

**INSTITUTE OF AGRICULTURAL RESEARCH STATISTICS**

**NATIONAL INDEX**

**OF**

**AGRICULTURAL**

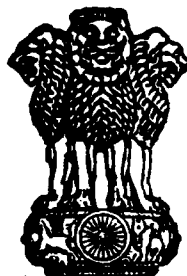
**FIELD**

**EXPERIMENTS**

**VOL. 13 PART 1**

**UTTAR PRADESH**

**1948-53**



**सत्यमेव जयते**

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**NEW DELHI**

## FOREWORD

It is a well recognized fact that the level of agricultural production in India is one of the lowest in the world and it is only by the exploitation of scientific methods of agriculture that we can hope to increase our agricultural production to the level necessary for providing a reasonable standard of living to the country's population. Properly planned and conducted field experiments provide a reliable basis for propagating improved agricultural techniques among farmers. A number of research institutes and other experimental centres are functioning under the Central Ministry of Agriculture, the Commodity Committees and the State Governments, in which research on agricultural problems is going on. The need for an integrated account of the researches done in these organisations and institutions in the country has been felt for a long time, particularly in the context of planning. The absence of such a unified account has often led to duplication of work and delay in the utilisation of the results for practical farming. The Institute of Agricultural Research Statistics of the Indian Council of Agricultural Research has, therefore, rendered a most timely service by preparing a compendium of all agricultural field experiments conducted in India upto 1953 and similar compendia are under preparation by the Institute for subsequent years.

The present compendium contains critical summaries of results of experiments bearing on important agronomic factors such as the responses of crops to fertilizers and manures, inter-relationship of fertilizers, varieties and cultivation practices and other information of value for giving sound advice to farmers in different regions. I am sure that these results will be fully utilised by agricultural institutions, research workers, planners and extension organisations. The chief merit of the present publication is that it brings together in one place the results of experimentation carried out under diverse soil, climatic and agricultural conditions obtaining in India. Workers in one State can thus supplement data for their own area by results from other regions where conditions may be similar and thereby re-inforce their own conclusions. For the same reason I hope that this publication will be of use to workers in other countries also.

A Standing Committee consisting of the Agricultural Commissioner with the Government of India, the Director, Indian Agricultural Research Institute and the Statistical Adviser, Indian Council of Agricultural Research, has been set up to provide general guidance to the work under this scheme. I congratulate the members of this Committee and in particular the Statistical Adviser and his associates at the Institute of Agricultural Research Statistics for bringing out this compendium. The preparation of this compendium has been made possible only by the whole hearted co-operation of the States and other organisations in making available the results of their experimental researches for this purpose. My thanks are due to the officers of the State Departments of Agriculture and other institutions for participating in this work. I hope that the present series will be followed by periodical publication of similar compendia for later years, in order that the availability, in a consolidated form, of results of scientific experiments in agriculture in India may be maintained up-to-date.

NEW DELHI,  
August 20, 1962.

A.D. PANDIT  
*Vice-President,*  
*Indian Council of Agricultural Research.*

## PREFACE

A large number of agricultural field experiments on different problems is being conducted in the country by Central and State Governments, Research Institutes, Commodity Committees and other organisations engaged in agricultural research. In addition, a number of schemes involving field experimentation is sponsored by the Indian Council of Agricultural Research in different States. The absence of a unified record of the results of these various experiments has considerably handicapped planning of further research and development and has often led to duplication of efforts.

Vaidyanathan brought out in 1933 a useful catalogue of manurial experiments conducted in India till then. Considering that Vaidyanathan's work was confined to manurial experiments and the fact that an enormous increase has taken place in the number and scope of agronomic experiments in recent years in India, the Indian Council of Agricultural Research launched the scheme of National Index of Field Experiments in 1954. The object of the scheme was two-fold :

(i) the preparation of compendium of all the field experiments for the period 1935-53 and

(ii) the preparation of index cards for individual experiments from 1954 onwards.

Under the scheme, results of all agricultural field experiments other than purely varietal trials were to be consolidated. Subsequently at the time of the extension of the scheme in 1959 it was decided that the compendium would be prepared in the first instance for the period 1948-53 and a similar compendium would be prepared for the period 1954-59. The present series for the period 1948-53 has been prepared in pursuance of this decision.

The compendium is divided into 15 volumes one each for (1) Andhra Pradesh (2) Assam, Manipur and Tripura (3) Bihar (4) Gujarat (5) Kerala (6) Madhya Pradesh (7) Madras (8) Maharashtra (9) Mysore (10) Orissa (11) Punjab, Jammu & Kashmir and Himachal Pradesh (12) Rajasthan (13) Uttar Pradesh (14) West Bengal and (15) all Central Institutes. In each volume back-ground information of the respective State regarding its physical features, soils, rainfall and climate, agricultural production and area under different crops is given. A map showing different regions of the State, soils and agricultural research farms is also included. The experiments reported in each volume have been arranged cropwise for each State. All the experiments belonging to a particular crop at various research stations are grouped together. For a particular crop, experiments are arranged according to the following classification :

Manurial (M), Cultural (C), Irrigational (I), Diseases, Pests and Chemicals other than fertilisers (D), Rotational (R), Mixed Cropping (X) and combinations of these wherever they occur (e.g., CM as Cultural-cum-Manurial). Experiments in which crop varieties also form a factor are denoted by adding V to their symbol and are given together (e.g., MV as Manurial-cum-Varietal). The results of an experiment are given along with other basic information such as rotation of crops followed, cultural practices adopted, etc.

For making maximum use of the experimental data all the important tables giving the average yields of various treatments along with the appropriate standard errors have been presented. No attempt has, however, been made to summarise the data of groups of experiments on any particular item and to draw any general conclusions. This will be done for the period 1948-59 while publishing the compendium for the period 1954-59.

This publication is the result of the co-operative endeavour of a large number of persons both at the Centre and in the States. I should particularly mention in this connection, guidance and help rendered in the formulation of the scheme by Dr. D.J. Finney F.R.S. of Aberdeen University, Scotland, during his stay at the Institute of Agricultural Research Statistics as an F.A.O. Statistical Expert in 1952-53.

( ii )

At the Institute of Agricultural Research Statistics, the work under the scheme was carried out under the supervision and guidance of Shri T.P. Abraham, Assistant Statistical Adviser. Shri G.A. Kulkarni, Statistician, looked after the detailed working of the scheme. These officers have been largely responsible for the preparation of the manuscript of the compendium and it is a pleasure to thank them for the hard work they have put in for getting this compendium ready. Messrs O.P. Kathuria, B.V. Srikantiah, M.L. Sahni, B.P. Dyundi, S.D. Bal and P.K. Jain of the statistical staff of the Institute deserve special mention for their careful scrutiny of the data and preparation of the material for the compendium. Thanks are also due to Dr. Uttam Chand, Professor of Statistics, now with the Central Statistical Organisation, Shri K.S. Avadhany, Assistant Statistician, also now with the Central Statistical Organisation, and Shri K.C. Raut, Statistician in this office who were associated with the scheme in its initial stages.

The burden of collecting data from original records by visiting different research stations and the analysis of a large number of experiments, only the primary data for which had been recorded in the files, fell on the regional staff appointed by the Indian Council of Agricultural Research in different States. They deserve to be congratulated for the patient work they have put in. The State Departments of Agriculture, Central Institutes and Commodity Committees made data for the experiments conducted within their jurisdiction readily available. The Indian Council of Agricultural Research acknowledges this willing co-operation without which the consolidation of the results would not have been possible. Various State officers who helped the project by making the data accessible to the statistical staff of the project and worked as the regional supervisors for the scheme also deserve thanks by the Council for their active help. The list of names of the regional supervisors is given on the following page.

NEW DELHI,  
August 16, 1962.

V.G. PANSE  
*Statistical Adviser*  
*Institute of Agricultural Research Statistics*  
*(I.C.A.R.)*

**REGIONAL SUPERVISORS FOR THE SCHEME OF THE NATIONAL INDEX  
OF FIELD EXPERIMENTS**

<b>Region and headquarters</b>	<b>Regional Supervisors :</b>
1. ANDHRA PRADESH (HYDERABAD)	SHRI D.V.G. KRISHNAMOORTHY, Deputy Director of Food Production, Andhra Pradesh. SHRI JAGANNATH RAO, Joint Director of Agriculture (Research), Andhra Pradesh. DR. KHADRUDDIN KHAN, Joint Director of Agriculture (Research), Andhra Pradesh. DR. WAHIUDDIN, Headquarters Deputy Director of Agriculture (Research), Andhra Pradesh.
2. ASSAM, MANIPUR AND TRIPURA (SHILLONG)	SHRI L.K. HANDIQUE, Director of Agriculture, Assam. SHRI S. MAJID, Director of Agriculture, Assam. DR. S.R. BAROOHA, Director of Agriculture, Assam.
3. BIHAR (SABOUR)	DR. R. RICHARIA, Principal, Agriculture College, Sabour. SHRI R.S. ROY, Principal, Agriculture College, Sabour.
4. KERALA (TRIVANDRUM)	SHRI N. SHANKARA MENON, Director of Agriculture, Kerala. SHRI P.D. NAIR, Director of Agriculture, Kerala.
5. MADHYA PRADESH (GWALIOR)	DR. T.R. MEHTA, Principal, Agriculture College, Gwalior.
6. MADRAS (COIMBATORE)	SHRI C.R. SHESHADRI, Vice-Principal & Secretary, Research Council, Agriculture College, Coimbatore. SHRI P.A. VENKATESWARAN, Vice-Principal & Secretary, Research Council, Agriculture College, Coimbatore. LATE SHRI M. BHAVANI SANKARA RAO, Vice-Principal & Secretary, Research Council, Agriculture College, Coimbatore. SHRI T. NATARAJAN, Agronomist & Secretary, Research Council, Agriculture College, Coimbatore. SHRI A.H. SARMA, Extension Specialist & Secretary, Research Council, Agriculture College, Coimbatore.
7. MAHARASHTRA & GUJARAT (FORMER BOMBAY STATE)	SHRI D.S. RANGA RAO, Statistician, Department of Agriculture, Poona.

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Owing to transfers and other changes more than one Regional Supervisor have been shown against several states as these officers have acted as Regional Supervisor during different periods from 1955 to 1962.

(iv)

8. **MYSORE**  
(BANGALORE)                      **SHRI A. ANANT PADMANABHA RAU.**  
State Statistician, Mysore State.
  
9. **ORISSA**  
(BHUBANESHWAR)                      **DR. U.N. MOHANTY.**  
Dy. Director of Agriculture (H.Q.), Orissa.
  
10. **PUNJAB, JAMMU &**  
**KASHMIR AND HIMACHAL**                      **SHRI P.S. SAHOTA,**  
**PRADESH(CHANDIGARH)**                      Statistician, Department of Agriculture, Punjab
  
11. **RAJASTHAN**  
(JAIPUR)                                      **SHRI. H.C. KOTHARI,**  
Statistician, Department of Agriculture, Rajasthan.
  
12. **UTTAR PRADESH**  
(LUCKNOW)                                      **DR. K. KISHEN,**  
Chief Statistician to Govt. of U.P.  
Department of Agriculture, U.P.
  
13. **WEST BENGAL**  
(CALCUTTA)                                      **SHRI S.N. MUKHERJEE,**  
Statistical Officer,  
Directorate of Agriculture,  
West Bengal.  
**DR. S. BASU,**  
Statistical Officer,  
Directorate of Agriculture,  
West Bengal.

**ABBREVIATIONS COMMON TO EXPERIMENTS ON ANNUAL AND  
PERENNIAL CROPS AND EXPERIMENTS ON CULTIVATORS'  
FIELDS**

**Crop :-** In the top left corner is given the name of the crop on which the experiment is conducted. Within brackets along side the crop is mentioned the season wherever the information is available.

**Ref :-** Against the sub-title 'reference' is mentioned the name of the State, the year in which the experiment is conducted and the serial number of the experiment for that year given in brackets.

Abbreviations adopted for States are as follows :-

A.P.	Andhra Pradesh	Mn.	Manipur
As.	Assam	Mh.	Maharashtra
Bh.	Bihar	Ms.	Mysore
DL.	Delhi	M.P.	Madhya Pradesh
Gj.	Gujarat	Or.	Orissa
H.P.	Himachal Pradesh	Pb.	Punjab
J.K.	Jammu & Kashmir	Rj.	Rajasthan
K.	Kerala	Tr.	Tripura
M.	Madras	U.P.	Uttar Pradesh
		W.B.	West Bengal

Repetition of the experiment in other years is indicated in the same line against 'reference' by stating the year and serial number for each repetition side by side e.g. U.P. 53(19)/52(42)/51(20) etc.

**Site :-** Name of the Research Station is mentioned along with the place where it is located, e.g. Agri. Res. Stn. for Agricultural Research Station.

For Central Institutes, the corresponding standard abbreviations have been adopted e.g. I.A.R.I. for Indian Agricultural Research Institute.

**Type :-** Abbreviations used against this item are one or more than one of the following :-

C—Cultural ; D—Control of Diseases and Pests ; I—Irrigational ; M—Manurial ; R—Rotational ; V—Varietal and X—Mixed cropping e.g. CM is to be read as Cultural-cum-Manurial.

**Results :-** Information under this heading should be read against the following items :-

(i) General mean. (ii) S.E. per plot. (iii) Result of test of significance. (iv) Summary table (s) with S.E. of comparison (s).

**Abbreviations used in the text of the experiments :-**

ac.—acre.	C.L.—Cart load.
Ammo. Phos.—Ammonium Phosphate.	C.M.—Cattle Manure.
A/N—Ammonium Nitrate.	C/N—Chilean Nitrate.
A/S—Ammonium Sulphate.	C/S—Copper Sulphate.
B.D.—Basal Dressing.	F.M.—Fish Meal or Fish Manure.
B.M.—Bone Meal.	F.W.C.—Farm Waste Compost.

( vi )

F. Y. M.—Farm Yard Manure.	N—Nitrogen.
G. M.—Green Manure.	Nitro phos—Nitro phosphate.
G. N. C.—Groundnut cake.	P—Phosphate.
K—Potash.	Pot. Sul.—Potassium Sulphate.
lb.—Pounds.	Super—Super Phosphate.
M. C.—Municipal Compost.	T. C.—Town compost.
Mur. Pot.—Muriate of Potash.	Zn. Sul.—Zinc Sulphate.

### BASAL CONDITIONS

Information under the above heading to be read against the following items :

#### A. For annual crops :

(i) (a) Crop rotation if any. (b) Previous crop. (c) Manuring of previous crop. (State amount and kind). (ii) (a) Soil type. (b) Soil analysis. (iii) Date of sowing/planting. (iv) Cultural practices. (a) Preparatory cultivation. (b) Method of sowing/planting. (c) Seed-rate. (d) Spacing. (e) No. of seedlings per hole. (v) Basal manuring with time and method of application. (vi) Variety. (vii) Irrigated or Unirrigated. (viii) Post-sowing/planting cultural operations. (ix) Rainfall during crop season (State name of the season along with the month). (x) Date of harvest.

#### B. For perennial crops :

(i) History of site including manuring and other operations. (ii) (a) Soil type. (b) Soil analysis. (iii) Method of propagation of plants. (iv) Variety. (v) Date and method of sowing/planting. (vi) Age of seedling at the time of planting. (vii) Basal dressing with time and method of application. (viii) Cultural operations during the year. (ix) Inter cropping if any. (x) Irrigated or Unirrigated. (xi) Rainfall during crop season. (xii) Date of harvest.

#### C. For experiments on cultivator's fields :

(i) (a) Crop rotation if any. (b) Previous crop. (c) Manuring of previous crop. (ii) Soil type in general. (iii) Basal manuring with time and method of application. (iv) Variety. (v) Cultural practices. (a) Preparatory cultivation. (b) Method of sowing. (c) Seed-rate. (d) Spacing. (e) No. of seedlings per hole. (vi) Period of sowing/planting per hold. (vii) Irrigated or Unirrigated. (viii) Post-sowing/planting cultural operations. (ix) Rainfall during crop season. (x) Period of harvesting.

### DESIGN

Information under this heading to be read against the following items :

#### A. For annual crops :

(i) Abbreviations for designs : C.R.D.—Completely Randomised Design ; R.B.D.—Randomised Block Design ; L. Sq.—Latin Square ; Confd.—Confounded ; Fact.—Factorial. (other designs and modifications of the above to be indicated in full). (ii) (a) No. of plots per block. (b) Block dimensions (iii) No. of replications. (iv) Plot size. (a) Gross. (b) Net. (v) Border or guard rows kept. (vi) Whether treatments are randomised (separately in each block).

#### B. For perennial crops :

(i) Abbreviations for designs : C.R.D.—Completely Randomised Design ; R.B.D.—Randomised Block Design ; L. Sq.—Latin Square ; Confd.—Confounded. (other designs and modifications of the above indicated in full). (ii) (a) No. of plots per block. (b) Block dimensions. (iii) No. of replications. (iv) No. of trees/plot. (v) Border or guard rows kept. (vi) Are treatments randomised.

#### C. For experiments on cultivators' fields :

(i) Method of selection of experimental sites. (ii) No. and distribution of experiments (iii) Plot size. (a) Gross. (b) Net. (iv) Whether treatments are randomised.



(vii)

GENERAL

Information under this heading to be read against the following items :—

**A. For annual crops :**

(i) Crop conditions during growth with date of lodging, if any. (ii) Incidence of pests and diseases with control measures taken. (iii) Quantitative observations taken. (iv) In case of repetition in successive years—(a) from what year to what year, (b) whether treatments were assigned to the same plots in the same manner every year, (c) reference to combined analysis, if any. (v) In case of repetition in other places, (a) names of the places along with reference, (b) reference to combined analysis, if any. (vi) Abnormal occurrences like heavy rains, frost, storm etc., if any. (vii) Any other important information.

**B. For perennial crops :**

(i) Crop condition during the year. (ii) Incidence of pests and diseases with control measures taken. (iii) Quantitative observations taken. (iv) In case of repetition in successive years—(a) from what year to what year, (b) reference to combined analysis, if any. (v) Abnormal occurrences like heavy rains, frost, storm etc., if any. (vi) Any other important information.

**C. For experiments on cultivators' fields :**

(i) Crop condition during growth. (ii) Incidence of pests and diseases with control measures taken. (iii) Quantitative observations taken. (iv) In case of repetition in successive years, (a) from what year to what year, (b) whether treatments were assigned to the same plots in the same manner every year, (c) reference to combined analysis, if any. (v) In case of repetition in other places names of places along with reference. (vi) Abnormal occurrences, like heavy rains, frost, storm etc., if any. (vii) Any other important information.

**LIST OF ABBREVIATIONS USED FOR OFFICERS ASSOCIATED WITH EXPERIMENTS  
IN UTTAR PRADESH**

Serial Number	Name and address of the Research officer	Abbreviation used in the proforma
1	2	3
1.	The Agricultural Chemist to Government, U.P., Kanpur.	A.C.
2.	The Crop Physiologist to Government, U.P., Lucknow.	C.P. and C.P. (R)
3.	The Plant Pathologist to Government, U.P., Kanpur.	P.P. and P.P. (K).
4.	The Economic Botanist ( <i>Rabi</i> ) Cereals and Potatoes to Government, U.P., Kanpur.	E.B. (R)
5.	The Economic Botanist, (Oilseed) to Government, U.P., Kanpur.	E.B. (O)
6.	The Principal, Agricultural College, Kanpur.	P.A.C.
7.	The Horticulturist Incharge, Vegetable Research Station, Kalianpur, Kanpur.	V.R.S. and V.R. (H)
8.	The Entomologist to Government, U.P., Kanpur.	Ento. (K)
9.	The Assistant Economic Botanist (Paddy) to Government, U.P., Nagina, District Bijnor.	A.E.B. (P), A.E.B. (P) P, A.E.B. (P) T and A.E.B. (P) G
10.	The Economic Botanist (Cotton) to Government, U.P., Bulandshahr.	E.B. (C)
11.	The Director, Sugarcane Research, Shahjahanpur.	D.S.R., D.S.R. (S), D.S.R. (M) and D.S.R. (G)
12.	The Director, Irrigation Research Institute, Roorkee, Saharanpur.	I.R.I.
13.	The Director, Vivekanand Laboratory, Almora.	V.L.
14.	Head of the Agronomy Department, Allahabad Agricultural Institute, P.O. Agricultural Institute, Allahabad.	H.A.D., A.A.I.
15.	Prof. and Head of the Horticulture Department, B.R. College, P.O. Bichpuri, Agra.	H.H.D., B.R.C.
16.	Prof. and Head of the Agronomy Department, B.R. College, P.O. Bichpuri, Agra.	H.A.D., B.R.C.
17.	Principal, College of Agriculture, Banaras Hindu University, Varansi.	B.H.U., Varansi
18.	Mycologist, Government Hill Fruit Research Station, Chaubattia (Almora).	Myco (C).
19.	Entomologist, Government Hill Fruit Research Station, Chaubattia (Almora)	Ento. (C).
20.	Horticulturist, Government Hill Fruit Research Station, Chaubattia (Almora).	Horti. (C).
21.	Soil Chemist, Government Hill Fruit Research Station, Chaubattia (Almora).	S.C. (C).
22.	Jt. Director, Soil Conservation Research Training and Demonstration Centre, Rehmankhara, Dhakauni, Rahimabad and katiyar.	J.D.A. (S) D.
23.	Jute Development Officer, Lucknow.	J.D.O.

GLOSSARY OF VERNACULAR NAMES OF CROPS

Sl. No.	Name of Crop	Botanical name	Assamese	Bengali	Oriya	Telugu	Tamil	Malayalam	Kannada	Marathi	Gujarati	Hindi	Punjabi & Kashmiri
1.	Paddy	<i>Oryza sativa</i> L.	Dhan	Dhan	Dhano	Vadlu, Biyyamu Godumalu	Nel	Nellu	Bhatta	Bhat	Dangar	Dhan ; Chawal Gehon	Chaul ; Dhan Kanak
2.	Wheat	<i>Triticum Sativum</i> Lamk ; <i>Triticum aestivum</i> L.	Gaum ; Ghehu	Gam	Gaham		Kothumai	Gothambu	Godhi	Gahu	Ghahu		
3.	Jowar	<i>Andropogon sorghum</i> Brot ; <i>Sorghum vulgare</i> Pers.	—	Jowar	Juara	Jonna	Cholam	Cholam	Jola	Jowari ; Jondhla	Jowari ; Juar	Jowar ; Jaur	Jowar
4.	Bajra	<i>Pennisetum typhoides</i> stapf Ex Hubbard	—	Bajra	Bajra	Sajja	Kambu	Kambu	Sajje	Bajri	Bajri	Bajra	Bajra
5.	Barley	<i>Hordeum vulgare</i> L.	Ja'dhan	Joba	Jaba, Barhi Macca	Barley	Baarli arisi	Barley	Barley akki	Satu ; Jav	Jav	Jau	Jaun
6.	Maize	<i>Zea mays</i> L.	Gom-dhan	Bhutta	Macca	Mokka-jonna	Makka cholam	Cholam	Musukina jola	Makka	Makkai	Makka	Makki ; Makayee
7.	Lobia, Cowpea	<i>Vigna catieng</i> Walp ; <i>Vigna sineasis</i> Savi.	—	Barbati	—	—	Thatapayaru	Mambayar	Alasande	Chavli	Chola ; Choli	—	Lobia Kara.
8.	Moong	<i>Phaseolus aureus</i> Roxb	Magumah	Sonamug	Mung	Pachape-salu	Pachaipayaru ; Pasipayaru	Cerupayaru ; Payaru	Hesaru	Mug ; Chinamug	Mag	Moong	Moong
9.	Gram	<i>Cicer arietinum</i> L.	Butmah	Chola	Boot	Sanagalu	Kadalai ; Sundal Kadalai Pattaani	Kadala	Kadale	Harbara	Chana	Chana	Chhole ; Chana
10.	Pea	<i>Pisum arvense</i> L.	Motor	Chota ; Pyaramatar	Bada chana	Desavali Batani		—	Holada bataani	Vatana ; Matar	Vatana	Muttar	Mattri
11.	Masoor (Lentil)	<i>Lens esculenta</i> Moench	Masur-mah	Masuri	Masur	Chiruse-naga	Masur paruppu	—	Masooru bele	Masur	Masur	Masur	Massar
12.	Potato	<i>Solanum tuberosum</i> L.	Alooguti	Alu	Bilati Alu	Bangladumpa	Uruzhai kilangu	Urala kizangu	Alu gedde	Batata	Aloo, Batata	Aaloo	Alu
13.	Onion	<i>Allium Cepa</i> L.	Piyaz	Piaj	Peas Ulli	Ulli	Vengayam	Ulli	Eerulli	Kanda	Dungli ; Kando	Piaz	Ganda ; Payaz
14.	Bhindi (Lady's finger)	<i>Hibiscus esculentus</i> ; <i>Abelmoschus esculentus</i> Moench.	Bhendi	Dhenrosh	Vendi	Benda kai	Bendai kai	Venda	Bende Kayi	Bhendi	Bhida ; Bhinda	Bhindi	Bhindi ; Tori

GLOSSARY OF VERNACULAR NAMES OF CROPS

S. No.	Name of Crop	Botanical name	Assamese	Bengal	Oriya	Telugu	Tamil	Malayam	Kannada	Marathi	Gujarati	Hindi	Punjabi & Kashmiri
15.	Brinjal	<i>Solanum melongena L.</i>	Bengena	Begun	Baigan	Vankaya	Katharikai	Vazhuthana	Badane kayi	Vange	Vangan	Baingan	Bengan ; Bataun
16.	Cabbage	<i>Brassica oleracea L. Var. capitata L.</i>	Bandha kabi	Bandha kapi	Bandha kobi	L. Akugobi	Muttaikose	Muttakose	Yele kosu	Kobi	Kobij	Patgobhy	Band gobhi
17.	Carrot	<i>Daucus carota L.</i>	Gajor	Gajar	Gajar	Gajara-gadda	Karrat	Carrot	Kempu mulangi	Gajar	Gajar	Gajar	Gajjar
18.	Cauli Flower	<i>Brassica oleracea L. var. botrytis L.</i>	Phool Kabi	Fulkapi	Fula kobi	Poogobi	Gospoovu	Cauliflower	Hukosu	Phul kobi	Fulkobi	Phool Gobhy	Phul gobhi
19.	Calocasia	<i>Colocasia antiquorum Schott.</i>	—	Kachu	Saru	Chemadu-mpalu	Sambu Sapan' Kizhangae	Chambu	Kesavina gedde	Alu	Alvi	Arbi	Arvi
20.	Garlic	<i>Allium sativum L.</i>	Nohoyu	Rashun	Rasun	Vellulli	Poodu Vella poodu Poosani	Veluthulli	Bellulli	Lasun	Lasan	Lehsoon	Thom ; Lassan
21.	Pumpkin	<i>Cucurbita pepo ; Cucurbita moschata Duch</i>	Kumura	Kumira	Bilati Kakharu (Scas) Mula	Allugadd Seemagum-madi Mullangi	Mullangi	Mathanga	Kumbala kayi	Kashi Bhopla	Kohla	Sitaphal	Halwa kadu ; Petha Muli
22.	Radish	<i>Raphanus sativus L.</i>	Mula	Mula	Mula	Mullangi	Mullangi	Mullanki	Mullangi	Mula	Mulo	Mooli	Muli
23.	Spinach	<i>Spinacia oleracea L.</i>	Palang sak	Palang	Mitha Palanga (Saga)	Teegabat-chali	Vusavyeley kerai	—	Spinak soppu	Palak	Palak	Paalak	Palak
24.	Tomato	<i>Lycopersicon esculentum Mill.</i>	Belahi	Belati begun	Bilati baigan	Tomato	Thakkali	Thakkali	Tomato	Welwangi ; Tambati	Vilaiti wagan Tometa Turia	Tamatter	Tamatar
25.	Torai (Ridge gourd)	<i>Luffa acutangula Roxb.</i>	Jika	Jhinga	Janhi	Beera	Peerkankai	Peechanga	Heere kayi	Dodka	Turia	Tori	kali Tori
26.	Turnip	<i>Brassica Campestris var. rapa L.</i>	Salgomi	Shlagan	Salgum	Turnip	—	Seema mulanki	Turnip	Salgam	Salgham	Saljam	Gonglu ; Shalgam ; Thippar
27.	Sugarcane	<i>Saccharum officinarum L.</i>	Kuhiar	Akh	—	Cheruku	Karumbu	Karimbu	Kabbu	Oos	Sherdi	Ganna Kamad Naishakar	Kamad ; Ganna ; Eakh ; Kapah
28.	Cotton	<i>Gossypium spp.</i>	Kapah	Karpas ; Tula	Kapa	Pratti	Paruthi	Paruthi	Hatti	Kapus	Kapas	Kapas	Kapah

GLOSSARY OF VERNACULAR NAMES OF CROPS

S. No.	Name of crops	Botanical name	Assamese	Urdu	Oriya	Telugu	Tamil	Malayalam	Kannada	Marathi	Gujarati	Hindi	Punjabi
29.	Tobacco	<i>Nicotiana tabacum L.</i>	Dhopat	Tamak	Uanpatra	Pogaku	Pugayilai	Pukayila	Hoge soppa	Tambaku	Tamaku	Tambaku	Tamaku ; Tambaku
30.	Jute	<i>Corchorus spp.</i>	Marapat	Shada pat Tosha pat	Jhota	Janumu	Chanapai	Chanambu	Sanabu	Joot	Meti Chhunchh	Jute	Patsan
31.	Groundnut	<i>Arachis hypogaea L.</i>	China Badam	Cheena-badam	China-Badam	Nelash-anga	Nilkadalai	Nilakk-adala	Kadale kayi	Bhuimug	Magafali	Mung-phali	Mungfali
32.	Castor	<i>Ricinus communis L.</i>	Eri	Rehri	Jada	Amudalu	Amanakku	Avanakku	Haralu	Erandi	Diveli ; Erondo	Rehri	Arind Harind ; Rind Alsi
33.	Linseed	<i>Linum usitatissimum L.</i>	Tisi	Tishi	Peshi	Avise	Alivithai	Cheruchana	Agase	Javas ; Alsi	Alsi	Alsi	Alsi
34.	Til (Sesamum)	<i>Sesamum orientale L.</i> <i>Sesamum indicum L.</i>	Til	Til	Rasi	Nuvvulu	Ellu	Ellu	Yellu	Til, Tili	Til	Til	Til
35.	Mustard	<i>Brassica juncea Coss.</i>	Sariah	Rai sarisha	Rai	Avalu	Kadugu	Kaduku	Kempu sasive	Mohri	Rai	Rai	Rai
36.	Rape	<i>Brassica campestris var.</i> <i>toria Duthie</i>	Sariah	Tori sarisha	---	Ava	Kadugu	---	---	Saras	Sarsav	Toria	Toria
37.	Berseem	<i>Trifolium alexanrinum L.</i>	---	Berseem	Gini ghasa	---	---	---	---	Bersim gavat	Barsim	Berseem	Berseem
38.	Apple	<i>Pyrus malus L.</i>	---	Apel	Seo	Apple ; Sabe	Apple	Apple	Sebu	Apple	Safarjan	Seb	Seo ; Seb
39.	Lemon	<i>Citrus limon Burm. F. ;</i> <i>Citrus limonia ozback</i>	Namu Tenga	Patj ;Gora lebu	Lembu	Peddanimma	---	Naranga	Herale	Limboo	Limbu	Bara Nemboo	Walaiti nimbu
40.	Citrus Grape fruit	<i>Citrus sarddisi Macf.</i>	Grape Fruit	---	---	Pamparapa- nasa	China bombili mas	---	---	Grape fruit	---	Grape friut	Grape phal
41.	Malta; Mosambi	<i>Citrus sinensis Osbeck</i>	Malta ; Mozambique	Mosambi	Mitha kamala	Battayi	Sathugudi ; Cheeni	Madura naranga	Sathkudi	Mosambi	Mosami	Malta Mausmee	Malta
42.	Guava	<i>Psidium guajava L.</i>	Madhuri	Peyara	Pijuli	Jama	Koyya	Pera	Sebe	Peru	Jamphal	Amrud	Amrud

GLOSSARY OF VERNACULAR NAMES OF CROPS

S. No.	Name of Crop	Botanical name	Assamese	Bengali	Oriya	Telugu	Tamil	Malayalam	Kannada	Marathi	Gujarati	Hindi	Punjabi
43.	<i>Kharbooz</i> (musk melon)	<i>Cucumis melo</i> L.	Chiral	Kharmuj	Khar bhuj	Karbuja	Kakkirikaai	Thai kumbalom	Kekkarike	Kharbuj	Sakkar teti	Kharbooja	Kharbuza
44.	<i>Lokat</i>	<i>Eriobotrya japonica</i> lindl.	Lataku	Loket phal	Lokat	Lokota	Lakkotta palam	---	Lakkote hannu	---	---	Lokat	Lokat
45.	Mango	<i>Mangifera indica</i> L.	Am	Am	Amba	Mamidi	Mangai	Mavu	Maru	Amba	Keri	Aam	Amb
46.	Peach	<i>Prunus persica</i> Batsch.	Narabog- ori	Pich	---	Peach	---	---	Pichis hannu	Pich	---	Aaroo	Aru
47.	Pomegranate	<i>Punica granatum</i> L.	Dalim	Dalim	Dalimba	Danimma	Maathuzham pazham	Mathalam	Dalimbre	Dalimb	Dadam	Anar	Anar
48.	Strawberry	<i>Fragaria vesca</i> L.	Garukhis	---	---	Strawberry	---	---	Strawberry hannu	---	---	Strawberry	Strawberti

## CONTENTS

	Page
FOREWORD	
PREFACE	... (i)
LIST OF ABBREVIATIONS	... (v)
LIST OF ABBREVIATIONS FOR OFFICERS IN U.P.	... (viii)
GLOSSARY OF VERNACULAR NAMES OF CROPS	... (ix)
UTTAR PRADESH STATE	... 1
STATEMENT SHOWING DETAILS OF EXPERIMENTAL STATIONS	... 15
EXPERIMENTAL RESULTS (CROP-WISE)	
Paddy	... 47
Wheat	... 199
<i>Jowar</i>	... 510
<i>Bajra</i>	... 551
Barley	... 558
Maize	... 589
Pulses ( <i>Lobia</i> , <i>Moong</i> , <i>Gram</i> , <i>Lahi</i> , Peas and Masoor)	... 604
Vegetables, Candiments & Spices ( <i>Potato</i> , <i>Onion</i> , <i>Bhindi</i> , <i>Brinjal</i> , <i>Cabbage</i> , <i>Carrot</i> , <i>Cauliflower</i> , <i>Colocasia</i> , <i>Garlic</i> , <i>Pumpkin</i> , <i>Radish</i> , <i>Spinach</i> , <i>Tomato</i> , <i>Torai</i> and <i>Turnips</i> )	... 623
Sugarcane	... 739
Cotton	... 1078
Tobacco	... 1102
Jute	... 1102
Oilseeds ( <i>Groundnut</i> , <i>Castor</i> , <i>Linseed</i> , <i>Til</i> , <i>Mustard</i> and <i>Rape</i> )	... 1104
Fodder Crops ( <i>Berseem</i> , <i>Sawan</i> , <i>Sanai</i> and <i>Oats</i> )	... 1120
Mixed cropping	... 1129
Fruit Crops ( <i>Apple</i> , <i>Citrus</i> , <i>Guava</i> , <i>Kharbooz</i> , <i>Lokat</i> , <i>Mango</i> , <i>Peach</i> , <i>Strawberry</i> and <i>Pomegranate</i> )	... 1196

# UTTAR PRADESH

## 1. GENERAL

This territory, formerly known as United Provinces of Agra and Avadh, was renamed as the State of Uttar Pradesh in January, 1950, on the inauguration of the New Constitution of the Indian Republic. The erstwhile princely States of Banaras, Rampur and Tehri, which were associated with the United Provinces for the purposes of census, were integrated in 1949—50 with Uttar Pradesh. Some other minor changes have also occurred as a result of transfer of enclaves. Uttar Pradesh lies between north latitudes 23° 52' and 31° 18' and east longitudes 77° 3' and 84° 39'. On the north, its boundary runs along Tibet and Nepal; on the east lies the State of Bihar and on the south the State of Madhya Pradesh and on the west and south-west lie the States of Himachal Pradesh, Punjab and Rajasthan.

The State is divided into 54 districts which are grouped into following 11 revenue divisions :

1. Meerut, 2. Agra, 3. Rohilkhand, 4. Allahabad, 5. Jhansi, 6. Varanasi, 7. Gorakhpur, 8. Lucknow, 9. Faizabad, 10. Kumaon and 11. Uttarakhand, the last having been created in 1960 prior to which the areas of this division constituted part of Kumaon division.

The total geographical area of the State according to the Surveyor General of India is 1,13,452 square miles. According to the village papers the area of the State during the year 1960—61 comes to 7,28,82,803 acres. Between these two figures there is a little discrepancy which is due to the recording of area under forests. Regular *partuls* are not carried out in the hilly regions of Kumaon and Uttarakhand divisions and so no reliable figures are available for these regions.

TABLE I

Statistics of Land Utilization for the plains of U.P. for 1960—61.

	<i>Area in acres</i>
1. Total Geographical Area (according to village papers)	6,27,17,858
2. Forests	48,43,873
3. Barren and Uncultivable Land	28,17,398
4. Land put to Non-agricultural uses	47,25,478
5. Culturable Waste	40,51,350
6. Permanent Pastures and Grazing grounds	1,08,248
7. Land under Misc. Tree and Groves	17,76,390
8. Current Fallows	3,59,774
9. Other Fallow Lands	31,12,707
10. Net Cultivated	4,09,22,640
Double Cropped Area	1,10,28,525
Total Cropped Area	5,19,51,165
The conventional estimate of the classification of land for the hilly regions of the Kumaon and Uttarakhand Divisions of the State for the year 1960—61 is given below :—	
1. Total	1,01,64,945
2. Forests	45,32,415
3. Land not available for Cultivation	35,84,720
4. Culturable Land other than Current Fallow	4,29,138
5. Current Fallow	69,641
6. Net Cultivated	15,49,031
Double Cropped Area	1,95,530
Total Cropped Area	17,44,561

The natural divisions of the territory of Uttar Pradesh are Himalayas in the North, Gangetic plain in the centre and Plateau on the South of the river Yamuna. Geologically, Himalayas form a region of their own, the central plain and the Plateau form a large alluvium of the Gangetic valley. This is the central part of the Indo-Gangetic plain which stretches from east to west of the country in the north. A part of



Mirzapur and the trans-Ganges part of the old state of Banaras are different both from the Himalayas in the north and large alluvial tract in the centre. East Satpura hills touch the south-east of the state and form a small separate tract.

The largest part of the land lying between Yamuna-Ganges in the South and the Himalayas in the north, is a large stretch of even land sloping very gently along the course of the Ganges. The plateau in the south slopes along the course of the Yamuna before its confluence with the Ganges at Allahabad or Prayag.

## 2. DIFFERENT SOIL-CLIMATIC REGIONS OF THE STATE

The State has been divided into 11 soil-climatic regions each of which has a particular combination of soil and climate that makes it somewhat different from others. However, it cannot strictly be said that the soils and climate within a region are throughout uniform, for there are local differences and that in passing from one region to another there is always a gradual rather than an abrupt change in these conditions. The various soil-climatic regions are described below :—

**1. Hilly Region :—**The hilly region includes the areas of Kumaon and Uttarakhand divisions and portions of Dehra Dun district of Meerut Division, the soils of which form a part of the southern outer spurs of the Himalayas, comprising of the eight hill districts *viz.*, Almora, Garhwal, Tehri, Naini Tal (excluding Kichha and Kashipur Tahsils), Dehra Dun (Mussoorie and Chakrata), Chamoli, Uttarkashi and Pithoragarh.

Native vegetation consists of forests of Oak and Pine with grasses and weeds as undergrowth.

**2. Tarai Region :—**This region extends along the foot hills of Himalayas from east to west and consists of Kichha and Kashipur tahsils of Naini Tal district, the whole of district Pilibhit excluding Bilaspur tahsil, entire area in Dehra Dun below 3000 ft. high northern part of Rampur district, Kheri district except Mohammadi Tahsil, district Bahraich except Kaiserganj tahsil, district Gonda except Gonda and Tarabganj tahsils, Basti district except Harraiya, Basti and Khalilabad tehsils, district Deoria except Deoria tahsil and district Gorakhpur except Gorakhpur and Bansagaon tahsils.

The vegetation consists of grasses, natural weeds and wild shrubby plants specially in the west tarai.

**3. Western Region :—**This region comprises of the districts of Saharanpur, Muzaffarnagar, Meerut and Bulandshahr which are located in the upper half of the Ganga-Yamuna *doab* of U.P. The region is separated from the States of Punjab and Delhi by the river Yamuna, which flows southwards down the Himalayas, forming the western boundaries of the region.

The vegetation mostly consists of forests and hill shrubs and weeds in the north ; grasses and halophytic plants in the South.

**4. Mid-Western Region :—**The area south of the Tarai region covering the districts of Bijnor, Moradabad, Budaun, Rampur, Bareilly, Shahjahanpur and Pilibhit is called Mid-Western region. River Ganges forms the western boundary of this tract and river Sharda forms the eastern boundary.

Native vegetation is the same as in the western region, but the area abounds in natural vegetative growth also.

**5. South-Western Region :—**This region consists of the districts of Aligarh, Etah, Mainpuri and a major portion of Agra and Mathura districts. The region constitutes a very important tract of Ganga-Yamuna *doab* and extends both in the upper and mid region of this productive alluvial plain. River Ganges forms the eastern boundary and river Yamuna flows through the centre of Mathura and Agra districts touching the western and south-eastern borders of Mainpuri district.

Native vegetation consists of short shrubs, bushes, low grasses, a number of wild dry land weeds and halophytic plants.

6. **Central Region** :—Central region is an area comprising of the districts of Kanpur, Fatehpur, Unnao, Lucknow, Sitapur, Hardoi, Farrukhabad and Etawah and forming a composite block of land in the middle and lower portions of Ganga-Yamuna *doab*. Besides the *doab* areas considerable portion of this region also occurs on the other side of the Ganges. River Yamuna forms the western boundary and flows in south-eastern direction. River Ganges also flows southward through the middle of this region.

7. **Mid-Eastern Region** :—The districts of Barabanki, Rae Bareli, Faizabad, Sultanpur, Pratapgarh and Allahabad are included in this region ; with the exception of last named district, the area is situated between the river courses of the Ganges and the Ghagra. The latter river flows at a greater velocity.

8. **North-Eastern Region** :—This region comprising of the non-tarai areas of the districts of Bahraich, Gonda, Basti, Gorakhpur and Deoria is bounded on the south by river Ghagra, northern boundary being the tarai belt. Great Gandak river separates the eastern most districts of Gorakhpur and Deoria from the State of Bihar.

9. **Eastern Region** :—Areas of this region are distributed in the districts of Jaunpur, Azamgarh, Varanasi, Ghazipur and Ballia which are situated in south-eastern extremity of U.P. Ghazipur and Ballia districts adjoin the State of Bihar which is separated from these districts by the river Ganges. A number of important rivers *viz.*, the Ganges, Sai, Gomati, Karmnasa and the Ghagra flow in this soil region. River Ghagra forms the northern boundary while the Ganges forms the southern boundary of this region.

10. **Bundelkhand Region** :—Jhansi, Jalaun, Hamirpur and Banda districts lying south-west of river Yamuna constitute this region.

Native vegetation consists of shrubs and grasses.

11. **Vindhya Region** :—The Vindhya Region extends on the south of the river Ganges in Mirzapur and southern portions of Varanasi (Chakia tahsil) and Allahabad districts (Meja and Karchhana tahsils).

Native vegetation consists of a wide range of forest trees and shrubs.

### 3. SOILS

The soils in the eleven regions already described above are as follows :—

1. **Hilly Region** :—The soils have developed over biotite schists and phyllites. The soil classifications recognized so far are (i) Brown Forest Soils (ii) Podsollic soils and (iii) Wiesenboden or meadow soils. Brown forest soils are most productive. High acidity and deeper alluviation of nutrients are the main characteristics of Podsollic Soils. Wiesenbodens have developed under water-logged conditions in valleys. Considerable correlation is found between soil condition and incidence of diseases and pests.

2. **Tarai Region** :—The soils have developed over finer fractions of material of considerable thickness transported by innumerable streams and rivulets from the outer Himalayan and Siwalik ranges resulting from wide torrential rains during monsoon months. Parent gravelly material are often found in lower depths specially in the foothills. The thickness of the soil layers increases with distance from the base of the hills with simultaneous decline in the thickness of underlying pebble bed.

All grades of texturally varying soils of alluvial nature are found in this region. Soil types recognized in one of the Tarai Region in Naini Tal. district are (1) Matkota clay loam (2) Matkota loam—highly calcareous (3) Matkota loam—slightly calcareous (4) Matkota loam—non-calcareous and (5) Matkota sandy loam.

Soils of Tarai region are productive, possessing initial reserve of nitrogenous plant food which deplete within few years of intensive cultivation. These soils have been found to be extremely responsive to phosphatic fertilizers. Being younger in formation these soils respond favourably to the application of both macro and micro-elements. Major portion of the tract due to their light texture, necessitates occasional green manuring. Short term crops do well in these areas.

The two Tarai tracts though developed under the influence of similar soil forming processes differ widely from one another in the fact that the soils in the north western group are located in close proximity to the Himalayas and are less calcareous than the soils in the north-eastern Tarai tracts, where the alluviums have to traverse larger distances. The latter thus are more calcareous and of much finer texture.

**3. Western Region :—**The alluviums are to a great depth and except for certain tracts of Saharanpur, parent rocks are found no where. These alluviums are very varied and are essentially basic in character and have been developed from mild calcareous parent material.

Like all alluvial regions, this tract contains all the four grades of the soil classes belonging to both the Ganges and the Yamuna river system. The four categories of soils pertaining to each of the two river systems are (i) Riverine soils (ii) Soils developed on flats (iii) Soils developed on uplands and (iv) Soils developed on low lands. Soils on recent alluviums are of recent origin and generally calcareous and light textured and are found in the vicinities of the river courses. At certain distances from the rivers, soils of the flatter areas are found. These soils are partially mature and of considerably older origin. These soils are medium textured, generally belonging to loam or [clay loam categories with a heavy strata of soil in the lower regions of the soil profile. They are neutral to slightly alkaline on the top but slightly to moderately alkaline at lower depths. Free calcium carbonate is occasionally found at lower depths. Soils of the upland class are generally found in the mid-interior of the region on the highest elevations and are the product of the oldest alluviums. They are lighter on the surface, the finer fractions having been alluviated to lower depths. These soils are brown to reddish brown in colour and are neutral to slightly alkaline in reaction. Free calcium is not commonly found in these soil types. Soils of low land are found extensively within the elevated regions. The soils are formed from the washings of the adjoining areas and on this account are generally fine textured. Considerable soil salinization is found in these areas which give rise to various categories of *usar* formations. These soils are highly alkaline and usually contain a hard pan either of clay or of *Kankar* nodules. Where salinity does not prevail these soils form very productive areas specially in respect of paddy crop.

The alluvial soils found in this region are productive and respond very well to fertilizer applications and other management practices. The water requirement of this region is generally high.

**4. Mid-Western Region :—**Alluviums deposited by the river Ganges and its tributaries after the disintegration of Himalayan ranges in the north through which the rivers flow in southward direction, formed the soils. Those parent rocks are basic in character and calcareous in nature.

Soils of this region are closely related to the alluvial soils of the neighbouring western region and formed of similar parent material. Many of the characteristic features of those soils are also present in the soils of this region. All grades of soils *viz.*, riverine, flat lands, up lands, and low lands distributed on topographical sequences are also found in this region. These soils, however, differ from *doab* soils in their degree of development, the factors influencing the soil development in the two cases being slightly different. These soils are generally finer in texture and have no impedence in drainage and on this account are, in general, comparatively free from hazards of soil salinity. They are generally calcareous except for the upland soils which have practically no lime.

The soils are freely drained and have a good moisture content. The water requirement of these soils is not as great as that of the soils of the adjoining western region. They are more productive and respond very well to improved management practices.

**5. South-Western Region :—**The soils of this region greatly resemble the soils of the Western Region and all grades of soils pertaining to the two river systems obtained in that region are also present in this soil region. These soils, however, differ from the soils of the former region in their extent of soil salinization, this region having greatest concentration of saline and alkali lands. The drainage of this tract is extremely defective, resulting in formation of extensive tracts of *usar*. The soils of the Agra and Mathura districts, more so of their western and south western tahsils lying on the other side of Yamuna, are markedly different from the soils of the *doab* area, the former being more closely related to the desert soils of Rajasthan.

The soils are generally dry and have accordingly a high water requirement. Irrigation facilities in this area have brought spectacular responses and give record yields of *rabi* cereal crops. These soils, however, should be watched with caution for hazards of soil salinization and a well laid out drainage system seems to be a pre-requisite for any agricultural development programme of this area.

**6. Central Region :—**Soils of this region also resemble closely the alluvial soils of the adjoining regions, more so of the *doab* areas. These soils, due to slightly better climate, however, give rise to fully mature soils. Riverine, flat, upland and lowland soils of both the river systems as found in the *doab* area are also found in this region. Greater extent of soil salinization is noticeable in these soils.

These soils afford good crop yields under controlled management practices and constitute an important part of the well known wheat belt of U.P. Due to the insufficient drainage, a considerable area of this region suffers from soil salinity. Extra caution should be taken to check further spread of salinity, more so in areas where irrigation canals are being introduced by providing adequate drainage facilities.

**7. Mid-Eastern Region :—**Practically all grades of soils, including recent alluviums, flats, uplands, and lowlands are found in this soil region. The region, however, differs from the other regions in the conspicuous absence of influence of Yamuna river which deposited alluviums primarily transported from more basic central Indian rock systems. The black, grey and the reddish brown soils found in the watersheds of the Yamuna river in *doab* areas are nowhere to be seen in this soil region. The districts adjoining Ganges river suffer from inadequate drainage facilities and on this account are subject to greater hazards of soil salinity. The districts worst affected from this hazard are, thus, Lucknow, Rae Bareli, Pratapgarh, Sultanpur and to certain extent that of Barabanki. The area on the left bank of Gomati comprising of greater portion of Barabanki and Faizabad are comparatively less saline than the soils of the remaining districts in this soil region.

The soils of the region stand in need of more controlled management practices specially in respect of saline and alkali soil areas. Provision of adequate drainage and affording other soil conservation practices are very important for the improvement of these soils.

**8. North-Eastern Region :—**The soils of this region have been rightly termed as calcimorphic soils due to the vast reserve of calcium present in them. Various stages of soil development found in other alluvial regions are also present in these areas even though they are inherently different in physical and chemical characteristics. The soils of the recent alluviums are highly calcareous, calcium carbonates at times being as high as 50 to 55 per cent. Soils are slightly to moderately alkaline in reaction, and possess an excellent moisture regime. Good crops are grown even without any irrigation. The water table in these areas is usually very high which maintains moisture supply to the plants during the entire period of their growth. Soils of the plains in this region are also calcareous though not to the same extent as the youngest member of the soil family. Soil

development which consists mainly of decalcification has considerably advanced in these areas and the surface soils have lost most of the calcium present in the recent alluviums. The lower regions are still fairly rich in free calcium carbonate and usually a zone of alluviated calcium carbonate in the form of *Kankar* nodules is found in these soil profiles. Soil salinity is not very common in these areas. Upland soils of this region are intensely leached, from which calcium carbonate has been completely washed out so much so that there is considerable depletion of exchangeable calcium. These soils thus are slightly acidic in reaction. There is excellent drainage and soil salinity is completely absent in these areas.

The soils of this region are fairly productive and afford bumper crops. Very intensive cultivation is practised in these areas and the fields are rarely left fallow. These areas have vast agricultural potential and given adequate plant foods, good crop yields can be maintained year after year. The upland soils due to the excessive rate of water percolation and their chemical and physical characteristics, hardly retain moisture for long periods, and on this account stand in need of frequent irrigations. They respond remarkably well to fertilizer applications.

**9. Eastern Region :—**The alluviums deposited in this region though related to other alluvial formations of the State are somewhat different than the soils of the upper areas. In general they are finer in texture than the soils of the upper regions. The soils of this region are more weathered and they distinctly exhibit the influences of various soil forming factors. The soils have been subjected to greater hydromorphic influences and have resulted in formation of a number of hydromorphic soil varieties more important of which are *Dhankar* and *Karail*, the former constituting extremely productive paddy soils of this State. In regions where Ganges flows in circuitous courses a group of very fine textured and black coloured soils, resembling in many aspects the black cotton soils of Central India plains, are found deposited in the interior depressed lands. They are calcareous and retain moisture for long periods. During dry months they crack and form deep fissures. They grow good crops of gram alone or mixed with barley and wheat even without much irrigation.

The soils of this region have a better moisture regime and are comparatively free from salt. They respond remarkably well to fertilizer application and more so to nitrogenous fertilizer. The soils are productive and given adequate irrigation facilities and suitable management, are liable to maintain high yields.

**10. Bundelkhand Region :—**The soils have developed over granite and gneiss of the Deccan trap with highly ferruginous beds. Lime stones are occasionally found. Four broad soil types have been recognised. Type I—A is a reddish brown coarse grained soil, very shallow and underlain with the parent material locally known as *rakar*. Type II is found near the plains. It is deeper having a layer of calcium carbonate in lower depths. This is locally known as *parwa*. Type III and IV are clayey, black coloured and calcareous. These are the *kabar* and *mar* types.

The soils in general are devoid of moisture and afford only early crops needing less water. Type I soils are most suited for inferior crops. Type II are better suited for cultivation under irrigated conditions. Type III & IV soils are very fertile and grow wheat, linseed and gram. Methods of dry farming are practised throughout Bundelkhand region.

**11. Vindhya Region :—**A wide variety of rocks consisting of Vindhya sandstones and shales, mixed conglomerates, calcareous shales, haematitic slates and schists, gneiss, granites, quartzite, trappesian and Archean Gneiss. Carboniferous rocks and lime stones give rise to different soils.

The topographic already recognized have developed on (i) Vindhya upland (ii) Vindhya flats (iii) Vindhya lowlands and categorized in five soil classifications viz., Vindhya type I to 5.

Vindhyan type 1 soils are dark brown in colour and sandy loam in texture and are found on uplands. Type 2 soils are loam textured and of brown colour underlain by reddish yellow mottled clay. Type 3 soils are yellowish gray in colour and comprise of heavy loams. They are developed on restricted drainage. Type 4 and 5 are associated with low lands. Type 4 soils have a compact surface of olive brown clay loam soil of strong acidic reaction. Type 5 soils have developed on extremely restricted drainage conditions with a high water table. These soils are gray coloured at the surface with a general fine texture and characterized by an underlying layer of Kankar nodules. Signs of water logging are clearly marked in lower depths of the profile of this type.

Cultivated areas are found sparsely interspersed within hilly areas with a system of rocks all round. Such areas are only adjacent to villages which are a few in number and are very sparsely populated. With the exception of soils developed on low lands the area supports only inferior crops whose water requirements are necessarily low due to the general scarcity of water prevailing in that country. They are excessively drained. Soils found in the Belan Valley belonging to Vindhyan lowland tracts respond remarkably well to phosphate and potash applications.

#### 4. CLIMATE AND RAINFALL

The climate and rainfall of the eleven regions are described below :

1. **Hilly Region** :—The climate is good with temperature being cool and moist. Rainfall is over 60 inches. Summer is short and cool. Winter is long and cold with frost and snow in the higher altitudes.

2. **Tarai Region** :—The climate is sub-humid and cool specially during winter months. Rainfall ranges between 40 and 50 inches, maximum being from July to September. Summer is not excessively hot, the temperature rarely crossing 108° F. Generally damp and excessive cold is experienced in the winter months.

3. **Western Region** :—The climate is sub-humid to semi-arid as one moves from north to south. Rainfall ranges between 30 and 50 inches, maximum being in the months of June to September. In north, the temperature is moderate all along the year.

4. **Mid-west Region** :—The climate is sub-humid in the north getting drier as one proceeds southward. The annual rainfall varies from 30 to 50 inches. The temperature is moderate with considerable fluctuations at different times of the year. Winters are very cold and summers are very hot. Almost the entire rain comes during the monsoon.

5. **South-west Region** :—The climate is arid to desert-like with rainfall ranging from 20 to 25 inches. Summer is quite severe, the western most districts showing desert like conditions.

6. **Central Region** :—The climate is semi-arid to sub-humid with slightly greater monthly and annual rainfall than the preceding *doab* soil regions. Winters are very cold. Almost the entire rainfall is received during the monsoon months. Summers are very hot ranging only next to the adjoining south west region.

7. **Mid-Eastern Region** :—The climate of this region is sub-humid resembling their western and northern counterparts. They are slightly less humid than the districts of mid-west region but slightly more humid than the west or south western region. The rainfall ranges from 30 to 40 inches, nine tenth of the precipitations occur during the monsoon months. Summers and winters are extremes.

8. **North-Eastern Region** :—The climate is sub-humid to humid. Rainfall is more than in the districts of plains and the northern tarai. The area due, to its geographical situation and its scooplike shape is swampy and on this account is prone to numerous drainage and flood problems.

9. **Eastern Region** :—The climate is sub-tropic humid with annual rainfall ranging between 40 to 45 inches. The area due to the swampy nature maintains humidity almost throughout the year. The temperatures are moderate and fluctuations during summer and winter are very marked.

10. **Bundelkhand Region** :—The climate is dry with hot summers and cool winters. Rainfall varies from 30 to 35 inches.

11. **Vindhya Region** :—The climate is sub-tropical with an annual rainfall of 40 to 45 inches. Months of July, August and September have the highest rainfall accounting for nine-tenths of the total rainfall. Temperatures are very high during summers and very low during winters. Marked difference between night and day temperatures is found.

## 5. IRRIGATION

The net irrigated area in the plains of the State was 124.6 lakh acres during the year 1960-61. It represents about 30.5 per cent of the net cultivated area. Irrigated area is concentrated in the western and north western districts.

The sources of irrigation in order of importance are canals, wells, tube-wells and tanks. The distribution of irrigation from different sources is given below :—

TABLE II

The table shows the source-wise distribution of the Net Irrigated Area for the plains portion of the State for the year 1960-1961.

Source		Irrigated Area in acres
1. Canals	Government	49,19,757
	Private	4,016
	Total	49,23,773
2. Tube Wells	Government	12,24,278
	Private	1,18,193
	Total	13,42,471
3. Other Wells	Government	24,915
	Private	45,31,321
	Total	45,56,236
4. Reservoirs		6,327
5. Tanks, Lakes and ponds		10,35,543
6. Other Sources		5,99,834
7. Total Irrigated		1,24,64,184

## 6. NORMAL CROPPING PATTERN AND AGRICULTURAL PRODUCTION

**Cropping Pattern** :—The net cultivated area of the State, excluding the hills, in 1960-61 was about 409.2 lakh acres. Of this, about one fourth is *Do fasli* area. The total cropped area of each season is as follows :

<i>Kharif</i>	272.8 lakh acres
<i>Rabi</i>	244.6 lakh acres
<i>Zaid</i>	3.1 lakh acres

(i) **Kharif Crops** :—The main *Kharif* crops are Paddy and Millets which occupy 36.4 per cent and 27.5 percent respectively of the total *Kharif* cropped area. The heaviest concentration of these crops is in the eastern U.P. Among millets, *Jowar*, *Bajra* and Maize are the most important crops.

Sugarcane is included in *Kharif* crops. It occupies only 12.0 per cent of the *Kharif* area but from the monetary point of view, it is the most important cash crop of the State. The highest concentration of this crop is in the western districts of the Meerut and Rohilkhand Divisions but it is an important crop throughout the northern districts of the plain.

Cotton, Jute, Groundnut and *Til* are the other important cash crops of *Kharif* season. The cultivation of cotton increases from east to west due to the comparative aridity of the western portion of the upper Gangetic plains.

Jute cultivation found encouragement after the partition of the country and although its cultivation was not known before, it is extensively grown in the Tarai belt in low lying areas near river beds where water is in plenty.

(ii) *Rabi* Crops :—Among the *Rabi* crops, Wheat is the most important crop, which is grown in 37.9% of *Rabi* area. Cultivation of wheat increases from eastern to western U.P. Western districts of Meerut and Rohilkhand Divisions and northern districts of Faizabad and Lucknow Divisions constitute the most important wheat growing tract. Gram and Barley come next in importance with an area of 25.8 percent and 17.8 percent respectively of the total *Rabi* cropped area. Bundelkhand is the most important gram producing area of the State. Barley which is next in importance to Gram, has its largest concentration in the eastern districts.

Rapeseed, Mustard, Linseed, Tobacco and Potato are the other important crops of *Rabi* season.

(iii) *Zaid* crops :—Rice and Tobacco are the important *zaid* crops of the State.

Crop rotations :—The crop rotations followed locally by the cultivators in the different soil-climatic regions of the State, already described above, are given below :—

**1. Hill Region :—**

(1) Maize—Wheat	(1 year)
(2) Rice—Peas+ <i>Mandua</i> —Wheat	(2 years)
(3) Fallow—Wheat	(1 year)
(4) Rice—Wheat	(1 year)
(5) Maize—Potato	(1 year)
(6) <i>Mandua</i> or Soyabean—Wheat	(1 year)

**2. Tarai Region :**

(1) Fallow— <i>Lahi</i> —Sugarcane	(2 years)
(2) Cowpea—Wheat	(1 year)
(3) Paddy—Peas+Green Manure—Wheat	(2 years)
(4) Green Manure— <i>Lahi</i> —Sugarcane	(2 years)

**3. Western Region :**

(1) Paddy—Berseem or Peas	(1 year)
(2) Maize—Berseem—Sugarcane	(2 years)
(3) Maize—Peas—Sugarcane	(2 years)
(4) Maize—Wheat	(1 year)
(5) Fallow—Wheat alone or mixed with Gram	(1 year)
(6) Maize— <i>Methi</i> —Sugarcane	(2 years)
(7) Maize—Potato—Sugarcane	(2 years)
(8) Green Manure—Wheat—Sugarcane— <i>Ratoon</i>	(3 years)
(9) Green Manure—Wheat—Cotton—Sugarcane	(3 years)

**4. Mid-Western Region :—**

(1) <i>Jowar</i> , <i>Bajra</i> or <i>Arahar</i> —Fallow—Wheat	(2 years)
(2) Paddy—Gram or Peas	(1 year)
(3) Maize—Wheat	(1 year)
(4) Groundnut—Sugarcane— <i>Ratoon</i>	(3 years)
(5) Groundnut—Sugarcane	(2 years)
(6) <i>Chari</i> —Gram	(1 year)
(7) Paddy—Peas—Fallow—Wheat	(2 years)
(8) Groundnut—Sugarcane—Fallow—Wheat	(3 years)

**5. South Western Region :—**

(1) <i>Bajra</i> alone or mixed with <i>Arahar</i> —Fallow—Wheat	(2 years)
(2) <i>Jowar</i> alone or mixed with <i>Arahar</i> —Fallow—Wheat	(2 years)
(3) Cotton—Peas—Fallow—Wheat	(2 years)
(4) Paddy—Peas—Sugarcane	(2 years)



- |   |           |
|---|-----------|
| (5) Maize—Potato—Sugarcane                        | (2 years) |
| (6) Fallow—Wheat                                  | (1 year)  |
| (7) Green Manure—Mustard—Sugarcane— <i>Ratoon</i> | (3 years) |

**6. Central Region :—**

- |   |           |
|---|-----------|
| (1) <i>Jowar</i> mixed with <i>Arhar</i> -Fallow-Wheat                          | (2 years) |
| (2) Maize - Potato—Tobacco  | (1 year)  |
| (3) Paddy—Peas—Sugarcane  | (2 years) |
| (4) Groundnut—Sugarcane—Fallow—Wheat  | (3 years) |
| (5) Cotton-Barley   | (1 year)  |
| (6) <i>Jowar</i> or <i>Bajra</i> alone or mixed with <i>Arhar</i> —Fallow—Wheat | (2 years) |
| (7) Paddy—Gram  | (1 year)  |

**7. Mid-Eastern Region :—**

- |                                     |           |
|-------------------------------------|-----------|
| (1) Maize—Sugarcane—Fallow—Wheat    | (3 years) |
| (2) Paddy—Peas or Gram              | (1 year)  |
| (3) Paddy—Fallow                    | (1 year)  |
| (4) Sugarcane— <i>Ratoon</i> —Maize | (3 years) |
| (5) Paddy—Gram—Fallow—Sugarcane     | (3 years) |
| (6) <i>Sanai</i> Seed—Barley        | (1 year)  |
| (7) <i>Sanai</i> (fibre)—Wheat      | (1 year)  |

**8. North Eastern Region :—**

- |  |           |
|--|-----------|
| (1) Paddy—Fallow or <i>Chatrimatri</i>     | (1 year)  |
| (2) Paddy—Peas or Gram                     | (1 year)  |
| (3) Sugarcane— <i>Ratoon</i> —Fallow—Wheat | (3 years) |
| (4) Sugarcane—Maize—Peas                   | (2 years) |
| (5) Paddy-Wheat                            | (1 year)  |
| (6) Fallow—Wheat                           | (1 year)  |
| (7) Paddy—Barley                           | (1 year)  |

**9. Eastern Region :—**

- |   |           |
|---|-----------|
| (1) Paddy—Peas                                    | (1 year)  |
| (2) Paddy—Fallow                                  | (1 year)  |
| (3) Maize—Peas                                    | (1 year)  |
| (4) <i>Arhar</i> + <i>Bajra</i> —Fallow—Sugarcane | (3 years) |
| (5) <i>Jowar</i> + <i>Arhar</i> —Fallow—Barley    | (2 years) |
| (6) Sugarcane—Fallow—Wheat—Paddy                  | (3 years) |

**10. Bundelkhand Region :—**

- |   |           |
|---|-----------|
| (1) <i>Jowar</i> —Gram—Fallow—Wheat                     | (2 years) |
| (2) <i>Jowar</i> and <i>Arhar</i> —Fallow—Wheat         | (2 years) |
| (3) Early Paddy—Wheat                                   | (1 year)  |
| (4) Fallow—Wheat and Gram mixed                         | (1 year)  |
| (5) <i>Jowar</i> or <i>Bajra</i> —Fallow—Fallow—Linseed | (2 years) |
| (6) <i>Jowar</i> with <i>Til</i> —Fallow—Wheat          | (2 years) |
| (7) <i>Til</i> —Fallow—Fallow—Wheat                     | (2 years) |

**11. Vindhya Region :—**

- |  |           |
|--|-----------|
| (1) Early Paddy—Gram or Peas                                     | (1 year)  |
| (2) Paddy— <i>Khasari</i>  | (1 year)  |
| (3) Paddy—Fallow   | (1 year)  |
| (4) <i>Jowar</i> and <i>Bajra</i> —Fallow—Fallow—Wheat or Barley | (2 years) |
| (5) Maize—Linseed  | (1 year)  |
| (6) <i>Sawan</i> or <i>Kodon</i> —Barley                         | (1 year)  |
| (7) Fallow—Wheat or Barley mixed with Gram                       | (1 year)  |

## Agricultural Area and Production :—

TABLE III

The table below gives the area, production average yield of principal crops for the year 1960-61:

Crop	Area in acres	Production in tons	Av. yield in lb./ac.
Rice	1,03,40,080	31,01,148	653*
Wheat	97,32,933	38,82,298*	900*
Barley	45,62,294	16,60,517*	824*
Jawar	22,09,962	4,86,861*	494*
Bajra	26,92,328	4,22,345*	351*
Maize	26,04,702	6,15,361*	531*
Gram	63,07,398	18,02,375*	640*
Peas	23,84,424	9,44,980*	888*
Arhar	16,11,553	8,71,712*	1,211*
Til (pure)	1,25,127	6,674*	113*
Groundnut	5,21,367	1,72,669*	742*
Rapeseed and Mustard (pure)	3,09,851	5,98,98*	445*
Linseed (pure)	1,70,642	1,43,20*	187*
Castor	5,645	2,241	492
Total Oilseed (pure)	11,32,632	2,54,802	
Til (mixed)	14,86,895	74,832	113
Rapeseed and Mustard (mixed)	42,67,099	8,47,250	445
Linseed (mixed)	12,93,590	1,08,037	187
Total Oilseeds (mixed)	70,47,584	10,30,119	
Sugarcane	32,83,988	5,36,54,564*	36,597*
Potato	2,80,825	7,87,102*	6,417
Cotton	1,57,681	39,680* bales	99*
Jute	32,315	92,137* bales	1,140*
Sannhemp (for fibre)	1,48,697	23,267*	351
Tobacco	48,075	15,796	777

- Note : 1. \* denotes that the estimates are based on the results of crop-cutting Experiments.  
 2. The production and average yield of Sugarcane are in terms of cane.  
 3. Production and average yield of rice are in terms of cleaned rice.  
 4. Figures of area and production are inclusive of the conventionally estimated figures for the hilly districts of Kumaon and Uttarakhand Divisions.  
 5. Figures of average yield are for the plains portion of the State only.  
 6. The figures of area under Til, Rapeseed (Mustard) and Linseed crops sown mixed are included in the crops with which these are sown mixed and have not been eliminated from the latter.  
 7. The production of Rice in Kharif is 30,97,011 tons and is based on the results of the crop-cutting experiments.  
 8. The production of Cotton is in bales of 392 lbs. and Jute in bales of 400 lbs.

## 7. AGRICULTURAL RESEARCH AND EXPERIMENTAL STATIONS

A large number of field experiments have been conducted for evolving better varieties through selection, acclimatisation and hybridisation. Varietal trials in various stages ranging from observational plots, preliminary trials, semifinal trials and field scale trials have been, and are being, conducted each season mostly at the Research Farms and Regional Research Stations. Besides these varietal trials, a number of other types of experiments on different problems have been conducted.

For the period 1948—1953, experiments conducted at 58 research and agricultural farms of the State were collected. A brief description of the number of experiments conducted is given below separately for each of the important crops.

(i) Wheat :—It is the most important *Rabi* crop of U.P., occupying nearly 10 million acres. The number of experiments conducted on wheat are the highest. Nearly 100 experiments on wheat were conducted at the Government Research Farm, Kanpur and Government Agricultural Research Farm, Kalayanpur (Kanpur). In almost all the research farms and many of the seed multiplication farms of the State, experiments on wheat were conducted.

(ii) **Paddy** :—This is the most important *khari*f crop of the State, occupying as much as nearly 10 million acres. The research activities on Paddy were concentrated at the Rice Research Station, Nagina (Bijnor district), 38 experiments out of 40 laid at this station were on Paddy. The Central Rice Research Station has recently been established at Masodha, Faizabad district. The research work on early maturing varieties for the eastern districts of the State is being conducted at the Rice Research Sub-station, Kunraghat (Gorakhpur). Thirty three experiments on paddy were available at this Station. For research work on late paddy crop, which is mainly grown in eastern districts, two new sub-stations were started in 1949, one in Pachperwa (District Gonda) for the north eastern region and the other at Tissubi (District Mirzapur) for the south eastern region. About 50 experiments were available at these two stations on Paddy. In order to intensify the research work on this crop, 3 more sub-stations have recently been established. These are located at Majhera (Naini Tal), Bansdih (Ballia) and Balchandpur (Bhraich). Research work is also being conducted at the 5 regional research stations situated at Meerut, Nawabganj, Hardoi, Amrukh and Varanasi.

(iii) **Barley** :—Although Barley occupies 4.6 million acres, only about 40 experiments were conducted on this crop. The attention is mostly being paid to evolve better varieties of this crop. Experiments on this crop were conducted mostly at Government Research Farm, Kanpur.

(iv) **Jowar, Bajra and Maize** :—These crops occupy 2.21, 2.69 and 2.60 million acres in area respectively. The research work on these crops is mainly conducted at Kanpur to evolve high yielding and disease-free varieties.

(v) **Potato** :—It is one of the most important vegetable crops that brings large economic returns and is widely grown in the State. Research work on Potato crop was started at Kanpur in the year 1944. Since most of the varieties do not flourish in the plains, attempts are being made at the Kausani Hill Sub-station. A number of experiments were conducted on nitrogen, phosphate and potash requirements of the potato crop. Potato crop is very widely grown in Farrukhabad district where a research station was established in 1948. Thirty one experiments on potato were conducted at this farm during the period under report.

(vi) **Sugarcane** : U. P. is the most important sugarcane growing State. A full fledged Sugarcane Research Station at Shahjahanpur has been functioning for a very long time. All the 86 experiments laid-out at this station were on Sugarcane. The two other sub-stations for conducting research on Sugarcane are situated at Muzaffarnagar in west U.P. and Gorakhpur in the east. Muzaffarnagar station has been catering to the special needs of western tracts of U.P., while Gorakhpur station caters to the needs of eastern tracts of U.P. which markedly differ in agricultural conditions. The main activities of these stations consists of evolution of new sugarcane varieties out of the material received from Coimbatore and Shahjahanpur in the form of the canes and out of the seedlings raised locally. Attention is also being paid by these research sub-stations for finding out improved agronomic practices suited to the tracts. Nearly 70 experiments were available at these two stations. A large number of experiments was conducted on cultivator's fields on this crop. Soil Survey work is also being conducted by these Stations. Eastern U.P. is more or less a permanent home for red rot and constant efforts are being made to wipe out this disease,

(vii) **Cotton** :—It is an important cash crop of western U. P. Experiments on this crop are being conducted at Bulandshahr with a sub-station at Raya (Mathura). The main research work is being carried out on the problem of finding out high yielding cotton varieties. Improved agronomical practices for increasing Cotton yield in the State are also being tried. Experiments on cotton are also being conducted at Regional Research Station, Meerut and several others Farms.

(viii) **Oilseeds** :—U.P. is one of the largest oilseed producing states of the country. Research work, mostly varietal, is being done on the five important oilseed crops viz. *Til*, Groundnut and Mustard, Linseed and Castor at Kalayanpur (Kanpur) Keserwa (Badaun) and Belatal (Hamirpur) for determining high yielding varieties.

(ix) **Fruit** :—The fruits grown in U.P. are of two types, Hill fruits and Plain fruits. Hill fruits like apple, peach and citrus are grown in the hilly districts of the State. Research work on these crops is concentrated at Chaubatia (Almora). Experiments are also being conducted at Jeolikote and Ramgarh in Nainital district. A large number of experiments are conducted to control pests and diseases. Experiments on plain fruits like mango, papaya, litchi are conducted at Govt. Horticultural Research Institute, Saharanpur. Recently, Govt. Fruit Research Station has been established at Basti to cater to the needs of eastern U.P.

(x) **Vegetables** :—The vegetable research station was established at Lucknow but was shifted to Kalayanpur (Kanpur) in 1953. Research work on seasonal vegetables is being conducted. Most of the experiments are laid out to control common diseases of vegetables. Varietal trials to improve the quality and yield of vegetables are also being conducted at regional research stations situated in different parts of the State.

## 8. EXPERIMENTS

The Table on page 14 shows the distribution of experiments according to the type of treatments tried and type of crops. Out of 1293 experiments reported for the period 1948-1953 in the state approximately, 44.6% were manurial and 20.0% cultural. Experiments in which manures or fertilizers forms a factor account for nearly 57.2% of the total number of experiments. The manurial experiments were largely on the principal crops like wheat, paddy and sugarcane. Nearly all manurial cum irrigational experiments were on wheat. Experiments in which irrigation was one of the factors accounted for nearly 10.5%. The experiments on vegetables were generally of manurial and cultural types. 80% of the experiments conducted on fruit trees were to control diseases and pests. Nearly 23% of the experiments were on wheat crop alone. Experiments on other cereal crops accounted for the same order. Among cash crops sugarcane received more attention. Nearly 25.3% experiments were conducted on this crop. About 100 experiments were rejected for the reasons that they were either having no results or were not conducted according to the statistically laid out designs.

The treatments commonly tried were the factorial combinations of 3 levels of nitrogen and 3 levels of  $P_2O_5$  on cereals and other food crops. The levels of both nitrogen and  $P_2O_5$  besides control, varied from 25 lb./ac. to 60 lb./ac. The usual source of nitrogen was Ammonium Sulphate, and in a few cases it was Chilean Nitrate. In some experiments the organic manures were also included to study their effects as compared to artificial fertilizers. The organic manures used were Farm Yard Manure, Compost, Castorcake, Coconut cake etc. The green manures tried in some experiments were Sanai, Guar, Senji, Berseem etc. The other type of treatment usually tried along with the nitrogenous fertilizers was irrigation in about 6 to 7% of cases. The cultural treatments usually included in the experiments were dates of sowing and seedrates etc.

On sugarcane crop, the levels of nitrogen varied from 100 lb./ac. to 200 lb./ac. and those of  $P_2O_5$  from 100 lb./ac. to 150 lb./ac. The source of nitrogen was usually Ammonium Sulphate, Ammonium Nitrate and mixture of Ammonium Sulphate and Groundnut cake. In cultivator's field experiments the treatments were usually manurial or cultural. In cultural experiments the treatments usually were harvesting time, times of planting etc.

The design mostly adopted was Randomised Blocks. In most of the experiments with R.B.D. layout the treatments were in factorial arrangements. The number of plots per replication varied from 3 to 16 although in a few experiments it was as much as 27. The next most used design was split-plot. In these designs the main plot treatments were usually irrigations, seedrates, dates of sowing etc. and sub-plot treatments were manures.

The number of main-plots per replication varied from 3 to 5 and number of sub-plots per main-plot varied from 3 to 6. The number of replications varied from 4 to 6. The net-plot size varied from 1/100th of an acre to 1/20th of an acre.

TABLE 4

*Statement giving the distribution of experiments according to crops and types of treatments tried*

Crop	M	MV	C	CV	CM	CMV	I+IV	IM+IMV	IC+ICV	D+DV	DM+CD+CDV	DI+DIV	Total
Paddy	114	—	57	5	13	3	9	—	—	9	—	—	210
Wheat	122	8	44	24	23	—	3	125	—	12	—	1	362
Jowar	35	—	2	—	—	—	—	—	—	11	2	—	50
Bajra	1	—	1	—	—	—	—	—	—	4	—	—	6
Barley	18	4	1	5	5	—	—	—	—	4	—	—	37
Maize	14	—	3	—	—	—	—	—	—	3	—	—	20
Pulses	11	1	2	—	—	—	—	—	—	3	—	—	17
Potato	40	8	58	8	1	—	—	1	—	7	—	—	123
Onion	2	—	10	—	—	—	2	1	—	—	—	—	15
Other vegetables	9	—	12	1	2	—	1	—	—	12	—	—	37
Sugarcane*	204	53	83	44	13	—	11	12	5	22	2	2	451
Cotton	15	2	2	—	5	3	—	—	—	7	—	—	34
Tobacco	1	—	—	—	—	—	—	—	—	—	—	—	1
Jute	—	—	3	—	—	—	—	—	—	—	—	—	3
Oilseeds	1	1	1	5	—	2	—	—	—	2	—	—	12
Fodder crops	9	—	—	2	—	—	—	—	—	1	—	—	12
Mixed cropping	—	—	—	—	—	—	—	—	—	—	—	—	84
Fruit crops	11	—	7	—	—	—	—	—	—	92	—	—	110
	607	77	286	94	62	8	26	139	5	189	4	3	1584

\* Includes zonal trails also.

**STATEMENT SHOWING DETAILS OF EXPERIMENTAL STATIONS  
UTTAR PRADASH**

Sl. No.	Name of the Station, Location, year of establishment	Major crops and tract it represents	Soil type and soil analysis	Normal rainfall in inches (month wise)	Irrigation facilities	No. of experiments	General description of the topography of experimental area
1	2	3	4	5	6	7	8
1.	Agra, Castle Grant Orchard B. R. College, Year of Establishment N.A.	It represents the south-west U.P. tract. Major crops : Orchard and Vegetables.	(a) Depth—6' Colour—Brown. Structure—Crumb. (b) N—0.057%. P <sub>2</sub> O <sub>5</sub> —0.1225%. Ignition loss—2.715%. (c) Mechanical Analysis—N.A.	N.A.	Canal and Well Irrigation.	Turnip — 2 Potato — 3 Garlic — 1 Cabbage — 2 Tomato — 2 Peas — 1 Mosambi— 1 <hr/> Total —12	Levelled land. No proper drainage system.
2.	Agra, Institutional Research Farm, B. R. College, Bichpuri, Year of Establishment 1943.	It represents the western U.P. tract. Major crops : Jowar, Bajra, Wheat, Potato and Sugarcane.	(a) Alluvial Soil Brownish, Structureless. (b) Nitrogen—0.045% Phosphorus—0.084% Potash—1.213% (c) Coarse sand — 0.445% Pure sand —58.925% Silt —22.821% Clay —16.66 %	June. Nil July. 0.85 Aug. 0.85 Sept. 0.59 Oct. 0.32 Nov. Nil Dec. 0.24 Jan. Nil Feb. Nil March. 0.32 April. Nil May. Nil Period—1960-61	Canal—Since long. Tubewell from 1953. Sewage tank from 1957.	Wheat — 7 Cotton — 2 Sanaï — 2 Moong — 2 Bajra — 1 Maize — 1 Garden Peas — 1 Carrot — 1 Turnip — 1 Potato — 1 Mixed cropping—1 <hr/> Total —20	Well levelled land. No proper drainage system.

**STATEMENT SHOWING DETAILS OF EXPERIMENTAL STATIONS**  
UTTAR PRADESH (Contd.)

1	2	3	4	5	6	7	8
3.	Agra, Khandari Farm, B.R. College. Year of establishment 1940.	It represents the western U.P. (Agri. tract). Major crops : <i>Rabi</i> : Wheat, Barley, Gram, Oats, Berseem and Potato. <i>Kharif</i> : <i>Jowar</i> , <i>Bajra</i> Maize and <i>Lobia</i> .	(a) Broad soil type : Alluvial soil. Depth—16". Colour—Brownish. Structure—Structureless. (b) Chemical analysis :— N—0.047%, Phosphorous - 0.0853% Potash (K)—1.217%. (c) Mechanical analysis :— Coarse sand 0.445%. Pure sand 58.925%. Silt 22.821%. Clay 16.56 %.	June — July 8.5 Aug. 8.5 Sept. 5.9 Oct. 3.2 Nov. — Dec. 2.4 Jan. — Feb. — March 1.2 April — May — <hr/> Total 29.0 (The figures are based on the data for the year 1960 only.)	Canal irrigation available from 1952. Tubewell irrigation available from 1954.	Wheat—1	Well levelled land. No proper drainage system.
4.	Aligarh : Central Dairy Farm.	Wheat and Barley.	Soil type : Low lying clay (Aligarh T.3.)	N.A.	N.A.	Barley—2 Wheat—1 <hr/> Total—3	N.A.

STATEMENT SHOWING DETAILS OF EXPERIMENTAL STATIONS

UTTAR PRADESH (Contd.)

1	2	3	4	5	6	7	8
5.	(i) Allahabad, Allahabad Agri. Institute. Year of establishment 1912. (ii) Govt. Minto Park, Allahabad.	It represents the Indo Gangetic Alluvium tract. Major crops : Wheat, Sugarcane, Jowar.	(a) Deep loam soil. Grey. Fairly loose cultivated soil. (b) Pl. see page 18. (c) Generally sandy loam to loam.	June. 4.75 July. 11.69 Aug. 15.02 Sept. 6.45 Oct. 0.68 Nov. 0.37 Dec. 0.08 Jan. 0.31 Feb. 0.77 March 0.34 April 0.12 May 0.02	Irrigation facilities are available on 125 acres. It is available from 1940.	Gram — 1 Barseem — 1 Wheat — 5 Sugarcane — 4 Bajra — 1 Jowar — 3 Barley — 1 Paddy — 1 Guar — 1 <hr/> Total — 18	Not undulating. Most of the soils are well drained. No special drainage problem.
6.	Almora. Vivekananda Laboratory. Distt. Almora. Year of Establishment 1924.	It represents hilly tract. Major crops : Kharif. Maize ; Sweet Potato Rabi-Wheat, Barley, Oats.	1. Soil type : Medium deep soil. 2. Colour : Brownish. 3. Structure : Sandy loam to clayey loam. 4. Soil analysis : (i) Chemical analysis : pH-- 6.5 to 7 N—low, Ammonia very low. P <sub>2</sub> O <sub>5</sub> (available) 0.01 to 0.02% K <sub>2</sub> O—Traces; Calcium 0.07 to 0.14% (ii) Mechanical analysis : N.A.	June 5.85 July 11.91 Aug. 10.49 Sept. 4.82 Oct. 6.12 Nov. 7.95 Dec. 0.97 Jan. 2.69 Feb. 1.97 March 2.10 April 1.55 May 2.20 <hr/> Total 58.62	There is a rain storage tank since 1943—44. No drainage system.	Barley 1	Terraced fields.
				Average of 10 years 1948-49 to 1957-58.			



**CHEMICAL ANALYSIS OF FIELD SOILS**  
**Table 1 (a) Agricultural Institute Farm, Allahabad.**

Soil Sample No.	B. Ex. Capacity	Available P 2 (Modified Bray's lbs./A.)	Absorbed P lbs./A. Bray's PI modified	Available K lbs./ac.	pH	Organic carbon percentage	Sticky Point piper percentage	Ratio of Kankar Soil
1	15.15	33	13	264	8.85	.35	23.9	
2	19.04	32	17	208	8.8	.48	23.25	
3	14.45	71	10	632	9.1	.41	22.55	
4	15.3	80	11	240	8.9	.47	22.55	
5	11.35	86	38	632	9.1	.55	19.4	
6	9.7	84	44	424	9.1	.52	23.45	
7A	15.0	352	18	328	8.45	.72	23.55	
7B	10.9	536	32	232	8.52	.48	20.45	
7C	11.84	448	80	216	8.45	.63	22.05	
7D	25.2	536	64	420	8.75	.52	25.4	
8	14.85	164	14	264	8.45	.44	23.5	
9A	29.3	656	55	216	8.25	.99	23.75	
9B	19.1	320	37	384	7.8	.62	23.9	
9C	14.75	164	30	184	8.57	.51	21.55	
9D	10.55	568	56	304	8.3	.52	20.95	
10A	9.85	656	78	240	8.25	.62	21.53	
10B	9.9	656	60	240	8.42	.41	17.55	
10C	18.9	134	27	232	8.4	.52	24.2	
10D	18.85	320	34	352	8.67	.75	23.35	
10E	19.2	162	8	184	8.55	.47	22.7	
11	8.85	512	61	200	8.25	.41	28.35	
12	10.2	656	52	304	7.77	.58	17.55	
13	11	528	87	232	8.1	.61	17.95	
14A	22.55	164	28	240	8.22	.61	23.85	
14B	21.25	384	43	368	8.6	.72	21.95	
14C	20.2	320	20	208	8.65	.61	22.3	
14D	17	496	74	288	8.65	.68	22.8	
14E	5.55	488	36	424	8.9	.46	18.5	
14F	17.85	230	16	272	8.07	.55	20.45	
15A	17.85	104	16	216	8.75	.48	20.5	
15B	11.65	112	16	240	8.42	.69	21.65	
15C	16.65	66	13	134	8.15	.33	19.95	
15D	9.35	336	31	424	9	.37	21.05	
15E	8.85	162	6	220	8.9	.41	23.5	7: 84
16A	11.55	360	32	190	8.7	.92	20.35	
16B	10.75	164	234	160	8.4	.50	14.6	
16C	7	106	8	390	8.85	.43	22.95	3 : 14
16D	9.15	424	19.5	270	8.9	.41	20.75	1 : 15
17A	9.3	84	8	190	8.75	.51	20.4	11: 160
17B	8.9	72	16	230	8.8	.41	24.4	
17C	8.2	352	14	180	8.7	.30	23.55	4: 237
18A	6.0	88	12.5	160	8.95	.41	20.7	
18B	7.4	80	4	170	8.5	.41	19.15	
18C	8.35	96	0	160	8.57	.55	23.6	
18D	23.05	256	12	190	8.9	.41	19.95	18: 246
18E	8.1	86	8	160	9.25	.36	17.75	14: 246
18F	9.3	32	16	190	8.72	.51	24.9	20: 236
19A	10.55	52	11	150	8.8	.32	20.6	5: 232
19B	9.45	56	8	130	8.55	.30	22.05	12: 148
19C	7.55	74	13	150	8.2	.33	19.8	
20A	7.85	86	9	130	8.9	.58	22.2	10: 137
20B	10.9	544	38	300	8.82	.75	24.35	
20C	7.55	56	5	120	9	.54	25.35	7: 248
20D	12.25	44	4	120	8.6	.35	19.9	7: 142
21	9.1	88	4	120	9	.33	15.6	7: 148
Hort. Nursery LOD (A)	12.6	656	115	240	8.27	.69	22.05	7: 148
Near Farm Office	20.65	164	22	272	8.6	.52	23.65	

**STATEMENT SHOWING DETAILS OF EXPERIMENTAL STATIONS**  
**UTTAR PRADESH (Contd.)**

1	2	3	4	5	6	7	8
7.	Attara : Govt. Agri. Farm Distt. Banda, $\frac{1}{2}$ mile from Attara Rly. Station. Year of establishment—1912.	It represents tripal soil of Parwa tract. Major crops : Paddy, Barley, Gram, and Sugarcane.	1. Soil type : <i>Parwa</i> , light <i>Kabar</i> , other information not available.	June 0.30 July 18.08 Aug. 15.19 Sept. 8.65 Oct. 3.80 Nov. Nil Dec. Nil Jan. 3.82 Feb. 0.32 March Nil April Nil May 1.00 <hr/> Total 51.16 Period—N.A.	Irrigation by canal but depends on rains. In <i>rabi</i> only one irrigation could be supplied. As the Stn. is in low land area, there is no pro- per drainage.	<i>Moong</i> —1 <i>Maize</i> —1 <i>Jowar</i> —2 Wheat —19 Paddy —11 Mixed —7 <hr/> Total —41	No information
8.	Bageshwar (Distt. Almora) Govt. Nursery. Year of establishment—N.A.	It is the valley area. Major crops : Olive, Citrus, Guava.	N.A.	N.A.	N.A.	Citrus —1 (Grape fruit) Citrus —1 (Lemon seedling) <hr/> Total —2	N.A.

**STATEMENT SHOWING DETAILS OF EXPERIMENTAL STATIONS.**  
UTTAR PRADESH (Contd.)

1	2	3	4	5	6	7	8																																																													
9.	Bahadradab, Field Res. Stn. Dist., Saharnpur. Year of establishment 1947	It represents clayey tract in <i>ghum</i> land. Major crop : Rice, wheat and sugarcane.	<p>Soil type : Chernosem</p> <p>(i) Depth—3' to 8'. Colour—(a) Horizon-gray (b) horizon grey to brown</p> <p>(ii) Structure : loose granular.</p> <p>Chemical analysis : % of colloidal mater size .002 m.m.</p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="text-align: center;">SiO<sub>2</sub></td> <td style="text-align: center;">Al<sub>2</sub>O<sub>3</sub></td> <td style="text-align: center;">Fe<sub>2</sub>O<sub>3</sub></td> <td style="text-align: center;">CaO</td> <td style="text-align: center;">MgO</td> </tr> <tr> <td style="text-align: center;">33.95</td> <td style="text-align: center;">36.06</td> <td style="text-align: center;">11.02</td> <td style="text-align: center;">0.31</td> <td style="text-align: center;">0.40</td> </tr> <tr> <td colspan="2" style="text-align: center;">K<sub>2</sub>O</td> <td colspan="3" style="text-align: center;">Na<sub>2</sub>O</td> </tr> <tr> <td colspan="2" style="text-align: center;">.056</td> <td colspan="3" style="text-align: center;">.044</td> </tr> </table> <p>Mechanical analysis :</p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="text-align: center;">Clay</td> <td style="text-align: center;">Silt</td> <td style="text-align: center;">Sand</td> <td style="text-align: center;">Gravel</td> </tr> <tr> <td style="text-align: center;">.002 m.m.</td> <td style="text-align: center;">.022— .02 m.</td> <td style="text-align: center;">0.02— 2 m.m.</td> <td style="text-align: center;">72 m.m.</td> </tr> <tr> <td style="text-align: center;">%27.5</td> <td style="text-align: center;">53.2</td> <td style="text-align: center;">19.3</td> <td style="text-align: center;">0</td> </tr> </table>	SiO <sub>2</sub>	Al <sub>2</sub> O <sub>3</sub>	Fe <sub>2</sub> O <sub>3</sub>	CaO	MgO	33.95	36.06	11.02	0.31	0.40	K <sub>2</sub> O		Na <sub>2</sub> O			.056		.044			Clay	Silt	Sand	Gravel	.002 m.m.	.022— .02 m.	0.02— 2 m.m.	72 m.m.	%27.5	53.2	19.3	0	<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="text-align: right;">June</td> <td style="text-align: left;">0.6</td> </tr> <tr> <td style="text-align: right;">July</td> <td style="text-align: left;">13.1</td> </tr> <tr> <td style="text-align: right;">Aug.</td> <td style="text-align: left;">16.9</td> </tr> <tr> <td style="text-align: right;">Sept.</td> <td style="text-align: left;">11.8</td> </tr> <tr> <td style="text-align: right;">Oct.</td> <td style="text-align: left;">Nil</td> </tr> <tr> <td style="text-align: right;">Nov.</td> <td style="text-align: left;">Nil</td> </tr> <tr> <td style="text-align: right;">Dec.</td> <td style="text-align: left;">0.2</td> </tr> <tr> <td style="text-align: right;">Jan.</td> <td style="text-align: left;">2.0</td> </tr> <tr> <td style="text-align: right;">Feb.</td> <td style="text-align: left;">1.6</td> </tr> <tr> <td style="text-align: right;">March</td> <td style="text-align: left;">1.5</td> </tr> <tr> <td style="text-align: right;">April</td> <td style="text-align: left;">Nil</td> </tr> <tr> <td style="text-align: right;">May</td> <td style="text-align: left;">Nil</td> </tr> <tr> <td style="text-align: right;">Total</td> <td style="text-align: left;">47.7</td> </tr> </table> <p style="text-align: center;">based on data from 1947 to 1950.</p>	June	0.6	July	13.1	Aug.	16.9	Sept.	11.8	Oct.	Nil	Nov.	Nil	Dec.	0.2	Jan.	2.0	Feb.	1.6	March	1.5	April	Nil	May	Nil	Total	47.7	Irrigation available from upper Ganga canal, facility available for a long time.	<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="text-align: right;">Wheat—2</td> </tr> <tr> <td style="text-align: right;">Paddy—2</td> </tr> <tr> <td style="text-align: right;">Total—4</td> </tr> </table>	Wheat—2	Paddy—2	Total—4	The experimental area is generally low lying, bounded by the upper Ganga canal and navigation channel. It is mostly clayey and plain. There were signs of water logging in some of the adjoining fields.
SiO <sub>2</sub>	Al <sub>2</sub> O <sub>3</sub>	Fe <sub>2</sub> O <sub>3</sub>	CaO	MgO																																																																
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10.	Bahraich : Govt. Agri. Farm, Dist. Bahraich, 2½ miles from Bahraich Rly. Stn., Year of est. 1926.	It represents Saryu river tract. Major crops : Wheat, Paddy Maize, Peas and Gram.	<ol style="list-style-type: none"> <li>1. Soil type : Sandy loam.</li> <li>2. Depth : 3'.</li> <li>3. Colour : White.</li> <li>4. Structure : Poor.</li> <li>5. Soil analysis : (see pages 21, 22)</li> </ol>	N.A.	Irrigation by tube well since 1926, No drainage system.	<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="text-align: right;">Wheat</td> <td style="text-align: left;">— 6</td> </tr> <tr> <td style="text-align: right;">Sugarcane</td> <td style="text-align: left;">—12</td> </tr> <tr> <td style="text-align: right;">Paddy</td> <td style="text-align: left;">— 2</td> </tr> <tr> <td style="text-align: right;">Maize</td> <td style="text-align: left;">— 1</td> </tr> <tr> <td style="text-align: right;">Mixed</td> <td style="text-align: left;">—10</td> </tr> <tr> <td style="text-align: right;">Total</td> <td style="text-align: left;">—31</td> </tr> </table>	Wheat	— 6	Sugarcane	—12	Paddy	— 2	Maize	— 1	Mixed	—10	Total	—31	N.A.																																																	
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STATEMENT SHOWING DETAILS OF EXPERIMENTAL STATIONS

UTTAR PRADESH (Contd.)

Analytical data of soils of Bahraich Farm

	1	2	3	4	5	6	7	8
	Field No. 7 Pit No. 1				Field No. 1 B Pit No. 2			
Depth	0'-1'2"	1'2"-2'5"	2'5"-4'9"	4'9"-6'	0-8"	8"-3'3"	3'3"-5' 10"	
Water holding capacity%	41.12	33.18	35.33	37.79	36.25	34.96	35.44	
pH	7.3	7.00	7.4	7.4	7.3	7.3	7.7	
P <sub>2</sub> O <sub>5</sub> %	0.1230	0.1065	0.0915	0.0985	0.0945	0.1005	0.0810	
CaO%	3.9480	3.8360	2.7580	3.0240	3.0240	3.4020	2.7720	
K <sub>2</sub> O%	0.7341	0.5371	0.4313	0.6978	1.4466	0.3909	0.3546	
Total Nitrogen%	0.0320	0.0154	0.0126	0.0196	0.0126	0.0056	0.0168	
Total Organic Carbon%	0.4430	0.1767	0.0665	0.0608	0.1680	0.0190	0.0361	
Total water soluble solids%	0.0680	0.0620	0.0600	0.0560	0.0600	0.0700	0.0980	
Total exchangeable bases m.e.%	—	—	—	—	—	—	—	
Exchangeable calcium m.e.%	—	—	—	—	—	—	—	
Coarse sand%	11.18	44.64	75.06	71.04	46.78	66.51	62.47	
Fine sand%	44.65	30.34	18.36	22.02	42.82	26.46	31.15	
Silt%	30.35	11.25	2.40	2.55	2.70	0.65	0.90	
Clay%	8.65	5.00	0.50	0.55	2.6	0.80	0.85	

**STATEMENT SHOWING DETAILS OF EXPERIMENTAL STATIONS**  
UTTAR PRADESH (Contd.)

Analytical data of soils of Bahraich Farm (Contd.)

1	2	3	4	5	6	7	8	9
	Field No. 19 A Pit No. 3				Field No. 10 Pit No. 4			
Depth	0-1'	1'-2'10"	2'10"-3'8"	3'8"-5'10"	0-6"	6"-2'5"	2'5"-3'5"	35"-5'
Water holding capacity%	48.98	47.22	43.80	42.96	47.29	47.13	55.03	48.83
pH	7.3	7.4	7.4	7.6	7.5	7.7	7.6	7.6
P <sub>2</sub> O <sub>5</sub> %	0.1605	0.1140	0.1110	0.1095	0.1545	0.1215	0.1110	0.1290
CaO%	5.238	5.460	7.224	4.270	5.29	6.48	6.98	4.62
K <sub>2</sub> O%	0.8036	0.6344	1.7049	0.4635	0.74	0.83	1.08	0.71
Total Nitrogen%	0.0462	0.0448	0.0560	0.0448	0.0406	0.0490	.0630	0.0518
Total Organic Carbon%	0.4503	0.1786	0.2204	0.0494	0.3553	0.2389	0.2367	0.0988
Total water Soluble Solids%	0.088	0.084	0.078	0.050	0.130	0.084	0.070	0.086
Total exchangeable bases m.e.%	—	—	—	—	—	—	—	—
Exchangeable calcium m.e.%	—	—	—	—	—	—	—	—
Coarse sand%	2.311	3.925	1.296	47.17	7.53	2.62	0.88	5.40
Fine sand%	62.04	72.31	68.52	42.85	56.51	62.51	42.95	76.49
Silt%	19.30	9.60	21.05	1.73	18.85	21.45	39.10	4.20
Clay%	8.30	4.25	5.50	0.900	7.40	6.85	9.00	2.60

**STATEMENT SHOWING DETAILS OF EXPERIMENTAL STATIONS  
UTTAR PRADESH (Contd.)**

1	2	3	4	5	6	7	8
11.	Barabanki : Govt. Agri. Farm, Distt. Barabanki Year of establishment. 1933.	It represents central range Rotations:— (1) Paddy—Pea or gram (2) Paddy—Pea or Sugar-cane, <i>mung</i> —G.M. Wheat.	1. Soil type : Loam 2. Depth—2' 3. Colour : Light blackish 4. Structure—Compact 26% poor space. 5. Soil analysis : Not available	June 3.70 July 4.06 Aug. 14.90 Sept. 5.64 Oct. 10.00 Nov. 0.30 Dec to April Nil May 2.51 <hr/> Total 41.11 (Figures for 1958-59)	Irrigation by canal and tube well since inception. No drainage system.	Wheat—2 Paddy—4 <hr/> Total—6	N.A.
12.	Belatal : Govt. Agri. Res. Farm, Distt. Hamirpur. ½ mile from Belatal Rly Stn. Year of establishment 1922-23	It represents the Bundel-Khand tract. Major crops : Oilseeds, Wheat, <i>Jowar</i>	1. Soil type : Hard <i>kabar</i> contains <i>Kans</i> . 2. Depth : 3'. 3. Colour—Black. 4. Structure—N.A. 5. Soil analysis : Not available.	June 2.93 July 12.78 Aug. 16.93 Sept. 3.31 Oct. 3.59 Nov. 0.49 Dec. 0.56 Jan. 0.66 Feb. — March 0.78 April — May — <hr/> Total 42.03  Figures for 1956-57	Irrigation by tank and canal, facilities available since beginning of the farm. No proper drainage system.	Paddy—1 Cotton—1 Mixed—2 <hr/> Total—4	Total area 58.48 Area for cultivation 54.27 acres.

**STATEMENT SHOWING DETAILS OF EXPERIMENTAL STATIONS**

UTTAR PRADESH (Contd.)

1	2	3	4	5	6	7	8	
13. Bharari : State Mech. Farm (1928). Distt. Jhansi.	Typical Bundelkhand Tract of <i>Rakar, Kabar</i> and <i>Parwa</i> Soils. Major crops : Paddy, Wheat, Barley.	Three types of soils, <i>Rakar, Kabar,</i> and <i>Parwa.</i> Other details N.A.	June	0.27	Pahai Canal	<i>Jowar</i>	—4	Uneven land.
			July	14.96		<i>Maize</i>	—1	
			Aug.	13.74		<i>Wheat</i>	—17	
			Sept.	11.19		<i>Paddy</i>	—8	
			Oct.	4.82		<i>Mixed</i>	—2	
			Nov.	Nil		<hr/>		
			Dec.	0.11		<b>Total</b>	<b>—32</b>	
			Jan.	0.02				
			Feb.	0.19				
			March	0.14				
			April	Nil				
			May	Nil				
			14. Bulandshahr : Govt. Agri. School Farm (1921).	Light loam and sandy loam		Soil type : Light and sandy loam Depth—10' (approximately) Colour—Yellow Structure—Fine and coarse Chemical and Mechanical Analysis : N.A.	June	
July	2.32	<i>Wheat</i>			—3			
Aug.	11.83	<hr/>						
Sept.	2.22	<b>Total</b>			<b>—4</b>			
Oct.	1.18							
Nov.	1.12							
Dec.	Nil							
Jan.	1.80							
Feb.	0.30							
March	Nil							
April	Nil							
May	0.88							

**STATEMENT SHOWING DETAILS OF EXPERIMENTAL STATIONS**  
UTTAR PARDESH (Contd.)

3	4	5	6	7	8		
15. Bulandshahr : Govt. Cotton Research Station (1944) 2 miles from Bulandshahr Railway Station.	Wheat and Cotton. It represents the alluvial tract of western U.P.	Soil type : Loam Depth : Deep Colour : Typical Gangetic alluvium Structure : Loam Other Details : N.A.	June	0.78	Irrigation by tube-well and also by the Ganges canal.	Cotton —7	N.A.
			July	8.54			
			Aug.	8.89			
			Sept.	6.39			
			Oct.	3.44			
			Nov.	0.15			
			Dec.	0.07			
			Jan.	0.99			
			Feb.	0.26			
			March	0.63			
			April	0.18			
			May	0.22			
			Average	2.545			
			16. Chirgaon : (Distt. Jhansi) Govt. Agri. Farm (1947).	Sugarcane, Jowar, Wheat, Cotton and Barley. It represents Bundelkhand tract.,			
July	8.0						
Aug.	11.0						
Sept.	8.0						
Oct.	0.5						
Nov.	Nil						
Dec.	0.5						
Jan.	1.5						
Feb.	Nil						
March	Nil						
April	Nil						
May	Nil						



**STATEMENT SHOWING DETAILS OF EXPERIMENTAL STATIONS**  
**UTTAR PARDESH (Contd.)**

1	2	3	4	5	6	7	8	
17.	Chaubhattia : (Distt. Almora) Govt. Hill Fruit Research Station.	Perennial Hilly tract.	N.A.	June 3.73 July 19.48 Aug. 6.48 Sept. 7.61 Oct. 6.70 Nov. 1.19 Dec. 0.05 Jan. 2.59 Feb. Nil March 3.34 April 1.27 May 0.87	Natural precipitation.	Lichi —1 Peach —1 Apple —37 <hr/> Total —39	Hilly tract	
18.	Dhakami : State Reclamation Farm.	Usar	N.A.	Saline alkaline above—7.8 pH value above —7.8	N.A.	N.A.	Paddy —5	N.A.
19.	Etawah : Govt. Agri. Farm (1913).	Wheat, Barley Sugarcane Cotton, Paddy, Potato Allahabad Region.	Soil type : Loam Colour : Light brown. Other details N.A.	June 0.19 July 11.33 Aug. 12.17 Sept. 0.69 Oct. 0.80 Nov. 2.70 Dec. Nil Jan. 0.16 Feb. Nil March 1.65 April 0.15 May Nil	Canal	Maize — 1 Wheat —11 Mixed — 7 <hr/> Total —19	N.A.	

**STATEMENT SHOWING DETAILS OF EXPERIMENTAL STATIONS  
UTTAR PRADESH (Contd.)**

1	2	3	4	5	6	7	8
20.	Faizabad : Govt. Agril. Farm (1918).	Paddy, Sugarcane, Wheat and Barley.	Soil type : Loam. Colour : White brown. Depth : 6" (brown colour sub soil after 6"). The soil becomes hard when dried and very loose with moisture. Other details N.A.	June 2.91 July 11.46 Aug. 13.40 Sept. 7.04 Oct. 1.85 Nov. Nil Dec. 0.21 Jan. 1.35 Feb. 0.05 March 0.64 April Nil May 1.11	Tubewell irrigation	Sugarcane —5 Wheat —8 Paddy —5 Mixed —2 <hr/> Total —20	N.A.
21.	Farukhabad : Govt. Potato Research Farm (1925).	Wheat, Potato, Maize Alluvial soils.	Soil type : Loam to sandy loam. Depth : N.A. Colour : Light brown. Structure : Granular. Other details : N.A.	June Nil July 7.96 Aug. 11.05 Sept. 5.52 Oct. Nil Nov. Nil Dec. 0.50 Jan. 1.61 Feb. Nil March Nil April Nil May 1.67	Tubewell irrigation	Kharbooz— 1 Potato —31 <hr/> Total —32	Experimental area is levelled.
				<hr/> Total 28.31 <hr/>			

**STATEMENT SHOWING DETAILS OF EXPERIMENTAL STATIONS**

**UTTAR PRADESH (Contd)**

1	2	3	4	5	6	7	8																																
22.	Ghazipur : Regional Training Institute. Year of Establishment 1931.	It represents the old alluvial tract. Major crops: <i>Rabi</i> crops—cereals, pulses and fodder. Only fodder crops are taken in <i>kharif</i> .	Soil types : Alluvial. Depth : Fairly deep. Colour : Varies from ash grey to brownish yellow. Structure ; Granular to Block Chemical analysis : N.A. Mechanical analysis : N.A.	<table> <tr><td>June</td><td>5.94</td></tr> <tr><td>July</td><td>8.60</td></tr> <tr><td>Aug.</td><td>14.33</td></tr> <tr><td>Sept.</td><td>8.74</td></tr> <tr><td>Oct.</td><td>2.83</td></tr> <tr><td>Nov.</td><td>0.39</td></tr> <tr><td>Dec.</td><td>0.06</td></tr> <tr><td>Jan.</td><td>1.07</td></tr> <tr><td>Feb.</td><td>0.48</td></tr> <tr><td>March</td><td>0.52</td></tr> <tr><td>April</td><td>0.06</td></tr> <tr><td>May</td><td>0.40</td></tr> </table> <p align="center">Total 43.42 The figures are based on 1948 to 1961 data.</p>	June	5.94	July	8.60	Aug.	14.33	Sept.	8.74	Oct.	2.83	Nov.	0.39	Dec.	0.06	Jan.	1.07	Feb.	0.48	March	0.52	April	0.06	May	0.40	Open wells, pond and tubewell. No. facilities for adequate irrigation during the dry months. Tubewell from 1958.	<table> <tr><td>Wheat</td><td>—2</td></tr> <tr><td>Jowar</td><td>—1</td></tr> <tr><td colspan="2"><hr/></td></tr> <tr><td>Total</td><td>—3</td></tr> </table>	Wheat	—2	Jowar	—1	<hr/>		Total	—3	More than $\frac{1}{2}$ area is level. About $\frac{1}{4}$ in the north-west end of the farm is sloping gently. A contour map shows 3' difference between highest and lowest locations. No proper drainage system.
June	5.94																																						
July	8.60																																						
Aug.	14.33																																						
Sept.	8.74																																						
Oct.	2.83																																						
Nov.	0.39																																						
Dec.	0.06																																						
Jan.	1.07																																						
Feb.	0.48																																						
March	0.52																																						
April	0.06																																						
May	0.40																																						
Wheat	—2																																						
Jowar	—1																																						
<hr/>																																							
Total	—3																																						
23.	Gograhat : (Distt. Bahraich) Govt. Jute Seed Demonstration and Experimental Farm. Year of Establishment 1949.	Jute, Paddy, Wheat, Barley. It represents the <i>Tarai</i> belt.	Soil type : Sandy loam. Depth : 6"—10". Colour—Light yellow. Structure—Sandy loam beneath the layer of coarse sand. Other Details N.A.	N.A.	Irrigation facilities are available in part of the farm from the year 1958—59. Other Details—N.A.	Jute—3	The experiments are conducted on up land, medium and low lying areas.																																

**STATEMENT SHOWING DETAILS OF EXPERIMENTAL STATIONS**  
**UTTAR PRADESH (Contd.)**

1	2	3	4	5	6	7	8			
24.	Gorakhpur: Govt. Agri. School Farm (1923).	Paddy, Sugarcane, Wheat and Groundnut.	Soil type : Loam and Sandy loam	June	1.03	Tubewell Irrigation, 4" delivery.	Wheat—1	levelled area.		
			Depth—9"	July	7.10					
			Colour—White soil, yellowish sub soil	Aug.	13.35					
			Structure—Loose.	Sept.	9.92					
			Other Details—N.A.	Oct.	3.37					
				Nov.	Nil					
				Dec.	0.02					
				Jan.	1.68					
				Feb.	Nil					
				March	0.74					
				April	0.72					
				May	Nil					
			25.	Hardoi : Govt. Agri. Farm.	N.A.				N.A.	June
July	6.37	Wheat —1								
Aug.	7.10					Mixed —4				
Sept.	1.47									
Oct.	0.32									
Nov.	0.78									
Dec.	Nil									
Jan.	0.03									
Feb.	Nil									
March	0.92									
April	0.02									
May	Nil									
								Total		—6

**STATEMENT SHOWING DETAILS OF EXPERIMENTAL STATIONS  
UTTAR PRADESH (Contd.)**

1	2	3	4	5	6	7	8
26.	Hawalbagh : (Distt. Almora) Govt. Agri. School Farm.	N.A.	N.A.	N.A.	N.A.	Wheat —5 Paddy —2 <hr/> Total —7	N.A.
27.	Joolikote : (Distt. Nainital) Govt. Horticultural Farm. Year of Estt. N.A.	It is the valley area with calcareous soil. Major crops :— Wheat, Soyabean, and Strawberry.	Soil type : Calcarious. Other details—N.A.	N.A.	N.A.	Strawberry —3 Citrus —4 Lokat —1 Pomegranate —1 Guava —1 <hr/> Total —10	Situated in the valley.
28.	Kalai : (Distt. Aligarh) Govt. Agri. Farm (1912)	Wheat, Maize, Barley, Cotton, Sugarcane. Indo-gangetic Plain.	Soil type : Loam Depth : 6" Colour—Light grey Structure—Loose Other Details—N.A.	June 0.98 July 11.60 Aug. 12.21 Sept. 7.20 Oct. 7.28 Nov. Nil Dec. 0.15 Jan. 1.08 Feb. 0.27 March 0.40 April 0.07 May 0.18	Canal and tubewell irrigation.	Jowar —2 Maize —2 Wheat —20 Mixed —5 <hr/> Total —29	Levelled.

STATEMENT SHOWING DETAILS OF EXPERIMENTAL STATIONS

UTTAR PRADESH (Contd.)

1	2	3	4	5	6	7	8
29.	Kalyanpur : (Distt. Kanpur) Govt. Agril. Res. Farm (1912)	N.A. Alluvial.	Deep soil : brown grey. Other details—N.A.	N.A.	Canal	<i>Jowar</i> — 3 <i>Kakum</i> — 1 <i>Sawan</i> — 1 <i>Castor</i> — 1 <i>Groundnut</i> — 2 <i>Cotton</i> — 4 <i>Maize</i> — 6 <i>Moong</i> — 1 <i>Bajra</i> — 1 <i>Wheat</i> — 29 <i>Paddy</i> — 1 <i>Mixed</i> — 6 <hr/> Total — 56	N.A.
30.	Kanpur : (i) Govt. Botani- cal Garden. (ii) Govt. Dairy Farm.	N.A.	N.A.	N.A.	N.A.	<i>Wheat</i> — 5 <i>Jowar</i> — 3 <i>Potato</i> — 4 <i>Onion</i> — 1 <i>Pea</i> — 1 <i>Tomato</i> — 1 <i>Radish</i> — 1 <i>Citrus</i> — 1 <i>Mango</i> — 3 <hr/> Total — 20	N.A.

**STATEMENT SHOWING DETAILS OF EXPERIMENTAL STATIONS**  
**UTTAR PRADESH (Contd.)**

1	2	3	4	5	6	7	8
31.	Kanpur : Govt. Research Farm (1904).	N.A. Gangetic Alluvial.	Alluvial loam. Other details—N.A.	N.A.	Canal irrigation	Wheat —32 Barley —27 Potato —42 <i>Sanal</i> — 5 <i>Til</i> — 2 <i>Bajra</i> — 3 Maize — 1 <i>Moong</i> — 3 Mustard — 1 <i>Jowar</i> — 3 Groundnut—10 <hr/> Total —179	About 10 acres of area is low land, the rest is levelled.
32.	Kanpur : Students Instructional Farm, Govt. Agril College. Year of establishment more than 30 years back.	<i>Jowar</i> , Maize, Sugarcane, Wheat, Barley. Gangetic and Alluvial.	Soil type : Sandy loam calcareous (i) 9°. (ii) Very light brown. (iii) Hard on drying. Chemical Analysis : Total Nitrogen — 0.065% P <sub>2</sub> O <sub>5</sub> — 0.120% Soil pH — 7.3 Mechanical Analysis Clay —12.25 % Silt —21.14 % Fine sand —61.36 % Coarse sand — 0.63 %	June —2.18 July —6.47 Aug. —8.72 Sept. —3.99 Oct. —3.63 Nov. Nil Dec. —0.16 Jan. —0.76 Feb. —0.49 March Nil April Nil May —0.60	Tubewell, canal lift and flow irrigation	Berseem —1 Maize —1 Gram —1 Linseed —1 Wheat —8 Barley —1 Mixed —3 <hr/> Total —16	The farm is bench terraced except some sloping plots.

**STATEMENT SHOWING DETAILS OF EXPERIMENTAL STATIONS**

**UTTAR PRADESH (Contd)**

1.	2.	3.	4.	5.	6.	7.	8.
33.	Kausani: (Distt. Almora) Potato Sub-Station Year of establishment : 1949.	Paddy, Small Millets, Potato and Wheat. It represents Hilly tract.	Brown forest soil of the hills. Other details—N.A.	N.A.	Nil	Potato —17 ----- Total —17	Surrounded with Pine Forests.
34.	Kunraghat : (Distt. Gorakhpur) Rice Research Sub-Station. (1939—40)	Paddy and Barley. Low land.	Alluvial soil with sandy texture and free drainage Type III. Depth : Surface—Sandy loam upto 20' Colour : Yellowish. Brown to greyish brown. Other details : N.A.	June 6.58 July 12.73 Aug. 12.77 Sept. 9.61 Oct. 3.02 Nov. 0.36 Dec. 0.14 Jan. 0.78 Feb. 0.40 March 0.27 April 0.06 May 1.33	Hydro-electric tubewell irrigation facilities are available from 1957.	Paddy —35 Mixed — 5 ----- Total —40	N.A.
35.	Kunraghat : (Distt. Gorakhpur) Sugarcane Research Sub-Station (1939).	Sugarcane and Wheat. Eastern part of U.P. with subhumid climate.	Type III : Soil of alluvial nature. Leached calcium soil with pH of about 6.5. Depth : 20' Colour : Greyish brown Other details : N.A.	June 6.58 July 12.73 Aug. 12.77 Sept. 9.51 Oct. 3.02 Nov. 0.36 Dec. 0.14 Jan. 0.78 Feb. 0.40 March 0.27 April 0.06 May 1.33	Tubewell	Wheat —11 Jowar — 3 Barley — 1 Sugarcane —30 ----- Total —45	Very slightly undulating.



STATEMENT SHOWING DETAILS OF EXPERIMENTAL STATIONS

UTTAR PRADESH (Contd.)

1	2	3	4	5	6	7	8
36.	Lucknow : Crop physiological Research Station (1948)	Paddy, Maize, <i>Jowar</i> Wheat, Barley. Gangetic Alluvial.	Sandy loam, light brown. Other details—N.A.	June 4.46 July 12.00 Aug. 11.50 Sept. 7.40 Oct. 1.28 Nov. 0.22 Dec. 0.32 Jan. 0.76 Feb. 0.72 March 0.34 April 0.25 May 0.77	Well	Wheat —20 <i>Moong</i> — 4 <i>Lobia</i> — 3 <i>Jowar</i> — 1 Barley — 2 Gram — 1 Maize — 1 Potato —11 Paddy —12 Mixed —14 <hr/> Total —69	Formerly the experimental area was uneven having rolling topography with slopy land, with the levelling up of the farm, the fields are now even and uniform though the experimental area is in different tiers.
37.	Lucknow : Govt. Vegetable Research Station Alam-bagh Year of Establishment 1943.	Vegetable with legumes for Green manuring and Paddy in the low lying fields. It represents the tract known as the Gangetic Plain ( <i>Duab</i> ).	Depth : Normal. Colour : Brown. Structure : Clayey Other details : N.A.	N.A.	There were three tube-wells. (Only two of which were in working order). The facilities were available from 1949.	Onion —13 Cauliflower — 3 <i>Total</i> — 1 Tomato — 2 Colocasia — 1 Garlic — 4 Pumpkin — 3 <i>Bhindi</i> — 3 Peas — 1 Brinjal — 4 <hr/> Total —35	Well drained and levelled farm.

**STATEMENT SHOWING DETAILS OF EXPERIMENTAL STATIONS**  
UTTAR PRADESH (Contd.)

1	2	3	4	5	6	7	8
38.	Lucknow: National Botanical Garden. Year of Establishment: 1953.	N.A. Gangetic Plain Alluvial Soil.	N.A.	N.A.	N.A.	Wheat —1 Mixed Cropping —1 Citrus —4 Guava —1 Mango 1 <hr/> Total —8	N.A.
39.	Matkota: P.O. Rudrapur Distt. Nainital, Tarai State Farm Western Block (1948)	N.A. Tarai Nainital tract.	Clay loam. Loam highly calcareous. Loam slightly calcareous. Sandy loam. Depth: 9" to 12". Colour: Dark Grey and Dark Brown. Other details —N.A.	June. 8.04 July. 12.81 Aug. 15.38 Sept. 19.01 Oct. 5.70 Nov. Nil Dec. 0.43 Jan. 1.55 Feb. 0.72 March 1.50 April Nil May 0.60	Tube-well and river irrigate a very small area and most of the area is unirrigated. Tubewells were bored in 1951-52.	Wheat —6 Jowar —1 Paddy —2 <hr/> Total —9	Nil

**STATEMENT SHOWING DETAILS OF EXPERIMENTAL STATIONS**  
**UTTAR PARDESH (Contd.)**

1.	2.	3.	4.	5.	6.	7.	8.	
40. Meerut : Govt. Agri. Farm.	Sugarcane, Wheat, Cotton, Maize, Potato, Paddy. Alluvial soil.	Silty loam. Other details—N.A.	June	2.23	Tubewell Irrigation.	Wheat	—15	Plain.
			July	11.21		Jowar	— 3	
			Aug.	10.96		Mustard	— 1	
			Sept.	7.58				
			Oct.	5.64		Total	—19	
			Nov.	0.34				
			Dec.	0.64				
			Jan.	1.64				
			Feb.	1.00				
			March	0.83				
			April	1.00				
			May	0.18				
			41. Muza ffarnagar : Sugarcane Research Sub-Station (1918).	Sugarcane, Wheat, Cotton and Paddy. Western tract of U.P. It is very hot and dry in summer and very cold in winter.		Type IV. Well drained soil. Depth—Surface soil 9". Colour—Brown to Brownish yellow. Granular to crumby—Sub soil is Brownish yellow to yellow and is crumby to compact for Soil analysis. See page 37.	June	
July	13.55	Sugarcane			—45			
Aug.	7.64							
Sept.	6.88	Total			—55			
Oct.	3.16							
Nov.	3.37							
Dec.	0.30							
Jan.	1.16							
Feb.	1.01							
March	0.96							
April	0.20							
May	0.64							

## SUGARCANE RESEARCH SUB STATION MUZAFFAR NAGAR

## TYPE IV LOAM SOIL

Depth	0-9"	9-18"	18-42"	42-60"	60-66"	66-75"
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## A.—MECHANICAL COMPOSITION (AIR DRY BASIS)

Coarse sand percent	12.76	13.70	9.54	9.41	4.46	6.79
Fine sand percent	59.38	48.02	49.64	48.41	57.75	54.48
Silt percent	14.37	16.27	18.22	20.63	16.95	19.46
Clay percent	11.21	19.43	20.03	18.30	18.00	15.38

## C.—CHEMICAL CONSTITUENTS (AIR DRY BASIS)

Moisture percent	0.41	0.84	0.88	0.90	0.69	0.62
Loss on ignition percent	1.35	2.98	3.60	2.78	3.19	3.11
HCl in solubles percent	88.65	82.46	80.22	79.74	80.25	80.94
HCl solubles silica percent	1.05	1.23	1.28	1.24	1.22	1.27
R <sub>2</sub> O <sub>3</sub> percent	6.67	11.46	12.39	13.44	12.76	11.58
Al <sub>2</sub> O <sub>3</sub> percent	3.87	7.38	7.99	8.60	7.96	6.86
Fe <sub>2</sub> O <sub>3</sub> percent	2.80	4.08	4.40	4.64	4.80	4.72
CaO percent	0.84	0.50	0.50	0.48	0.50	0.50
MgO	0.87	1.09	0.87	0.75	1.21	0.62
K <sub>2</sub> O percent	0.33	0.40	0.42	0.49	0.45	0.39
P <sub>2</sub> O <sub>5</sub> percent	0.04	0.02	0.04	0.10	0.08	0.05
Nitrogen percent	0.04	0.03	0.02	0.02	0.02	0.03
Carbon percent	0.34	0.29	0.25	0.16	0.17	0.15

## TYPE IV CLAY LOAM SOIL

Depth	0-7½"	7½-20"	20-28"	28-32"	32-51"	51-72"
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## A.—MECHANICAL COMPOSITION (AIR DRY BASIS)

Coarse sand percent	3.02	3.83	2.98	8.55	3.34	2.47
Fine sand percent	47.59	26.14	31.83	28.28	35.44	—
Silt percent	32.40	36.52	33.75	22.44	26.89	20.63
Clay percent	16.20	33.15	35.70	31.91	31.69	29.48

## C.—CHEMICAL CONSTITUENTS (AIR DRY BASIS)

Moisture percent	0.72	1.06	1.04	1.46	1.52	1.34
Loss on ignition percent	3.23	4.24	4.04	4.41	4.49	4.21
HCl in solubles percent	82.57	74.79	75.97	72.70	71.26	73.96
HCl soluble silica percent	0.91	1.06	0.90	0.98	0.96	0.89
R <sub>2</sub> O <sub>3</sub> percent	11.88	18.14	16.09	18.65	21.23	15.92
Al <sub>2</sub> O <sub>3</sub> percent	8.04	12.70	11.29	11.93	14.03	10.48
Fe <sub>2</sub> O <sub>3</sub> percent	3.84	5.44	4.80	6.72	7.20	5.44
CaO percent	0.73	0.64	0.56	0.50	0.50	0.45
MgO percent	0.40	0.64	0.68	0.60	0.52	0.48
K <sub>2</sub> O percent	0.66	0.68	0.65	0.87	0.33	0.32
P <sub>2</sub> O <sub>5</sub> percent	0.12	0.09	0.09	0.08	0.14	0.09
Nitrogen percent	—	—	—	—	—	—
Carbon percent	0.74	0.38	0.33	0.24	0.22	0.21

STATEMENT SHOWING DETAILS OF EXPERIMENTAL STATIONS

UTTAR PARDESH (Contd.)

1	2	3	4	5	6	7	8
42.	Nagina : (Distt. Bijnore) Rice Research Station (1926).	Paddy, Wheat. Semi <i>Tarai</i> area.	Soil type : Loam and Sandy loam. Colour—Light brown. Structure—Medium compact. Depth—6'. Other details—N.A.	June 4.20 July. 21.99 Aug. 10.62 Sept. 13.49 Oct. 5.37 Nov. 0.02 Dec. 0.71 Jan. 1.92 Feb. 0.52 March 1.41 April Nil May 0.87	Canal, Tubewell Irrigation.	Wheat— 1 Paddy—39 <hr/> Total —40	—
43.	Nawabgunj : (Distt. Bareilly) Govt. Agri. Farm.	Paddy, Sugarcane. Sub- <i>Tarai</i> region of the Rohelkhand division.	Locally known as <i>Matifar</i> . It is classified as Bareilly Type III. Profile development : mature. Texture—Clay loam with high clay percent. Structure : Cloddy Concretions—Small Iron nodules. pH—6.8 to 6.6. The water holding capacity ranges from 35 to 50% having highest capacity in between 18" to 30" depth. Other details ( <i>i.e.</i> Chemical and Mechanical Analysis)—N.A.	June. 4.23 July. 3.31 Aug. 12.11 Sept. 7.72 Oct. 1.83 Nov. 0.09 Dec. 0.39 Jan. 1.17 Feb. 1.29 March 0.46 April 0.22 May 0.88	Lift Irrigation from the river, [also canal irrigation.	Wheat —2 Sugarcane —2 Paddy —9 <hr/> Total —13	The experimental area is low lying and gets water logged during monsoon.

**STATEMENT SHOWING DETAILS OF EXPERIMENTAL STATIONS  
UTTAR PRADESH (Contd.)**

1	2	3	4	5	6	7	8
44.	Neoli, (Distt. Etah) Sugarcane Research Sub-station. Year of establishment 1951-52.	Sugarcane, Wheat. Sandy Soil.	Sandy soil. Depth : 6" to 9". Colour : Greyish brown. Structure : 2J to 30% clay soil. Chemical analysis : N.A. Mechanical analysis : 50% coarse sand, 30% fine sand, and 20% Silt.	June 2.53 July 8.33 Aug. 6.64 Sept. 2.92 Oct. 5.71 Nov. Nil Dec. 0.06 Jan. 0.73 Feb. 0.68 March 0.44 April Nil May 0.15	Tubewell irrigation is available from the establishment of the Research Sub-station.	Sugarcane - 6	25 acre area of land was set apart for experimental purposes. This land is situated in the Khadar tract of river Ganga which flows just on the north eastern boundary of the Neoli Farm.
45.	Pachperwa. (Distt. Gonda) Late Paddy Research Sub-Station. Year of establishment : 1949.	N.A. It represents late paddy growing tract.	Light loam to loam. Other details N.A.	N.A.	Canal Irrigation	Paddy - 22	N.A.
46.	Partapgarh. Govt. Agril. Farm. (1906).	Sugarcane, Wheat, Barley Paddy. Eastern U.P. tract.	Sandy loam. Grey colour. Other details : N.A.	N.A.	Tubewell Irrigation.	Wheat - 12 Jowar - 3 Maize - 1 Mixed - 7 <hr/> Total - 23	N.A.

**STATEMENT SHOWING DETAILS OF EXPERIMENTAL STATIONS**  
**UTTAR PRADESH (Contd.)**

1	2	3	4	5	6	7	8														
47.	Phoolbagh Tehsil Kichha (Kam) Distt. Nainital Tarai State Farm Central Block. Year of establishment 1950-51.	It represents Tarai area.	<p>There are broadly six types of soils :</p> <p>(i) Clay loam. -</p> <p>(ii) Loam.</p> <p>(iii) Loam, highly calcareous.</p> <p>(iv) Slightly calcareous.</p> <p>(v) Sandy loam.</p> <p>(vi) Sandy.</p> <p>Depth—18".</p> <p>Colour—Brownish black.</p> <p>Structure—The sandy soil is loose structured and other soils are sticky. Soil particles are fine, have got the capacity of retaining fertility.</p> <p>Chemical analysis: Soils are deficient in N, P<sub>2</sub>O<sub>5</sub> and K<sub>2</sub>O.</p> <p>Mechanical analysis :—N.A.</p>	<p>June 4.31</p> <p>July 18.22</p> <p>Aug. 7.45</p> <p>Sept. 22.31</p> <p>Oct. 6.53</p> <p>Nov. 0.40</p> <p>Dec. 0.68</p> <p>Jan. 0.33</p> <p>Feb. 0.04</p> <p>March 0.19</p> <p>April 0.65</p> <p>May Nil</p> <p>These figures are based on period 1958-59.</p>	<p>Irrigation facilities are limited. There are only five artisons and two tube-wells on the farm. The cultivation depends on rain fall only.</p>	Wheat—1	N.A.														
48.	Pura, (Dist. Kanpur) Govt. Research Farm (1949).	Paddy, Maize, Jowar, Barley and Potato. Medium to light textured alluvial soils.	<p>Alluvial (Gangetic).</p> <p>Depth—Very deep.</p> <p>Colour—Greyish brown to dark brown.</p> <p>Structure—Single grained.</p> <p>Chemical analysis :—Surface</p> <table style="margin-left: 20px;"> <tr> <td>CaO</td> <td>Total N</td> <td>Org. C</td> <td>pH.</td> </tr> <tr> <td>1.0%</td> <td>0.065%</td> <td>0.40%</td> <td>7.8</td> </tr> </table> <p>Mechanical analysis :</p> <table style="margin-left: 20px;"> <tr> <td>Sand</td> <td>Clay</td> <td>Silt</td> </tr> <tr> <td>60%</td> <td>15%</td> <td>25%</td> </tr> </table>	CaO	Total N	Org. C	pH.	1.0%	0.065%	0.40%	7.8	Sand	Clay	Silt	60%	15%	25%	<p>June 3.66</p> <p>July 10.51</p> <p>Aug. 10.37</p> <p>Sept. 5.85</p> <p>Oct. 1.07</p> <p>Nov. 0.16</p> <p>Dec. 0.36</p> <p>Jan. 0.64</p> <p>Feb. 0.40</p> <p>March 0.31</p> <p>April 0.18</p> <p>May 0.38</p>	N.A.	<p>Paddy —7</p> <p>Jowar —1</p> <p>Wheat —2</p> <p>Barley —1</p> <p>Gram —1</p> <hr style="width: 50%; margin-left: 0;"/> <p>Total —12</p>	<p>Most of the area is levelled except for some plots adjacent to road which have a slope of 2' to 3'.</p>
CaO	Total N	Org. C	pH.																		
1.0%	0.065%	0.40%	7.8																		
Sand	Clay	Silt																			
60%	15%	25%																			

STATEMENT SHOWING DETAILS OF EXPERIMENTAL STATIONS

UTTAR PRADESH (Contd.)

1	2	3	4	5	6	7	8
49.	Ramgarh : (Distt. Nainital) Govt. Hill Fruit Research Station. Year of Estab- lishment N.A. (Now abolished). (Pl. sec. Col. 8).	N.A.	N.A.	N.A.	N.A.	Peach —1	Topography :— Orchard areas on ter- raced slopes. Note :—There is no Hill Fruit Research Station at Ramgarh, but experiments of Hill Fruit Research Station, Chaubhattia (Distt. Almora) are often conducted there in private or- chards. This station has now been abolish- ed. It was financed by I.C.A.R. for 5 years only.
50.	Raya : (Distt. Mathura) Govt. Cotton Research Sub-Station (1918).	Cotton, and Wheat. Western U.P. tract. Dry climate and scanty rain fall.	Soil type: Loam to sandy loam with moderate fertility. The south western strip is characterised by gravelly sub-soil. Chemical analysis : N.A. Mechanical analysis : Clay 19.53% Fine silt 9.17% Silt 13.78% Fine sand 54.09% Coarse sand—1.40%-Misc. 2.03%	June 1.18 July 10.05 Aug. 8.52 Sept. 5.94 Oct. 1.76 Nov. 0.17 Dec. 0.05 Jan. 0.57 Feb. 0.39 March 0.53 April 0.09 May 0.18	Lift Irrigation from Upper Ganges Canal.	Cotton —23 Jowar — 1 Wheat — 9 Mixed — 4 <hr/> Total —37	Well levelled and well laid out.



**STATEMENT SHOWING DETAILS OF EXPERIMENTAL STATIONS**  
**UTTAR PRADESH (Contd.)**

1	2	3	4	5	6	7	8
51.	Saidpur : Dist. Jhansi State Livestock Cum-Agri. Farm. Year of Establish- ment 1948-49.	It represents Bundelkhand soils of <i>Mar</i> type.	Soil type : <i>Mar</i> light soil of <i>Ranker</i> nature. Depth : 4" to 5". Colour : Blackish to light reddish. Structure : Light, granular and heavy granular. Other details—N.A.	June 2.78 July 13.62 Aug. 13.11 Sept. 6.36 Oct. 1.19 Nov. 0.11 Dec. 0.08 Jan. 1.20 Feb. 0.22 March 0.46 April 0.07 May 0.11	Irrigation Reservoir for about 60 acres con- structed in 1952-53.	Maize—1	Undulated tract. The slope is very irregular and heavy erosion at certain places.
52.	Shahjahanpur : Main Sugarcane Research Station.	Wheat, Barley and Sugarcane. Central tract of U.P. typi- cal of the white sugar belt of North India.	Soil type : Type 3-Old Alluvium uplands. Depth : 200' (approx.). Colour : Greyish brown. Structure : Granular. For Mechanical and Chemical analysis of the soil please see page 46	June 4.5 July 11.1 Aug. 12.4 Sept. 7.0 Oct. 2.2 Nov. 0.5 Dec. 0.3 Jan. 1.1 Feb. 0.6 March 0.5 April 0.2 May 0.4	Canal and tube well irrigation.	Sugarcane—86	In general there are uplands with even surface except in three blocks where there are slight slopes.

**STATEMENT SHOWING DETAILS OF EXPERIMENTAL STATIONS**

UTTAR PRADESH (Contd.)

1	2	3	4	5	6	7	8
53.	Tissuhl : (Distt. Mirzapur) Govt. Agril. Farm (1935).	South-east of U.P. hilly tract. Paddy and Barley	Soil type : Hard clay Depth : 10' to 20' Colour : Grey Structure : Hard clay with small <i>kankars</i> . Other details—N.A.	June 1.33 July 10.50 Aug. 22.90 Sept. 12.60 Oct. 5.90 Nov. Nil Dec. Nil Jan. 3.00 Feb. Nil March Nil April Nil May Nil	Canal from rainfed Dam.	Wheat —3 Paddy —6 Total —9	N.A.
54.	Tissuhl : (Distt. Mirzapur) Late Paddy Research Sub-Station. Year of Establishment 1949.	It represents late paddy growing tract. Normal cropping pattern—N.A.	Soil type : Loam to clayey loam. Other details N.A.	N.A.	Canal Irrigation	Paddy —33	N.A.

**STATEMENT SHOWING DETAILS OF EXPERIMENTAL STATIONS**

UTTAR PARDESH (Contd.)

1	2	3	4	5	6	7	8
55.	Unnao Govt. Seed Farm. Year of Establishment 1953.	It represents the <i>Usar</i> tract. Major crops : Berseem, Pea and Barley.	Depth—9" Colour—Clayey <i>Usar</i> Structure—Fine Chemical & Mechanical analysis—N.A.	June. 3.50 July. 14.05 Aug. 10.01 Sept. 1.71 Oct. 11.91 Nov. Nil Dec. 0.17 Jan. 0.72 Feb. 0.71 March Nil April 0.01 May 10.22 Average 43.01 The period 1960-61	Canal and tubewell irrigation. Canal from 1953 and tubewell from 1961-62.	Paddy —2	The farm is in low lying area and there is water logging in most of the farm land. Mostly paddy crop is successful in this farm. There is proper drainage system.
56.	Varanasi : Agri. Farm, Agri. College. Banaras Hindu University. Year of Establishment 1923.	It represents the Gangetic Alluvium tract. Major crops—N.A.	Medium alluvium soil suited for cultivation of almost all crops : Depth—Korizonns not distinctly formed. Colour—Light brownish yellow. Structure—Structureless to compact. Chemical Analysis : N—0.05% P <sub>2</sub> O <sub>6</sub> —0.05%, Org. C—0.5%, K <sub>2</sub> O—0.5% and CaO—0.8%. Mechanical Analysis : Clay-20.0% Silt-25.0%, Fine sand-35.0% and Coarse sand-15.0%.	June 2.78 July 13.60 Aug. 9.68 Sept. 7.62 Oct. 5.20 Nov. Nil Dec. Nil Jan. 2.90 Feb. Nil March 0.22 April 0.22 May 0.27 Average 42.63 The period on which it is based is 1958-1959 and 1960.	Tubewell irrigation available from 1935.	Wheat —6 Spinach —1 Paddy —1 Onion —1 Tobacco —1 Mustard —4 Potato —9 Total —23	Uniformly level except certain portions of the farm which are low lying and suitable for paddy cultivation. Natural drainage except in certain areas of the farm where deep ditches are provided for removing surplus and standing water.

STATEMENT SHOWING DETAILS OF EXPERIMENTAL STATIONS.

UTTAR PRADESH (Contd.)

1	2	3	4	5	6	7	8
57.	Varanasi : Regional Res. Stn. since 1956. Distt Varanasi. 3 miles from Varanasi Rly. Station.	It represents brown and grey alluvial soil. Major crop : Wheat.	Soil type : Banaras Type III (Brownish grey moderately drained loam soil). Depth : 0.6' to 0.9' surface soil. Colour : Brownish and Brownish grey. Structure : Crumb. Soil analysis : See page 46	June 4.85 July 12.76 Aug. 9.92 Sept. 10.41 Oct. 1.56 Nov. 0.04 Dec. 0.09 Jan. 0.59 Feb. 0.15 March 0.35 April 0.02 May 0.18 <hr/> Total 40.92 Average of 9 years (1950—1958).	Irrigation by tubewell. Facilities available from 1954. No proper drainage system.	Jowar — 6 Barley — 1 Wheat — 21 Maize — 1 Paddy — 7 Mixed — 4 <hr/> Total — 40	Flat (at slightly lower level than surrounding fields).

## SUGARCANE RESEARCH FARM, SHAHJAHANPUR

Plot No : H<sub>3</sub>

Soil Type 3

Lab. : No.	Analytical Data			
	S/1865	S/1866	S/1867	S/1868
Depth	0—9"	9"—32"	32"—57"	57"—72"
<b>(a) Mechanical (air dry basis)</b>				
Coarse sand percent	1.34	0.29	0.35	0.22
Fine sand percent	55.52	10.72	22.05	30.13
Silt percent	23.47	52.57	41.71	33.60
Clay percent	17.40	33.60	31.66	33.45
<b>(b) Physical (air dry basis)</b>				
Water holding capacity percent	42.66	58.30	54.96	55.79
Moisture equivalent percent	22.49	27.13	24.92	25.39
Sticky point moisture percent	18.38	26.55	24.09	22.31
<b>(c) Physico-chemical (air dry basis)</b>				
Base exchange capacity percent	13.80	18.20	17.50	16.50
Exchangeable Ca+m.e percent	8.01	9.00	6.00	7.00
Total exchangeable bases m.e. percent	11.00	14.00	15.00	14.00
pH	6.60	6.20	6.00	6.00
<b>(d) Chemical (air dry basis)</b>				
Moisture percent	0.67	1.79	2.24	1.25
Loss on ignition percent	2.07	3.01	2.40	2.59
HCl insoluble percent	82.18	72.95	71.42	75.99
R <sub>2</sub> O <sub>3</sub> percent				
.....)	13.33	18.39	20.98	16.44
Al <sub>2</sub> O <sub>3</sub> percent	8.09	12.67	8.22	9.92
Fe <sub>2</sub> O <sub>3</sub> percent	5.24	5.72	12.76	6.52
CaO percent	0.42	0.44	0.50	0.34
MgO percent	0.99	—	1.15	1.43
K <sub>2</sub> O percent	0.10	0.21	0.21	0.64
P <sub>2</sub> O <sub>5</sub> percent	0.09	0.22	0.22	0.16
Nitrogen percent	0.03	0.04	0.02	0.04
Organic Carbon percent	0.34	0.21	0.21	0.03
C/N.....)	12.44	4.95	12.41	7.02
C/P.....)	3.73	0.94	0.95	0.17

## SOIL ANALYSIS FROM ONE REPRESENTATIVE PROFILE OF REGIONAL RESEARCH STATION, VARANASI

Profile	0—9"	9"—22"	22"—33"	33"—72"
Moisture	1.46	1.06	1.28	1.07
Loss	2.12	2.56	2.62	2.62
HCl Insoluble	84.67	80.27	75.46	74.70
R <sub>2</sub> O <sub>3</sub> %	8.05	12.29	16.99	16.65
CaO%	0.28	0.34	0.45	0.395
MgO%	1.29	0.93	1.13	1.03
K <sub>2</sub> O%	1.03	0.99	1.06	1.12
Fe <sub>2</sub> O <sub>3</sub> %	2.52	1.60	3.68	3.76
Al <sub>2</sub> O <sub>3</sub> %	5.47	10.65	13.26	13.84
Org. C	0.589	0.226	0.215	0.203
Total N	0.054	0.025	0.020	0.022
pH.	6.80	6.60	6.20	6.500
Total Water Soluble Salts	0.064	0.069	0.039	0.0570
Coarse Sand	0.90	3.21	2.81	1.20
Fine Sand	42.21	25.45	25.07	25.26
Silt	34.75	34.80	32.46	40.60
Clay	17.33	33.15	35.90	29.53

Crop :-Paddy (*Kharif*).

Ref :- U.P. 53(363).

Site :-Allahabad Agri. Institute, Allahabad.

Type :-'M'.

Object :-To ascertain the effect of two different Nitrogenous fertilizers on the yield of Paddy.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) N.A. (c) N.A. (ii) (a) Deep loam soil. (b) Refer soil analysis, Allahabad. (iii) 8.7.1953.  
 (iv) (a) N.A. (b) Broadcast. (c) N.A. (d) N.A. (e) N.A. (v) N.A. (vi) T-22. (vii) N.A. (viii)  
 Weeding on 21 and 29.7.1953. (ix) 48.44". (x) 26.10.1953.

## 2. TREATMENTS :

1. A/S @ 40 lb/ac. of N.  
 2. Sodium Nitrate @ 40 lb./ac. of N.  
 3. Control.  
 Fertilizers were top dressed on 28.8.1953.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 3. (b) 41'×69'. (iii) 7. (iv) (a) 41'×23'. (b) 39'×21'. (v) 1' ring around the net plot. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) Dusting with gam maxene on 5.9.1953. (iii) Yield of grain and *bhusa*. (iv) (a) No. (b) No. (c) Nil. (v) (a) No. (b) No. (vi) Nil. (vii) There was a gradual slope in the field from east to west. The plots in the south-eastern end of the layout matured earlier and yielded less than the plots in the north-western end. Experiment conducted by the Head of Agronomy Department, Allahabad Agricultural Institute, Allahabad.

## 5. RESULTS :

(i) 1537 lb./ac.  
 (ii) 287.73 lb./ac.  
 (iii) Treatment differences are significant.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	1790
2.	1524
3.	1297
S.E./mean	=108.7 lb./ac.

Crop :-Paddy (*Kharif*).

Ref :-U.P. 53(343).

Site :-Govt. Agri. Farm, Atarra.

Type :-'M'.

Object :-To study the residual effect of application of N and P to Paddy crop, having already studied the residual effect on previous crop *Moong*.

## 1. BASAL CONDITIONS ;

(i) (a) Nil. (b) *Moong* T<sub>1</sub>. (c) Nil. (ii) (a) *Parwa*. (b) N.A. (iii) 29.7.1953. (iv) (a) After turning *Moong*, 2 ploughings with *Watts* plough. (b) Transplanting. (c) —. (d) N.A. (e) N.A. (v) Green manuring of *Moong*. (vi) N.A. (vii) Unirrigated. (viii) N.A. (ix) 28.10". (x) 29, 30 and 31.10.1953.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 3 levels of N: N<sub>0</sub>=0, N<sub>1</sub>=30 and N<sub>2</sub>=60 lb./ac.  
 (2) 3 levels of P<sub>2</sub>O<sub>5</sub>: P<sub>0</sub>=0, P<sub>1</sub>=60 and P<sub>2</sub>=120 lb./ac.  
 N as A/S and P<sub>2</sub>O<sub>5</sub> as Super.

The treatments were applied in *Rabi* 1952-1253 to wheat crop. Then the residual effect was studied on *Moong* T<sub>1</sub> crop and then the present experiment on Paddy crop.

## 3. DESIGN :

(i) 3×3 Fact. in R.B.D. (ii) (a) 9. (b) N.A. (iii) 6. (iv) (a) N.A. (b) 20'×54.5'. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) N.A. (iii) Yield of grain and straw. (iv) (a) 1953-N.A. (b) N.A. (c) Nil (v) (a) and (b) No. (vi) Nil. (vii) Experiment conducted by Agril. Chemist.

## 5. RESULTS :

- (i) 2368 lb./ac.  
(ii) 117.20 lb./ac.  
(iii) Main effects of N and P are highly significant. Interaction N×P is not significant.  
(iv) Av. yield of paddy in lb./ac.

	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>	Mean
N <sub>0</sub>	2075	2238	2408	2240
N <sub>1</sub>	2178	2278	2508	2321
N <sub>2</sub>	2308	2591	2731	2543
Mean	2187	2369	2549	2368

S.E. of any marginal mean =27.63 lb./ac.  
S.E. of body of table =47.85 lb./ac.

Crop :- Paddy (*Kharif*).

Ref :- U.P. 53(344).

Site :- Govt. Agri. Farm, Atarra.

Type :- 'M'.

Object :- To study the effect of N and P applied alone and in combination on the yield and quality of Paddy crop.

## 1. BASAL CONDITIONS :

- (i) (a) N.A. (b) Gram. (c) Nil. (ii) (a) *Parwa*. (b) N.A. (iii) 11 to 13.8.1953. (iv) (a) 4 ploughings with wats plough, including hot weather cultivation and 2 ploughings with wats plough, at the time of transplanting. (b) Transplanted in lines. (c) —. (d) and (e) N.A. (v) Nil. (vi) N.A. (vii) Irrigated. (viii) N.A. (ix) 24.07". (x) 25,26 and 27.11.1953.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 3 levels of N : N<sub>0</sub>=0, N<sub>1</sub>=30 and N<sub>2</sub>=60 lb./ac.(2) 3 levels of P<sub>2</sub>O<sub>5</sub> : P<sub>0</sub>=0, P<sub>1</sub>=60 and P<sub>2</sub>=120 lb./ac.

N as A/S applied on 14.8.1953 and P<sub>2</sub>O<sub>5</sub> as Super applied on 8.7.1953. A/S broadcasted and placed in 4" deep bunds (furrow opened by either a victory or U.P. plough or even two *desi* ploughs one behind the other in the same furrow).

## 3. DESIGN :

- (i) 3×3 Fact. in R.B.D. (ii) (a) 9. (b) N.A. (iii) 6. (iv) (a) N.A. (b) 33'×33'. (v) N.A. (vi) Yes.

## 4. GENERAL :

- (i) Poor growth was observed in some plots which were on higher level and irrigation water could not reach properly. (ii) N.A. (iii) Yield of grain and straw. (iv) (a) and (b) N.A. (c) Nil. (v) (a) N.A. (b) Nil. (vi) Nil. (vii) Experiment conducted by Agril. Chemist.

## 5. RESULTS :

- (i) 2201 lb./ac.  
(ii) 230.83 lb./ac.  
(iii) Main effects of N and P are highly significant, interaction N×P is not significant.  
(iv) Av. yield of grain in lb./ac.

	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>	Mean
N <sub>0</sub>	1837	1997	2143	1992
N <sub>1</sub>	2090	2300	2383	2258
N <sub>2</sub>	2160	2320	2583	2354
Mean	2029	2206	2370	2201

S.E. of any marginal mean =54.41 lb./ac.  
S.E. of body of table =94.24 lb./ac.

Crop :- Paddy.

Ref :- U.P. 50(194).

Site :- Govt. Agri. Farm, Atarra.

Type :- 'M'.

Object :- To find the response of Paddy to application of nitrogen, phosphate and calcium.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Barley. (c) N.A. (ii) (a) Light *kabar*. (b) N.A. (iii) 5.6.1950/14.8.1950. (iv) (a) 4 ploughings with Watts plough. (b) Transplanted. (c) —. (d) and (e) N.A. (v) N.A. (vi) T.36 (late). (vii) Irrigated. (viii) Nil. (ix) 58.16". (x) 26 to 28.11.1950.

## 2. TREATMENTS :

All combinations of (1), (2) and (3)

(1) 3 levels of N :  $N_0=0$ ,  $N_1=30$  and  $N_2=60$  lb./ac.(2) 3 levels of  $P_2O_5$  :  $P_0=0$ ,  $P_1=20$  and  $P_2=40$  lb./ac.(3) 3 levels of Ca :  $C_0=0$ ,  $C_1=30$  and  $C_2=60$  lb./ac.N as A/S,  $P_2O_5$  as Super and Ca as Gypsum.

## 3. DESIGN :

(i)  $3^3$  partially confounded. (ii) (a) 9 plots/block and 3 blocks/replication. (b) N.A. (iii) 2. (iv) (a)  $18' \times 42'$ . (b)  $12' \times 36'$ . (v) 3' around the net plot. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) Nil. (iii) Yield of Paddy. (iv) (a) 1950—1953. (b) No. (c) N.A. (v) (a) Banaras, Tisui (Mirzapur), Bharari (Jhansi), Pachperwa (Gonda), Nawabgunj (Bareilly) and Nagina (Bijnore). (b) N.A. (vi) Nil. (vii) Conducted by C.P.

## 5. RESULTS :

(i) 2405 lb./ac.

(ii) 110.4 lb./ac.

(iii) Main effect of N and interaction  $P \times C$  are highly significant. Y component of NPC interaction is significant. Others are not significant.

(iv) Av. yield of grain in lb./ac.

	$P_0$	$P_1$	$P_2$	Mean	$C_0$	$C_1$	$C_2$
$N_0$	1258	1400	1599	1419	1395	1387	1473
$N_1$	2260	2696	2441	2466	2355	2519	2523
$N_2$	3353	3215	3420	3329	3329	3349	3310
Mean	2290	2437	2486	2405	2360	2418	2435
$C_0$	2247	2333	2499				
$C_1$	2268	2519	2467				
$C_2$	2355	2458	2493				

S.E. of any marginal mean = 26.03 lb./ac.

S.E. of body of table = 45.07 lb./ac.

Crop :- Paddy (*Kharif*).

Ref :- U.P. 51(279).

Site :- Govt. Agri. Farm, Atarra.

Type :- 'M'.

Object :- To find the response of Paddy to application of nitrogen, phosphate and calcium.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) and (c) N.A. (ii) (a) *Kabar*. (b) N.A. (iii) 28.6.1951/12.8.1951. (iv) (a) N.A. (b) Transplanting. (c) —. (d) and (e) N.A. (v) N.A. (vi) T. 36. (vii) N.A. (viii) N.A. (ix) N.A. (x) N.A.



**2. TREATMENTS :**

All combinations of (1), (2) and (3)

- (1) 3 levels of N :  $N_0=0$ ,  $N_1=30$  and  $N_2=60$  lb./ac.  
 (2) 3 levels of  $P_2O_5$  :  $P_0=0$ ,  $P_1=20$  and  $P_2=40$  lb./ac.  
 (3) 3 levels of Ca :  $C_0=0$ ,  $C_1=30$  and  $C_2=60$  lb./ac.

**3. DESIGN :**

- (i)  $3^3$  Confounded Fact. (ii) (a) 9 plots/block and 3 blocks/replication. (b) N.A. (iii) 2. (iv) (a)  $18' \times 42'$  (b)  $12' \times 36'$ . (v) 3' around the net plot. (vi) Yes.

**4. GENERAL :**

- (i) No lodging, good. (ii) Nil. (iii) Grain yield. (iv) (a) 1950-53. (b) and (c) No. (v) (a) Nagina, Tisuihi (Mirzapur), Bharari (Jhansi), Pachperwa (Gonda), Faizabad and Nawatganj (Bareilly). (b) Nil. (vi) Nil. (vii) The expt. was conducted by C.P.

**5. RESULTS :**

- (i) 2357 lb./ac.  
 (ii) 178.42 lb./ac.  
 (iii) Main effects of N, P and X component of NPC interaction are highly significant. W component of NPC interaction is significant. Other effects and interactions are not significant.  
 (iv) Av. yield of grain in lb./ac.

	$P_0$	$P_1$	$P_2$	Mean	$C_0$	$C_1$	$C_2$
$N_0$	1210	1376	1575	1387	1359	1372	1400
$N_1$	2251	2467	2446	2388	2143	2506	2515
$N_2$	3330	3172	3384	3295	3271	3345	3267
Mean	2264	2338	2468	2357	2268	2408	2394
$C_0$	2204	2124	2476				
$C_1$	2260	2485	2478				
$C_2$	2325	2407	2450				

S.E. of any marginal mean =42.06 lb./ac.

S.E. of body of table =72.84 lb./ac.

Crop :-Paddy (Kharif).

Ref :-U.P. 52(322).

Site :-Govt. Agri. Farm, Atarra.

Type :-'M'.

Object :-To find the response of Paddy to application of nitrogen, phosphate and calcium.

**1. BASAL CONDITIONS:**

- (i) (a) Paddy-Pea. (b) Pea. (c) N.A. (ii) (a) Light Kabar. (b) N.A. (iii) 23.6.1952/25.7.1952. (iv) (a) N.A. (b) Transplanted. (c) —. (d) and (e) N.A. (v) Nil. (vi) T. 36 (late). (vii) N.A. (viii) N.A. (ix) 49.18°. (x) N.A.

**2. TREATMENTS :**

All combinations of (1), (2) and (3)

- (1) 3 levels of N :  $N_0=0$ ,  $N_1=30$  and  $N_2=60$  lb./ac.  
 (2) 3 levels of  $P_2O_5$  :  $P_0=0$ ,  $P_1=20$  and  $P_2=40$  lb./ac.  
 (3) 3 levels of Ca :  $C_0=0$ ,  $C_1=30$  and  $C_2=60$  lb./ac.  
 N as A/S,  $P_2O_5$  as Super and Ca as Gypsum.

**3. DESIGN :**

- (i)  $3^3$  Confounded Fact. (ii) (a) 9 plots/block and 3 blocks/replication. (b) N.A. (iii) 2. (iv) (a)  $18' \times 42'$ . (b)  $12' \times 36'$ . (v) 3' around. (vi) Yes.

**4. GENERAL :**

- (i) No. (ii) N.A. (iii) Grain yield. (iv) (a) 1950-53. (b) No. (c) Nil. (v) (a) Pachperwa (Gonda), Banaras, Nagina, (Bijrore), Nawatganj (Bareilly), Faizabad, Tisuihi (Mirzapur) and Bharari (Jhansi). (b) Nil. (vi) Nil. (vii) The expt. was conducted by C.P.

## 5. RESULTS :

- (i) 2937 lb./ac.  
(ii) 158.81 lb /ac.  
(iii) All main effects, all 1st order interactions and Y and Z components of NPC interaction are highly significant ; W and X component of NPC interaction are not significant.  
(iv) Av. yie.d of grain in lo./ac.

	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>	Mean	C <sub>0</sub>	C <sub>1</sub>	C <sub>2</sub>
N <sub>0</sub>	2975	3630	3474	3360	2750	3803	3526
N <sub>1</sub>	3023	3407	2906	3112	2943	3710	2684
N <sub>2</sub>	2286	2854	1875	2338	2614	2042	2359
Mean	2761	3297	2752	2937	2769	3185	2856
C <sub>0</sub>	2189	3146	2973				
C <sub>1</sub>	3165	3399	2990				
C <sub>2</sub>	2930	3347	2292				

S.E of any marginal mean =37.44 lb./ac.  
S.E. of body of table =64.83 lb./ac.

Crop :- Paddy

Ref :- U.P. 53(48).

Site :- Govt. Agri. Farm, Atarra.

Type :- 'M'.

Object :—To find out the response of late Paddy to application of nitrogen, phosphate and calcium.

## 1. BASAL CONDITIONS :

- (i) (a) Paddy followed by pea. (b) P.a. (c) Nil. (ii) (a) *Parwa*. (b) N.A. (iii) 16.8.1953. (iv) (a) 5 ploughings during July and August 1953. (b) Transplanting. (c) —. (d) Plant spacing 9" and row spacing 12". (e) 1. (v) Nil. (vi) T-36 (late). (vii) Irrigated. (viii) Weeding and hoeing performed 3-4 times. (ix) N.A. (x) 25.11.1953.

## 2. TREATMENTS :

All combinations of (1), (2) and (3).

- (1) 3 levels of N : N<sub>0</sub>=0, N<sub>1</sub>=30 and N<sub>2</sub>=60 lb /ac.  
(2) 3 levels of P<sub>2</sub>O<sub>5</sub> : P<sub>0</sub>=0, P<sub>1</sub>=20 and P<sub>2</sub>=40 lb./ac.  
(3) 3 levels of Ca : C<sub>0</sub>=0, C<sub>1</sub>=30 and C<sub>2</sub>=60 lb./ac.  
N as A/S, P<sub>2</sub>O<sub>5</sub> as Super and Ca as Gypsum.

## 3. DESIGN :

- (i) 3<sup>3</sup> confounded Fact. (ii) (a) 9 plots/block ; 3 blocks/replication. (b) N.A. (iii) 2. (iv) (a) 18'×42'. (b) 12'×36'. (v) 3' around the net plot. (vi) Yes.

## 4. GENERAL :

- (i) Good. (ii) Nil. (iii) Grain yield and straw yield. (iv) (a) 1953—1953. (b) Yes. (c) N.A. (v) (a) Bbarari, Bararas, Faizabad and Nawabganj. (b) N.A. (vi) Nil. (vii) Conducted by C.P.

## 5. RESULTS :

- (i) 2367 lb /ac.  
(ii) 12.43 lb /ac.  
(iii) All main effects, all first order interactions and W, Z and X components of NPC interaction are highly significant. Y component of NPC interaction is significant.

(iv) Av. yield of grain in lb./ac.

	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>	Mean	C <sub>0</sub>	C <sub>1</sub>	C <sub>2</sub>
N <sub>0</sub>	1919	1925	1953	1932	1916	1934	1947
N <sub>1</sub>	1921	2098	2167	2062	1983	2096	2107
N <sub>2</sub>	2081	2232	2310	2208	2085	2245	2292
Mean	1973	2085	2144	2067	1995	2091	2116
C <sub>0</sub>	1929	2016	2040				
C <sub>1</sub>	1979	2104	2191				
C <sub>2</sub>	2012	2135	2200				

S.E. of any marginal mean = 2.93 lb./ac.

S.E. of body of table = 5.07 lb./ac.

Crop :- Paddy.

Ref :- U.P. 52(156).

Site :- Govt. Agri. Farm, Atarra.

Type :- 'M'.

Object :- To find out the effect of minor elements on growth and yield of Paddy.

## 1. BASAL CONDITIONS :

(i) (a) *Sanai*-Wheat-Paddy. (b) Wheat. (c) N.A. (ii) (a) *Parwa*. (b) N.A. (iii) 23.6.1952/7 and 8.8.1952. (iv) (a) N.A. (b) Transplanting. (c) —. (d) and (e) N.A. (v) Nil. (vi) T-36 (late). (vii) N.A. (viii) N.A. (ix) 49.18°. (x) N.A.

## 2. TREATMENTS :

- Control.
- Molybdenum (Mo) as molybdic acid at 6 lb./ac. of Mo.
- Copper (Cu) as copper sulphate at 6 lb./ac. of Cu.
- Boron (B) as commercial borax at 1 lb./ac. of B.
- Sulphur (S) as commercial sulphur at 50 lb./ac. of S.
- Zinc (Zn) as zinc sulphate at 4 lb./ac. of Zn.

A basal dose of A/S at 30 lb./ac. of N+Super at 15 lb./ac. of P<sub>2</sub>O<sub>5</sub>+Pot. Sul. at 15 lb./ac. of K<sub>2</sub>O applied to all plots. Trace elements mixed with soil before sowing; date of manuring 23.7.1952.

## 3. DESIGN :

(i) L. Sq. (ii) (a) 6. (b) N.A. (iii) 6. (iv) (a) 35'×27'. (b) 31'×23'. (v) 2' around the net plot (vi) Yes.

## 4. GENERAL :

(i) All plots except control lodged in the 1st week of December. (ii) No. (iii) Grain yield. (iv) (a) No. (b) No. (c) No. (v) (a) Nawatganj (Bareilly), Faizabad, Banaras, Bharari (Jhansi), Belatal and Bahraich. (vi) Nil. (vii) Conducted by C.P.

## 5. RESULTS :

- 4580 lb./ac.
- 209.68 lb./ac.
- Treatment differences are highly significant.
- Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	4268
2.	4624
3.	4613
4.	4817
5.	4451
6.	4705
S.E./mean	= 85.60 lb./ac.

Crop :- Paddy.

Ref :- U.P. 53(47).

Site :- Govt. Agri. Farm, Atarra.

Type :- 'M'.

Object :- To find the effect of trace elements on growth, yield and quality of Paddy.

**1. BASAL CONDITIONS :**

- (i) (a) Wheat followed by Paddy. (b) Fallow. (c) Nil. (ii) (a) Light *kabar*. (b) N.A. (iii) 12.8.1953.  
 (iv) (a) 4 ploughings during July and August. (b) Transplanting. (c) 12 srs./ac. in nursery bed. (d) Plant spacing 9" and row spacing 12". (e) single seedlings. (v) G.M.+A/S at 30 lb./ac.+ 30 lb./ac. of  $P_2O_5$  as Super+15 lb./ac. of  $K_2O$  as Pot. sulphate+15 lb./ac. of Ca as Gypsum. (vi) T-36 (late). (vii) Irrigated. (viii) Interculturing between rows 3-4 times with hand hoe. Weedings also performed. 1st weeding after 10-15 days of transplanting. (ix) N.A. (x) 20.11.1953.

**2. TREATMENTS :**

Main-plot treatments:

3 trace elements : Cu=Copper, B=Boron and Zn=Zinc.

Sub-plot treatments :

4 levels of trace elements :  $L_0$ ,  $L_1$ ,  $L_2$ , and  $L_3$ .[levels of copper :  $L_0=0$ ,  $L_1=3$ ,  $L_2=6$  and  $L_3=12$  lb./ac. of Cu.levels of Boron:  $L_0=0$ ,  $L_1=1$ ,  $L_2=2$  and  $L_3=4$  lb./ac. of B.levels of Zinc :  $L_0=0$ ,  $L_1=1$ ,  $L_2=4$  and  $L_3=10$  lb./ac. of Zn.]

Copper as copper sulphate, Boron as borax and zinc as zinc sulphate applied as surface dressing mixed with dry earth or sand 2 days after transplanting so as to secure uniform distribution within the plots.

**3. DESIGN :**

- (i) Split-plot. (ii) (a) 3 main-plots/replication and 4 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) Sub-plot 28'x37' main-plot 56'x77'. (b) 25'x34'. (v) Plot bund 1.5'x1' around. (vi) Yes.

**4. GENERAL :**

- (i) Good. (ii) Nil. (iii) Grain and straw yield. (iv) (a) 1953—N.A. (b) and (c) No. (v) (a) Bharari (Jhansi), Baharaich, Nawabganj, Faizabad and Banaras. (vi) Nil. (vii) Conducted by C.P.

**5. RESULTS :**

- (i) 2674 lb./ac.  
 (ii) (a) 21.42 lb./ac.  
 (b) 8.74 lb./ac.  
 (iii) Main-plot treatments are not significantly different, sub-plot treatments within main-plots are highly significant.  
 (iv) Av. yield of grain in lb./ac.

	$L_0$	$L_1$	$L_2$	$L_3$	Mean
Cu	2653	2669	2682	2675	2670
B	2658	2693	2724	2660	2684
Zn	2651	2671	2684	2666	2668
Mean					

S.E. of difference of two

1. main-plot treatment marginal means

=8.74 lb./ac.

2. means in the same row

=7.14 lb./ac.

Crop :- Paddy

Ref :- U.P. 52(170)

Site :- Govt. Agri. Farm, Baharaich.

Type :- 'M'.

Object :- To study the effect trace elements in presence of adequate quantities of N, P and K on growth, yield and quality of Paddy.

**1. BASAL CONDITIONS :**

- (i) (a) Nil. (b) Pea+*Mansur*. (c) N.A. (ii) (a) Sandy Loam. (b) Refer soil analysis, Baharaich. (iii) 7.6.1952/9.24.10.1952 (iv) (a) N.A. (b) Transplanting. (c) —. (d) and (e) N.A. (v)  $P_2O_5$  to be applied 6" deep in furrows while preparing the field. A/S and Pot. sulphate as top dressing one week before transplanting. (vi) T-8 (late). (vii) N.A. (viii) N.A. (ix) N.A. (x) N.A.

## 2. TREATMENTS :

1. Control.
2. Molybdenum ( $M_0$ ) as molybdic acid at 6 lb./ac. of Mo.
3. Copper (Cu) as copper sulphate at 6 lb./ac. of Cu.
4. Boron (B) as commercial borax at 1 lb./ac. of B.
5. Sulphur (S) as commercial sulphur at 50 lb./ac. of S.
6. Zinc (Zn) as zinc sulphate at 4 lb./ac. of Zn.

A basal dose of A/S at 30 lb./ac. of N+Super at 15 lb./ac. of  $P_2O_5$  +Pot. Sulphate at 15 lb./ac. of  $K_2O$  is applied to all plots. Elements applied mixed with fine earth as surface dressing 5-6 days before soil. Date of manuring 12.7.1952.

## 3. DESIGN :

- (i) Latin square. (ii) (a) 6. (b) N.A. (iii) 6. (iv) (a) 35'×27'. (b) 31'×23'. (v) 2' around the net plot. (vi) Yes.

## 4. GENERAL :

- (i) No lodging. Good. (ii) No. (iii) Yield of Paddy. (iv) (a) to (c) No. (v) (a) Atarra, Nawabganj (Bareilly), Faizabad, Banaras, Bharari (Jhansi), Belatal and Lucknow. (b) N.A. (vi) Nil. (vii) Conducted by C.P.

## 5. RESULTS :

- (i) 2799 lb./ac.  
 (ii) 364.9 lb./ac.  
 (iii) Treatment differences are not significant.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	2801
2.	2791
3.	2953
4.	2728
5.	2906
6.	2613
S.E./mean	=149.0 lb./ac.

Crop :- Paddy.

Site :- Govt. Agri. Farm, Baharaich.

Ref :- U.P. 53(49).

Type :- 'M'.

Object :- To find the effect of trace elements (Copper, Boron, Zinc) in presence of adequate quantities of N, P, K and Calcium on growth, yield and quality of Paddy.

## 1. BASAL CONDITIONS :

- (i) (a) Nil. (b) Masoor. (c) Nil. (ii) (a) Sandy loam. (b) Refer soil analysis, Baharaich. (iii) 28 to 30.8.1953. (iv) (a) 5 ploughings. (b) Transplanting. (c) 12 srs./ac. in nursery bed. (d) Plant spacing 9" and row spacing 12". (e) 1. (v) Green manuring, A/S at 30 lb./ac. of N, Super at 30 lb./ac. of  $P_2O_5$ ; Sulphate of Potash at 15 lb./ac. and Gypsum at 15 lb./ac. (vi) T-15 (late) (vii) Irrigated. (viii) Weeding and hoeing on 15 and 16.9.1953. (ix) N.A. (x) 29.11.1953.

## 2. TREATMENTS :

Main-plot treatments :

3 trace elements :- Cu=Copper, B=Boron and Zn=Zinc.

Sub-plot treatments :

4 levels of trace elements :-  $L_0$ ,  $L_1$ ,  $L_2$  and  $L_3$ .

[levels of copper :-  $L_0=0$ ,  $L_1=3$ ,  $L_2=6$  and  $L_3=12$  lb./ac. of Cu.

levels of Boron :-  $L_0=0$ ,  $L_1=1$ ,  $L_2=2$  and  $L_3=4$  lb./ac. of B.

levels of Zinc :-  $L_0=0$ ,  $L_1=1$ ,  $L_2=4$  and  $L_3=10$  lb./ac. of Zn.]

Copper as copper sulphate, Boron as borax and Zinc as zinc sulphate applied as surface dressing mixed with dry earth or sand 2 days before transplanting so as to secure uniform distribution within the plot.

## 3. DESIGN :

- (i) Split-plot. (ii) (a) 3 main-plots/replication and 4 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) 28'×37'. (v) 25'×34' (v) Plot bund 1.5'×1' around. (vi) Yes.

## 4. GENERAL :

(i) Fair. (ii) Nil. (iii) Grain and straw yield. (iv) (a) 1953—1955. (b) and (c) No. (v) (a) Banaras, Faizabad, Bharari (Jhansi), Banda and Nawabganj (Bareilly). (vi) Nil. (vii) Conducted by C.P.

## 5. RESULTS :

- (i) 541.4 lb./ac.  
 (ii) (a) 119.46 lb./ac.  
 (b) 132.78 lb./ac.  
 (iii) Main-plot treatments and sub-plot treatments within main-plot treatment are not significantly different.  
 (iv) Av. yield of grain in lb./ac.

	L <sub>0</sub>	L <sub>1</sub>	L <sub>2</sub>	L <sub>3</sub>	Mean
Cu	542.5	590.8	507.4	529.3	542.5
B	546.9	529.3	560.1	621.6	564.5
Zn	456.9	571.1	542.5	498.6	517.3

S.E. of difference of two

1. main-plot treatment marginal means = 48.77 lb./ac.  
 2. means in the same row = 108.41 lb./ac.

Crop :- Paddy.

Site :- Govt. Agri. Farm, Barabanki.

Ref:- U.P. 49(96).

Type :- 'M'.

Object :- To study the best time of application of N to Paddy.

## 1. BASAL CONDITIONS :

(i) (a) No. (b) Wheat. (c) N.A. (ii) (a) N.A. (b) N.A. (iii) 16.5.1949/2, 3.7.1949. (iv) (a) 2 ploughings. (b) Transplanting. (c) —. (d) and (e) N.A. (v) 40 lb./ac. of N in the form of compost. (vi) T-22, (vii) Irrigated. (viii) 1 weeding. (ix) Nil. (x) N.A.

## 2. TREATMENTS :

All combinations of (1) and (2) + a control.

(1) 2 sources of N at 60 lb./ac. of N : S<sub>1</sub> = A/S and S<sub>2</sub> = A/N.

(2) 6 times of application of N : T<sub>1</sub> = Full dose at transplanting, T<sub>2</sub> = Full dose at 30 days after transplanting, T<sub>3</sub> = Full dose at 50 days after transplanting, T<sub>4</sub> =  $\frac{1}{2}$  at transplanting and  $\frac{1}{2}$  at 30 days after transplanting, T<sub>5</sub> =  $\frac{1}{2}$  at transplanting and  $\frac{1}{2}$  at 50 days after transplanting and T<sub>6</sub> =  $\frac{1}{2}$  at 30 days after and  $\frac{1}{2}$  at 50 days after transplanting.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 13. (b) N.A. (iii) 3. (iv) (a) 17' × 39'. (b) 11' × 33'. (v) 3' ring round the net plot. (vi) Yes.

## 4. GENERAL :

(i) Normal. (ii) N.A. (iii) Grain and *Bhusa* yield. (iv) (a) 1949—1950. (b) and (c) No. (v) (a) Lucknow. (b) N.A. (vi) Nil. (vii) Conducted by C.P.

## 5. RESULTS :

- (i) 1732 lb./ac.  
 (ii) 323.9 lb./ac.  
 (iii) None of the effects is significant.

(iv) Av. yield of grain in lb./ac.

Control=1480 lb./ac.

	T <sub>1</sub>	T <sub>2</sub>	T <sub>3</sub>	T <sub>4</sub>	T <sub>5</sub>	T <sub>6</sub>	Mean
S <sub>1</sub>	1686	1624	1624	1994	1953	1953	1806
S <sub>2</sub>	1552	1573	1696	1850	1871	1665	1701
Mean	1619	1599	1660	1922	1912	1809	1753

S.E. of marginal mean of S = 76.5 lb./ac.

S.E. of marginal mean of T = 132.3 lb./ac.

S.E. of body of table = 187.0 lb./ac.

Crop :- Paddy.

Ref :- U.P. 50(124).

Site :- Govt. Agri. Farm, Barabanki.

Type :- 'M'.

Object :- To study the optimum time of application of N to Paddy crop.

## 1. BASAL CONDITIONS :

(i) (a) No. (b) Gram. (c) N.A. (ii) (a) Loam. (b) N.A. (iii) 15.5.1950/28.6. to 1.7.1950. (iv) (a) *Palwa* 29.4.1950 and 5, 6.5.1950; 1st ploughing by victory plough, 2nd ploughing by *deshi* plough on 13.5.1950, 3rd and 4th ploughing by cultivator, grass picking on 18, 21.6.1950. (b) Transplanting. (c) —. (d) and (e) N.A. (v) 140 md./ac. of compost. (vi) W-22(early). (vii) N.A. (viii) Weeding between 27.7.1950 and 2.8.1950. (ix) 19.68°. (x) 23 to 24.9.1950.

## 2. TREATMENTS :

All combinations of (1) and (2) + a control.

(1) 2 sources of N at 60 lb./ac. of N : S<sub>1</sub>=A/S and S<sub>2</sub>=A/N.

(2) 6 times of application of N : T<sub>1</sub>=Full dose at transplanting, T<sub>2</sub>=Full dose at 30 days after transplanting, T<sub>3</sub>=Full dose at 50 days after transplanting, T<sub>4</sub>= $\frac{1}{2}$  at transplanting and  $\frac{1}{2}$  at 30 days after transplanting, T<sub>5</sub>= $\frac{1}{2}$  at transplanting and  $\frac{1}{2}$  at 50 days after transplanting and T<sub>6</sub>= $\frac{1}{2}$  at 30 days after and  $\frac{1}{2}$  at 50 days after transplanting.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 13. (b) N.A. (iii) 3. (iv) (a) 17'×39'. (b) 11'×33'. (v) 3' ring round the net plot. (vi) Yes.

## 4. GENERAL :

(i) Due to scarcity of rains, the growth and yield was poor. (ii) N.A. (iii) Grain yield. (iv) (a) 1949-1950. (b) and (c) No. (v) (a) Lucknow, Tisuhli (Mirzapur) and Hawalbagh (Almora). (b) N.A. (vi) Nil. (vii) Conducted by C.P.

## 5. RESULTS :

(i) 2176 lb./ac.

(ii) 574.7 lb./ac.

(iii) None of the effects is significant.

(iv) Av. yield of grain in lb./ac.

Control=1881 lb./ac.

	T <sub>1</sub>	T <sub>2</sub>	T <sub>3</sub>	T <sub>4</sub>	T <sub>5</sub>	T <sub>6</sub>	Mean
S <sub>1</sub>	2185	2143	2251	2442	1933	2431	2231
S <sub>2</sub>	1922	2272	2447	2385	2097	1897	2170
Mean	2054	2208	2349	2414	2015	2164	2201

S.E. of marginal mean of S = 135.4 lb./ac.

S.E. of marginal mean of T = 234.7 lb./ac.

S.E. of body of table = 331.8 lb./ac.

Crop :-Paddy.

Ref. :-U.P. 49(95).

Site :-Govt. Agri. Farm, Barabanki.

Type :-'M'.

Object :-To study the optimum time of application of  $P_2O_5$  to Paddy crop.

## 1. BASAL CONDITIONS :

(i) (a) No. (b) Wheat. (c) N.A. (ii) (a) Loam. (b) N.A. (iii) 16.5.1949/2, 3.7.1949. (iv) (a) 2 ploughings. (b) Transplanting. (c) (d) & (e) N.A. (v) 40 lb./ac. of N in the form of compost. (vi) T-22. (vii) Irrigated. (viii) Weeding on 15.7.1949. (ix) N.A. (x) N.A.

## 2. TREATMENTS :

All combinations of (1) and (2)+a control.

(1) 2 sources of  $P_2O_5$  (at 40 lb./ac.):  $S_1$ =Super and  $S_2$ =Ammono. Phos.

(2) 6 times of application of  $P_2O_5$ :  $T_1$ =Full dose at transplanting,  $T_2$ =Full dose at 30 days after transplanting,  $T_3$ =Full dose at 50 days after transplanting,  $T_4$ = $\frac{1}{2}$  at transplanting and  $\frac{1}{2}$  at 30 days after transplanting,  $T_5$ = $\frac{1}{2}$  at transplanting and  $\frac{1}{2}$  at 50 days after transplanting and  $T_6$ = $\frac{1}{2}$  at 30 days after and  $\frac{1}{2}$  at 50 days after transplanting.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 13. (b) N.A. (iii) 3. (iv) (a)  $17' \times 39'$ . (b)  $11' \times 33'$ . (v) 3' ring round the net plot. (vi) Yes.

## 4. GENERAL :

(i) Normal. (ii) N.A. (iii) Grain and *bhusa* yield. (iv) (a) 1949—50. (b) and (c) No. (v) (a) Lucknow. (b) N.A. (vi) Nil. (vii) Nil.

## 5. RESULTS :

(i) 2074 lb./ac.  
 (ii) 348.9 lb./ac.  
 (iii) None of the effects is significant.  
 (iv) Av. yield of grain in lb./ac.

Control = 1480 lb./ac.

	$T_1$	$T_2$	$T_3$	$T_4$	$T_5$	$T_6$	Mean
$S_1$	1809	2251	2241	2138	2241	2092	2129
$S_2$	2128	2220	1912	1994	2406	2056	2119
Mean	1968	2235	2077	2066	2324	2074	2124

S.E. of marginal mean of S = 82.2 lb./ac.  
 S.E. of marginal mean of T = 142.5 lb./ac.  
 S.E. of body of table = 201.4 lb./ac.

Crop :-Paddy.

Ref :-U.P. 50(125).

Site :-Govt. Agri. Farm, Barabanki.

Type :-'M'.

Object :-To study the optimum time of application of  $P_2O_5$  to Paddy crop.

## 1. BASAL CONDITIONS :

(i) (a) No. (b) Gram. (c) N.A. (ii) (a) Loam. (b) N.A. (iii) 15.5.1950/28.6.1950 to 1.7.1950. (iv) (a) *Palwa* 29.4.1950, 1st ploughing by Victory plough, 2nd ploughing by *deshi* plough, 3rd and 4th ploughing by cultivator; grass picking on 18 to 21.6.1950. (b) Transplanting. (c) —. (d) and (e) N.A. (v) 140 md/ac. of compost. (vi) W. 22 (early). (vii) N.A. (viii) Weeding 27.7.1950 and 2.8.1950. (ix) 19.68°. (x) 23 and 24.9.1950.



**2. TREATMENTS :**

All combinations of (1), (2) + a control

(1) 2 sources of  $P_2O_5$  (at 40 lb./ac.):  $S_1$ =Super and  $S_2$ = Ammo. phos.

(2) 6 times of application of  $P_2O_5$ :  $T_1$ =Full dose at transplanting,  $T_2$ =Full dose at 30 days after transplanting,  $T_3$ =Full dose at 50 days after transplanting,  $T_4$ = $\frac{1}{2}$  at transplanting and  $\frac{1}{2}$  at 30 days after transplanting,  $T_5$ = $\frac{1}{2}$  at transplanting and  $\frac{1}{2}$  at 50 days after transplanting and  $T_6$ = $\frac{1}{2}$  at 30 days after and  $\frac{1}{2}$  at 50 days after transplanting.

**3. DESIGN :**

(i) R.B.D. (ii) (a) 13. (b) N.A. (iii) 3. (iv) (a) 17'×39'. (b) 11'×33'. (v) 3' ring round the net plot. (vi) Yes.

**4. GENERAL :**

(i) Due to scarcity of rains the growth was poor. (ii) N.A. (iii) Grain yield. (iv) (a) 1949—1950. (b) and (c) No. (v) (a) Lucknow and Tisuihi (Mirzapur). (b) N.A. (vi) Nil. (vii) Conducted by C.P.

**5. RESULTS :**

- (i) 1968 lb./ac.  
 (ii) 434.1 lb./ac.  
 (iii) None of the effects is significant.  
 (iv) Av. yield of grain in lb./ac.

	Control = 1963 lb./ac.						Mean
	$T_1$	$T_2$	$T_3$	$T_4$	$T_5$	$T_6$	
$S_1$	1856	1907	2066	1876	1856	1850	1902
$S_2$	1902	2071	1671	2262	2231	2077	2036
Mean	1879	1989	1868	2069	2044	1964	1969

S.E. of marginal mean of S = 102.3 lb./ac.  
 S.E. of marginal mean of T = 177.3 lb./ac.  
 S.E. of body of table = 250.6 lb./ac.

Crop :- Paddy.

Ref :- U.P. 52(172).

Site :- Govt. Agri. Res. Farm, Belatal.

Type :- 'M'.

Object :- To study the effect of Boron, Molybdenum, Copper, Sulphur and zinc in presence of adequate quantities of N, P and K on growth, yield and quality of Paddy.

**1. BASAL CONDITIONS :**

(i) (a) Nil. (b) Wheat. (c) N.A. (ii) (a) Hard *kabar*. (b) N.A. (iii) 12.6.1952/25.7.1952. (iv) (a) N.A. (b) Transplanted. (c) —. (d) and (e) N.A. (v)  $P_2O_5$  to be applied 6" deep in furrows while preparing field. A/S and Pot. sulphate as top dressing one week before transplanting. (vi) T.9 (late). (vii) N.A. (viii) N.A. (ix) 48.23°. (x) N.A.

**2. TREATMENTS :**

- Control.
- Molybdenum (Mo) as molybdic acid at 6 lb./ac. of Mo.
- Copper (Cu) as copper sulphate at 6 lb./ac. of Cu.
- Boron (B) as commercial borax at 1 lb./ac. of B.
- Sulphur (S) as commercial sulphur at 50 lb./ac. of S.
- Zinc (Zn) as zinc sulphate at 4 lb./ac. of Zn.

A basal dose of A/S at 30 lb./ac. of N+Super at 15 lb./ac. of  $P_2O_5$  + Pot. Sulphate at 15 lb./ac. of  $K_2O$  is applied to all treatments. Elements applied mixed with fine earth as surface dressing 5-6 days before sowing.

**3. DESIGN :**

(i) L.Sq. (ii) (a) 6. (b) N.A. (iii) 6. (iv) (a) 35'×27'. (b) 31'×23'. (v) 2' around the net plot. (vi) Yes.

**4. GENERAL :**

(i) No lodging. Poor. (ii) Nil. (iii) Grain yield. (iv) (a) to (c) No. (v) (a) Atarra, Bahraich, Nawabganj (Bareilly), Faizabad, Banaras, Bharari (Jhansi) and Lucknow. (b) N.A. (vi) Nil. (vii) Conducted by C.P.

## 5. RESULTS :

- (i) 335.6 lb./ac.  
 (ii) 108.2 lb./ac.  
 (iii) Treatment differences are not significant.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	327.9
2.	324.0
3.	244.7
4.	335.1
5.	415.0
6.	367.2
S.E./mean	= 44.17 lb./ac.

Crop :- Paddy.

Ref :- U.P. 52(174).

Site :- State Mechanised Farm, Bharari.

Type :- 'M'.

Object :- To study the effect of Boron, Molybdenum, Copper, Sulphur and Zinc in presence of adequate quantities of N, P and K on the growth, yield and quality of Paddy.

## 1. BASAL CONDITIONS :

- (i) (a) Paddy-Berseem. (b) Berseem. (c) No. (ii) (a) *Kabar*. (b) N.A. (iii) N.A. (iv) (a) to (e) N.A. (v)  $P_2O_5$  to be applied 6" deep in furrows while preparing field. A/S and Pot. sul. as top dressing one week before transplanting. (vi) T-43 (medium). (vii) N.A. (viii) N.A. (ix) N.A. (x) N.A.

## 2. TREATMENTS:

- Control.
- Molybdenum (Mo) as molybdic acid at 6 lb./ac. of Mo.
- Copper (Cu) as copper sulphate at 6 lb./ac. of Cu.
- Boron (B) as commercial borax at 1 lb./ac. of B.
- Sulphur (S) as commercial sulphur at 50 lb./ac. of S.
- Zinc (Zn) as zinc sulphate at 4 lb./ac. of Zn.

A basal dose of A/S at 30 lb./ac. of N + Super at 15 lb./ac. of  $P_2O_5$  + Pot. Sulphate at 15 lb./ac. of  $K_2O$  is applied to all treatments. Trace elements mixed with fire earth as surface dressing 5-6 days before sowing.

## 3. DESIGN :

- (i) L. Sq. (ii) (a) 6. (b) N.A. (iii) 6. (iv) (a) 35' x 37'. (b) 31' x 23'. (v) 2' around the net plot. (vi) Yes.

## 4. GENERAL :

- (i) Good. (ii) Nil. (iii) Grain yield. (iv) (a) 1952-1953. (b) and (c) No. (v) (a) Atarra, Belatal, Bahraich, Nawabganj (Bareilly), Faizabad, Lucknow and Banaras. (b) N.A. (vi) Nil. (vii) Conducted by C.P.

## 5. RESULTS :

- (i) 1557 lb./ac.  
 (ii) 338.8 lb./ac.  
 (iii) Treatment differences are not significant.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	1385
2.	1657
3.	1581
4.	1563
5.	1524
6.	1634
S.E./mean	= 138.30 lb./ac.

Crop :- Paddy.  
Site :- State Mechanised Farm, Bharari.

Ref :- U.P. 53(46).  
Type :- 'M'.

Object:—To study the effect of varying doses of trace elements (Copper, Boron, Zinc) in presence of adequate quantities of N, P and Calcium on growth, yield and quality of Paddy.

### 1. BASAL CONDITIONS :

(i) (a) *Sanai*-Paddy-Berseem. (b) Berseem. (c) Nil. (ii) (a) *Parwa*. (b) N.A. (iii) 10.8.1953. (iv) (a) Ploughing and harrowing on 30.7.1953. (b) Transplanting. (c) 12 srs/ac. in nursery bed. (d) Plant spacing 9" and row spacing 12" (improved method). (e) 1. (v) Green manuring-*Sanai* turned in on 30.7.1953, A/S at 30 lb./ac. of N, Super at 30 lb./ac. of  $P_2O_5$ , Sulphate of potash at 15 lb./ac. of  $K_2O$  and Gypsum at 15 lb./ac. of Ca. (vi) T-43 (late). (vii) Irrigated. (viii) Interculturing between rows 3-4 times with hand hoe. Weeding is also performed. 1st weeding after 10-15 days of transplanting (ix) N.A. (x) 8.11.1953.

### 2. TREATMENTS :

#### Main-plot treatments :

3 trace elements : Cu=Copper, B=Boron and Zn=Zinc.

#### Sub-plot treatments :

4 levels of trace elements :  $L_0$ ,  $L_1$ ,  $L_2$  and  $L_3$

[levels of Copper :  $L_0=0$ ,  $L_1=3$ ,  $L_2=6$  and  $L_3=12$  lb./ac. of Cu.

levels of Boron :  $L_0=0$ ,  $L_1=1$ ,  $L_2=2$  and  $L_3=4$  lb./ac. of B.

levels of Zinc :  $L_0=0$ ,  $L_1=1$ ,  $L_2=4$  and  $L_3=10$  lb./ac. of Zn.]

Copper as copper sulphate, boron as borax and zinc as zinc sulphate applied as surface dressing mixed with fine sand or dry earth, 2 days before transplanting so as to secure uniform distribution within plots.

### 3. DESIGN :

(i) Split-plot. (ii) (a) 3 main-plots/replication and 4 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) 25'x37'. (b) 22'x34'. (v) Plot bund 1.5'x1' around, block partition of irrigation channel 3'. Field border 2' around. (vi) Yes.

### 4. GENERAL :

(i) Good. (ii) Slight attack of gundhibug at milky stage. (iii) Grain and straw yield. (iv) (a) 1953—contd. (b) and (c) No. (v) (a) Banaras, Nawabganj, Baharaich, Banda and Faizabad. (b) N.A. (vi) Nil. (vii) Conducted by C.P.

### 5. RESULTS :

(i) 1944 lb./ac.

(ii) (a) 262.7 lb./ac.

(b) 210.3 lb./ac.

(iii) Main-plot treatments and sub-plot treatments within main-plot treatments are not significant.

(i.) Av. yield of grain in lb./ac.

	$L_0$	$L_1$	$L_2$	$L_3$	Mean
Cu	1937	1907	2017	2042	1976
B	1959	2007	1717	2037	1930
Zn	2017	2004	1817	1864	1926

S.E. of difference of two

main-plot treatment means = 107.3 lb./ac.

means in the same row = 171.7 lb./ac.

Crop :- Paddy.  
Site :- State Mechanised Farm, Bharari.

Ref :- U.P. 49(240).  
Type :- 'M'.

Object:—To study the response of Paddy to three levels of N, P and Calcium.

### 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fallow. (c) No. (ii) (a) N.A. (b) N.A. (iii) 25.5.1949/23.7.1949. (iv) (a) Hot weather cultivation and subsequent 3 harrowings, transplanting after puddling. (b) Transplanting. (c) —. (d) N.A. (e) N.A. (v) N.A. (vi) T-136. (vii) Irrigated. (viii) N.A. (ix) N.A. (x) N.A.

∴ TREATMENTS :

All combinations of (1), (2) and (3)

(1) 3 levels of N :  $N_0=0$ ,  $N_1=30$  and  $N_2=60$  lb./ac.

(2) 3 levels of  $P_2O_5$  :  $P_0=0$ ,  $P_1=20$  and  $P_2=40$  lb./ac.

(3) 3 levels of Ca :  $C_0=0$ ,  $C_1=30$  and  $C_2=60$  lb./ac.

N as A/S.  $P_2O_5$  as Super and Calcium as gypsum containing 3% Ca.

3. DESIGN :

(i)  $3^3$  Confounded Factorial. (ii) (a) 3 blocks/replication, 9 plots/block. (b) N.A. (iii) 2. (iv) (a)  $18 \times 42'$ . (b)  $12' \times 36'$ . (v) 3' all round the net plot. (vi) Yes.

4. GENERAL :

(i) N.A. (ii) N.A. (iii) Height of paddy plants. No. of tillers per plant. No. of green leaves per plant. No. of dry leaves per plant. Length of leaf in cms. Breadth of leaf. Fresh weight of shoot per plant. Fresh weight of root per plant. Total weight of straw and grain. (iv) (a) 1949—1953. (b) No. (c) Nil. (v) (a) Nawabgunj (Bareilly), Nagina (Bijnore) and Banaras. (b) Nil. (vi) Nil. (vii) The expt. was conducted by C.P. This experiment was wrongly laid out. In one replication the treatment combination  $N_1P_1C_2$  should have been tried in a block in place of treatment combination  $N_1P_2C_1$  and vice versa in the other block. Hence yield of combinations  $N_1P_1C_2$  &  $N_1P_2C_1$  have been taken as missing.

5. RESULTS :

(i) 1309 lb./ac.

(ii) 2509 lb./ac.

(iii) Main effect of N is highly significant. Main effect of P and interaction  $N \times P$  are significant. Other effect and all the interactions are not significant.

(iv) Av. yield of grain in lb./ac.

	$P_0$	$P_1$	$P_2$	Mean	$C_0$	$C_1$	$C_2$
$N_0$	1046	1160	1018	1075	994	1115	1115
N	1381	1227	1685	1431	1497	1305	1491
$N_2$	1201	1383	1679	1421	1478	1411	1374
Mean	1209	1257	1461	1309	1323	1277	1327
$C_0$	1223	1262	1484				
$C_1$	1199	1266	1366				
$C_2$	1206	1242	1532				

S.E. of difference between  $N_1$  and  $N_0$  means or  $N_1$  and  $N_2$  means

= 87.72 lb./ac.

S.E. of difference between  $N_0$  and  $N_2$  means

= 83.64 lb./ac.

S.E. of difference between  $P_1$  and  $P_0$  or  $P_2$  and  $P_0$  means

= 85.51 lb./ac.

S.E. of difference between  $P_2$  and  $P_1$  means

= 87.35 lb./ac.

S.E. of difference between  $C_0$  and  $C_1$  or  $C_2$  and  $C_0$  means

= 85.51 lb./ac.

S.E. of difference between  $C_1$  and  $C_2$  means

= 87.35 lb./ac.

S.E. of body of any table excluding  $N_1P_2$ ,  $N_1P_1$ ,  $N_1C_1$ ,  $N_1C_2$ ,  $C_1P_2$  and  $P_1C_2$  means

= 102.44 lb./ac.

S.E. of  $N_1P_1$ ,  $N_1P_2$ ,  $N_1C_1$ ,  $N_1C_2$ ,  $C_1P_2$  and  $P_1C_2$  means

= 118.28 lb./ac.

Crop :- Paddy (Kharif).

Ref :- U.P 50(212).

Site :- State Mechanised Farm, Bharari.

Type :- 'M'.

Object :- To study the response of Paddy to three levels of N, P and Calcium.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fallow. (c) N.A. (ii) (a) and (b) N.A. (iii) 13.6.1950/12.8.1950. (iv) (a) One ploughing by *desi* ploughing, 2 harrowings, 2 ploughings by *desi* plough, mixing manures by cultivator 3 times. (b) Transplanting (c) —. (d) & (e) N.A. (v) N.A. (vi) T. 136 (early). (vii) Irrigated. (viii) N.A. (ix) N.A. (x) N.A.

2. TREATMENTS :

All combinations of (1), (2) and (3)

(1) 3 levels of N :  $N_0=0$ ,  $N_1=30$  and  $N_2=60$  lb./ac. of N.

(2) 3 levels of  $P_2O_5$  :  $P_0=0$ ,  $P_1=20$  and  $P_2=40$  lb./ac. of  $P_2O_5$

(3) 3 levels of Calcium :  $C_0=0$ ,  $C_1=30$  and  $C_2=60$  lb./ac. of Ca.

N as A/S,  $P_2O_5$  as Super and Ca as Gypsum. A/S applied on 11.8.1950, Super on 9.8.1950 and Gypsum on 10.8.1950.

## 3. DESIGN :

(i)  $3^3$  Partially Confounded. (ii) (a) 3 blocks/replication, 9 plots/block. (b) N.A. (iii) 2. (iv) (a)  $18' \times 42'$ .  
(b)  $12' \times 36'$  (v) 3' around the net plot. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) N.A. (iii) Grain yield. (iv) (a) 1949-53. (b) and (c) No. (v) (a) Binaras, Atarra (Banda), Tisui (Mirzapur), Pachpurwa (Gonda), Nawabganj (Birsilly) and Nagina. (b) Nil. (vi) Lay-out plan in replication I was wrong. The treatment combination  $N_1P_1C_2$  should be in third block while the treatment combination  $N_1P_2C_1$  should be in first block. Hence the yield of plots containing wrong treatment combinations has been rejected and analysis has been done by applying missing plot technique. (vii) Conducted by C.P.

## 5. RESULTS :

(i) 345.2 lb./ac.  
(ii) 166.61 lb./ac.  
(iii) None of the main effects and their interaction is significant.  
(iv) Av. yield of grain in lb./ac.

	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>	Mean	C <sub>0</sub>	C <sub>1</sub>	C <sub>2</sub>
N <sub>0</sub>	380.3	250.6	216.0	282.3	319.8	224.7	302.5
N <sub>1</sub>	328.4	321.9	382.4	344.3	302.5	347.9	382.4
N <sub>2</sub>	509.9	380.3	345.7	412.0	363.0	466.7	406.2
Mean	406.2	317.6	314.7	346.2	328.4	346.4	363.7
C <sub>0</sub>	432.1	302.5	250.6				
C <sub>1</sub>	432.1	285.2	321.9				
C <sub>2</sub>	354.3	365.1	371.6				

S.E. of marginal means of N<sub>0</sub>, N<sub>2</sub>, P<sub>0</sub> and C<sub>0</sub>

S.E. of marginal mean of N<sub>1</sub>

S.E. of marginal mean of P<sub>1</sub>, P<sub>2</sub>, C<sub>1</sub> and C<sub>2</sub>

S.E. of any mean excluding ( $N_1P_1$ ,  $N_1C_2$ ,  $P_1C_2$ ,  $N_1P_2$ ,  $P_2C_1$  and  $N_1C_1$ ) in the body of any table = 68.02 lb./ac.

S.E. of means of  $N_1P_1$ ,  $N_1C_2$ ,  $P_1C_2$ ,  $N_1P_2$ ,  $P_2C_1$  and  $N_1C_1$

= 39.27 lb./ac.

= 43.02 lb./ac.

= 41.01 lb./ac.

= 68.02 lb./ac.

= 78.54 lb./ac.

Crop :- Paddy (Kharif).

Site :- State Mechanised Farm, Bharari.

Ref :- U.P. 51(281).

Type :- 'M'.

Object :- To study the response of late Paddy to 3 levels of N, P and Calcium.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Berseem. (c) N.A. (ii) (a) *Kabar* and *Rankar* mixed. (b) N.A. (iii) 28.5.1951/3.8.1951.  
(iv) (a) N.A. (b) Transplanting. (c) —. (d) and (e) N.A. (v) Nil. (vi) T. 136. (vii) N.A. (viii) N.A. (ix) N.A. (x) N.A.

## 2. TREATMENTS :

All combinations of (1), (2) and (3)

(1) 3 levels of N : N<sub>0</sub>=0, N<sub>1</sub>=30 and N<sub>2</sub>=60 lb./ac.

(2) 3 levels of P<sub>2</sub>O<sub>5</sub> : P<sub>0</sub>=0, P<sub>1</sub>=20 and P<sub>2</sub>=40 lb./ac.

(3) 3 levels of Ca : C<sub>0</sub>=0, C<sub>1</sub>=30 and C<sub>2</sub>=60 lb./ac.

N as A/S, P<sub>2</sub>O<sub>5</sub> as Super and Ca as Gypsum. Manuring of A/S on 23.7.1951, Ca on 27.7.1951 and Super on 21.7.1951.

## 3. DESIGN :

(i)  $3^3$  Confounded Fact. (ii) (a) 3 blocks/replication ; 9 plots/block. (b) N.A. (iii) 2. (iv) (a)  $18' \times 42'$ . (b)  $12' \times 36'$ . (v) 3' around the net plot. (vi) Yes.

## 4. GENERAL :

(i) No lodging, good. (ii) Nil. (iii) Grain yield. (iv) (a) 1949—1953. (b) No. (c) Nil. (v) (a) Nagina (Bijnor), Tissuhi (Mirzapur), Nawatganj (Bareilly), Atarra (Banda), Pachperwa (Gonda) and Faizatad. (b) Nil. (vi) Nil. (vii) The expt. was wrongly laid out. In one replication the treatment combination  $N_1P_1C_2$  should have been tried in a block in place of treatment combination  $N_1P_2C_1$  and vice versa in the other block. Hence yield of treatment combinations  $N_1P_1C_2$  and  $N_1P_2C_1$  have been taken as missing and they have been estimated. The expt. was conducted by C.P.

## 5. RESULTS :

- (i) 1187 lb./ac.  
 (ii) 283.05 lb./ac.  
 (iii) Main effect of N is highly significant. Other effects and interactions are not significant.  
 (iv) Av. yield of grain in lb./ac.

	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>	Mean	C <sub>0</sub>	C <sub>1</sub>	C <sub>2</sub>
N <sub>0</sub>	985	1003	1128	1039	994	1024	1098
N <sub>1</sub>	1201	1119	1117	1146	1270	1044	1124
N <sub>2</sub>	1309	1322	1499	1377	1569	1301	1262
Mean	1165	1148	1248	1187	1278	1123	1161
C <sub>0</sub>	1266	1219	1348				
C <sub>1</sub>	1059	1067	1242				
C <sub>2</sub>	1171	1158	1154				

S.E. of difference between N<sub>1</sub> and N<sub>0</sub> or N<sub>1</sub> and N<sub>2</sub> means = 81.47 lb./ac.  
 S.E. of difference between N<sub>0</sub> and N<sub>2</sub> means = 77.68 lb./ac.  
 S.E. of difference between P<sub>1</sub> and P<sub>0</sub> or P<sub>2</sub> and P<sub>0</sub> means = 79.42 lb./ac.  
 S.E. of difference between P<sub>2</sub> and P<sub>1</sub> means = 81.12 lb./ac.  
 S.E. of difference between C<sub>0</sub> and C<sub>1</sub> or C<sub>2</sub> and C<sub>0</sub> means = 79.42 lb./ac.  
 S.E. of difference between C<sub>1</sub> and C<sub>2</sub> means = 81.12 lb./ac.  
 S.E. of t ody of any table excluding N<sub>1</sub>P<sub>1</sub>, N<sub>1</sub>C<sub>2</sub>, P<sub>1</sub>C<sub>2</sub>, N<sub>1</sub>P<sub>2</sub>, P<sub>2</sub>C<sub>1</sub> and N<sub>1</sub>C<sub>1</sub> means = 95.14 lb./ac.  
 S.E. of N<sub>1</sub>P<sub>1</sub>, N<sub>1</sub>C<sub>2</sub>, P<sub>1</sub>C<sub>2</sub>, N<sub>1</sub>P<sub>2</sub>, P<sub>2</sub>C<sub>1</sub> and N<sub>1</sub>C<sub>1</sub> means = 109.85 lb./ac.

Crop :- Paddy (Kharif).

Ref :- U.P. 52(244).

Site :- State Mechanised Farm, Bharari.

Type :- 'M'.

Object :- To study the response of late Paddy to 3 levels of N, P and Ca.

## 1. BASAL CONDITIONS :

(i) (a) Paddy-Tersee m. (t) Tersee m. (c) N.A. (ii) (a) N.A. (b) N.A. (iii) N.A. (iv) (a) N.A. (b) N.A. (c) N.A. (d) N.A. (e) N.A. (v) N.A. (vi) T-43 (med). (vii) N.A. (viii) N.A. (ix) N.A. (x) N.A.

## 2. TREATMENTS :

All combinations of (1), (2) and (3)

- (1) 3 levels of N : N<sub>0</sub>=0, N<sub>1</sub>=30 and N<sub>2</sub>=60 lb./ac.  
 (2) 3 levels of P<sub>2</sub>O<sub>5</sub> : P<sub>0</sub>=0, P<sub>1</sub>=20 and P<sub>2</sub>=40 lb./ac.  
 (3) 3 levels of Calcium : C<sub>0</sub>=0, C<sub>1</sub>=30 and C<sub>2</sub>=60 lb./ac.  
 N as A/S, P<sub>2</sub>O<sub>5</sub> as Super and Ca as Gypsum.

## 3. DESIGN :

(i) 3×3×3 Partly Confounded. (ii) (a) 3 blocks/replication, 9 plots/block. (b) N.A. (iii) 3. (iv) (a) 18'×42. (b) 12'×36'. (v) 3' around the net plot. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) N.A. (iii) Grain yield. (iv) (a) 1949—1953. (b) No. (c) No. (v) Pachperwa (Gonda), Banaras, Nagina, Nawatganj (Bareilly), Faizatad, Atarra (Banda) and Tissuhi (Mirzapur). (vi) Nil. (vii) Lay-out plan in replication I was wrong. The treatment combination N<sub>1</sub>P<sub>1</sub>C<sub>2</sub> should be in third block while the

treatment combination  $N_1P_2C_1$  should be in first block. Hence the yield of plots containing wrong treatment combinations has been rejected and analysis has been done by applying missing plot technique as suggested by chief statistician to Govt. of U.P. Conducted by C.P.

### 5. RESULTS :

- (i) 3191 lb./ac.
- (ii) 368.2 lb./ac.
- (iii) Main effect of N is highly significant ; interaction  $N \times C$  is significant. Other effects and interactions are not significant.
- (iv) Av. yield of grain in lb./ac.

	$P_0$	$P_1$	$P_2$	Mean	$C_0$	$C_1$	$C_2$
$N_0$	2599	3001	2662	2754	2815	2681	2766
$N_1$	3364	3368	3299	3344	3312	3684	3036
$N_2$	3492	3498	3431	3474	3280	3438	3703
Mean	3152	3289	3131	3191	3136	3268	3168
$C_0$	3163	3059	3185				
$C_1$	3215	3541	3046				
$C_2$	3077	3267	3161				

- S.E. of marginal means of  $N_0, N_2, P_0$  and  $C_0$  = 86.79 lb./ac.  
 S.E. of marginal mean of  $N_1$  = 95.08 lb./ac.  
 S.E. of marginal mean  $P_1, P_2, C_1$  and  $C_2$  = 90.65 lb./ac.  
 S.E. of any mean excluding  $N_1P_1, N_1C_2, P_1C_2, N_1P_2, P_2C_1$  and  $N_1C_1$  in the body of any table = 150.33 lb./ac.  
 S.E. of means of  $N_1P_1, N_1C_2, P_1C_1, N_1P_2$  and  $P_2C_1$  = 173.59 lb./ac.

Crop :- Paddy (*Kharif*).

Site : State Mechanised Farm, Bharari.

Ref :- U.P. 53(45).

Type :- 'M'.

Object :- To study the response of late Paddy to three levels of N, P and Calcium (Ca).

### 1. BASAL CONDITIONS:

- (i) *Sanal*-Paddy-Berseem. (b) Berseem (c) Nil. (ii) (a) Parwa. (b) N.A. (iii) 6.8.1953. (iv) (a) Ploughing and harrowing on 1.8. 1953. (b) Transplanted. (c) 12 srs in nursery bed. (d) Plant spacing 9" and row spacing 12". (e) 1. (v) Nil. (vi) T-43 (late). (vii) Irrigated. (viii) N.A. (ix) N.A. (x) 9.11.1953.

### 2. TREATMENTS :

All combinations of (1), (2) and (3)

- (1) 3 levels of N :  $N_0=0, N_1=30$  and  $N_2=60$  lb /ac.
- (2) 3 levels of  $P_2O_5$  :  $P_0=0, P_1=20$  and  $P_2=40$  lb /ac.
- (3) 3 levels of Calcium :  $C_0=0, C_1=30$  and  $C_2=60$  lb./ac.

N as A/S,  $P_2O_5$  as super and Ca as Gypsum.

Super applied 3"—4" deep in soil behind plough 3 days before sowing. Gypsum applied as surface dressing a day before sowing. A/S applied as top dressing 2 weeks after germination.

### 3. DESIGN :

- (i)  $3 \times 3 \times 3$  Confounded Fact. (ii) (a) 3 blocks/replication and 9 plots/block. (b) N.A. (iii) 2. (iv) (a) 18' x 42'. (b) 12' x 36'. (v) 3' around the net plot. (vi) Yes.

### 4. GENERAL :

- (i) Good. (ii) Negligible attack of gundibug. (iii) Grain and straw yield. (iv) (a) 1949—1953. (b) and (c) No. (v) Attera (Banda), Nawabganj, Banaras and Faizabad. (b) N.A. (vi) Nil. (vii) Conducted by C.P.

## 5. RESULTS :

- (i) 2506 lb./ac.  
(ii) 595.4 lb./ac.  
(iii) None of the effects is significant.  
(iv) Av. yield of grain in lb./ac.

	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>	Mean	C <sub>0</sub>	C <sub>1</sub>	C <sub>2</sub>
N <sub>0</sub>	2627	2504	2411	2514	2746	2208	2588
N <sub>1</sub>	2308	2390	2653	2450	2390	2619	2342
N <sub>2</sub>	2859	2580	2221	2553	2513	2865	2282
Mean	2598	2491	2429	2506	2550	2564	2404
C <sub>0</sub>	2591	2638	2420				
C <sub>1</sub>	2558	2364	2770				
C <sub>2</sub>	2645	2472	2096				

S.E. of any marginal mean =140.36 lb./ac.  
S.E. of body of table =243.08 lb./ac.

Crop :- Paddy.

Ref :- U.P. 51(155).

Site :- Govt. Agri. Farm, Faizabad.

Type :- 'M'.

Object :- To study the response of late Paddy to three levels of N, P and Calcium.

## 1. BASAL CONDITIONS :

- (i) (a) Nil. (b) Berseem. (c) N.A. (ii) (a) Loam. (b) N.A. (iii) 8.5.1951/29.7.1951. (iv) (a) N.A. (b) Transplanting. (c) —. (d) and (e) N.A. (v) N.A. (vi) T-136 (late). (vii) N.A. (viii) N.A. (ix) 30.71". (x) N.A.

## 2. TREATMENTS :

All combinations of (1), (2) and (3)

- (1) 3 levels of N : N<sub>0</sub>=0, N<sub>1</sub>=30 and N<sub>2</sub>=60 lb./ac.  
(2) 3 levels of P<sub>2</sub>O<sub>5</sub> : P<sub>0</sub>=0, P<sub>1</sub>=20 and P<sub>2</sub>=40 lb./ac.  
(3) 3 levels of Calcium : C<sub>0</sub>=0, C<sub>1</sub>=30 and C<sub>2</sub>=60 lb./ac.

N as A/S, P<sub>2</sub>O<sub>5</sub> as Super and Ca as Gypsum. Date of manuring 26.7.1951 and 27.5.1951.

## 3. DESIGN :

- (i) 3<sup>3</sup> Confounded Factorial. (ii) (a) 3 blocks/replication and 9 plots/block. (b) N.A. (iii) 2. (iv) (a) 20'×36" (b) 15'×30". (v) 2½'×2'. Irrigation channel—2'. (vi) Yes.

## 4. GENERAL :

- (i) No lodging. The condition of the crop was poor due to late transplanting. (ii) Nil. (iii) Grain yield. (iv) (a) 1951—1953. (b) and (c) No. (v) (a) and (b) N.A. (vi) Nil. (vii) Conducted by C.P.

## 5. RESULTS :

- (i) 103.1 lb./ac.  
(ii) 23.48 lb./ac.  
(iii) None of the effects is significant.



(iv) Av. yield of grain in lb./ac.

	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>	Mean	C <sub>0</sub>	C <sub>1</sub>	C <sub>2</sub>
N <sub>0</sub>	97.4	110.9	104.7	104.3	94.3	117.1	101.6
N <sub>1</sub>	97.4	104.7	122.3	108.1	108.8	103.7	111.9
N <sub>2</sub>	97.4	96.4	96.4	96.7	82.9	107.8	99.5
Mean	97.4	104.0	107.8	103.1	95.3	109.5	104.3
C <sub>0</sub>	89.1	91.2	105.7				
C <sub>1</sub>	111.9	106.8	109.8				
C <sub>2</sub>	91.2	114.0	107.8				

S.E. of any marginal mean = 5.53 lb./ac.

S.E. of body of table = 9.58 lb./ac.

Crop :- Paddy.

Site :- Govt. Agri. Farm, Faizabad.

Ref :- U.P. 52(217).

Type :- 'M'.

Object :- To study the response of late Paddy to three levels of N, P and Calcium.

**1. BASAL CONDITIONS :**

(i) (a) Paddy—Berseem. (b) Berseem, (c) N.A. (ii) (a) Clayey loam. (b) N.A. (iii) 31.5.1952/20 to 22.7.1952. (iv) (a) N.A. (b) Transplanting. (c) —. (d) and (e) N.A. (v) Nil. (vi) T.136 (early variety). (vii) N.A. (viii) N.A. (ix) 25.57". (x) N.A.

**2. TREATMENTS :**

All combinations of (1), (2) and (3)

(1) 3 levels of N : N<sub>0</sub>=0, N<sub>1</sub>=30 and N<sub>2</sub>=60 lb./ac.(2) 3 levels of P<sub>2</sub>O<sub>5</sub> : P<sub>0</sub>=0, P<sub>1</sub>=20 and P<sub>2</sub>=40 lb./ac.(3) 3 levels of Calcium : C<sub>0</sub>=0, C<sub>1</sub>=30 and C<sub>2</sub>=60 lb./ac.N as A/S, P<sub>2</sub>O<sub>5</sub> as Super and Ca as Gypsum. Manures applied 3 days before transplanting.**3. DESIGN :**

(i) 3<sup>3</sup> Partially Confounded. (ii) (a) 3 blocks/replication and 9 plots/block. (b) N.A. (iii) 2. (iv) (a) 20'×36'. (b) 15'×30'. (v) 3' around the net plot. (vi) Yes.

**4. GENERAL :**

(i) No lodging. (ii) Attacked by *gundi* 25% on ear heads. (iii) Grain yield. (iv) (a) 1951—1953. (b) and (c) No. (v) (a) Pachperwa (Gonda), Tisuhi (Mirzapur), Nagina (Bijnore), Nawabganj (Barilly), Banaras, Atarra (Banda) and Bharari (Jhansi). (vi) Nil. (vii) Conducted by C.P.

**5. RESULTS :**

(i) 452.4 lb./ac.

(ii) 86.12 lb./ac.

(iii) None of the effects is significant.

(iv) Av. yield of grain in lb./ac.

	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>	Mean	C <sub>0</sub>	C <sub>1</sub>	C <sub>2</sub>
N <sub>0</sub>	408.6	472.9	464.7	448.7	419.0	470.9	456.3
N <sub>1</sub>	396.2	460.5	448.0	434.9	452.2	394.1	458.4
N <sub>2</sub>	522.7	435.6	462.6	473.6	514.4	445.9	460.3
Mean	442.5	456.3	458.4	452.4	461.9	437.0	458.4
C <sub>0</sub>	475.0	402.4	458.4				
C <sub>1</sub>	425.2	452.2	433.5				
C <sub>2</sub>	427.3	514.4	433.5				

S.E. of any marginal mean =20.29 lb./ac.

S.E. of body of table =35.16 lb./ac.

Crop :- Paddy.

Site :- Govt. Agri. Farm, Faizabad.

Ref :- U.P. 53(32).

Type :- 'M'.

Object :—To study the response of late Paddy to three levels of N, P and Calcium (Ca).

## 1. BASAL CONDITIONS :

(i) (a) Paddy followed by Berseem. (b) Berseem. (c) Nil. (ii) (a) Clay loam. (b) N.A. (iii) 6—12.7.1953. (iv) (a) Ploughing with desi plough on 6, 7 and 11.7.1953. (b) Transplanting. (c) 12 srs./ac. in nursery bed. (d) Plant spacing 9" and row spacing 12". (e) 1. (v) Nil. (vi) T-136. (vii) Irrigated. (viii) N.A. (ix) N.A. (x) 3—5.10.1953.

## 2. TREATMENTS :

All combinations of (1), (2) and (3).

(1) 3 levels of N : N<sub>0</sub>=0, N<sub>1</sub>=30 and N<sub>2</sub>=60 lb./ac.(2) 3 levels of P<sub>2</sub>O<sub>5</sub> : P<sub>0</sub>=0, P<sub>1</sub>=20 and P<sub>2</sub>=40 lb./ac.(3) 3 levels of Calcium : C<sub>0</sub>=0, C<sub>1</sub>=30 and C<sub>2</sub>=60 lb./ac.

N as A/S. P<sub>2</sub>O<sub>5</sub> as Super and Ca as Gypsum. Super placed 3"-4" deep in soil between the plough 3 days before sowing. Gypsum applied as surface dressing a day before sowing. A/S applied as top dressing 2 weeks before germination.

## 3. DESIGN :

(i) 3<sup>3</sup> Confounded Factorial. (ii) (a) 3 blocks/replication and 9 plots/block. (b) N.A. (iii) 2. (iv) (a) 21'×36'. (b) 15'×30'. (v) Plot bund 3'×9' around. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Severe attack of gundhibug badly damaged the crop. (iii) Grain and straw yield. (iv) (a) 1951—1953. (b) No. (c) No. (v) (a) Nawabganj, Banaras, Bharari (Jhansi) and Atarra (Banda). (b) N.A. (vi) Nil. (vii) Conducted by C.P.

## 5. RESULTS :

(i) 375 lb./ac.

(ii) 59.96 lb./ac.

(iii) Main effect of C is highly significant ; that of N is significant. Interactions N×P and P×C are highly significant, interaction N×C is significant Y and W components of NPC interaction are highly significant.

(iv) Av. yield of grain in lb./ac.

	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>	Mean	C <sub>0</sub>	C <sub>1</sub>	C <sub>2</sub>
N <sub>0</sub>	330	359	326	338	313	321	380
N <sub>1</sub>	382	421	411	405	330	375	508
N <sub>2</sub>	465	305	373	381	409	324	411
Mean	392	362	370	375	350	340	433
C <sub>0</sub>	419	284	348				
C <sub>1</sub>	340	326	355				
C <sub>2</sub>	417	475	307				

S.E. of any marginal mean

=14.13 lb./ac.

S.E. of body of table

=24.47 lb./ac.

Crop :- Paddy.

Ref :- U.P. 52(175).

Site :- Govt. Agri. Farm, Faizabad.

Type :- 'M'.

Object:—To study the effect of Boron, Molybdenum, Copper, Sulphur and Zinc in presence of adequate quantities of N, P and K on growth, yield and quality of Paddy.

## 1. BASAL CONDITIONS :

(i) (a) Paddy-Berseem. (b) Berseem. (c) No. (ii) (a) Clay loam. (b) N.A. (iii) N.A. (iv) (a) N.A. (b) Transplanted. (c) —. (d) N.A. (e) N.A. (v) P<sub>2</sub>O<sub>5</sub> to be applied 6" deep in furrows while preparing the field; A/S and Pot. sulphate as top dressing one week before transplanting. (vi) T-136 (early). (vii) N.A. (viii) N.A. (ix) 25.57". (x) N.A.

## 2. TREATMENTS :

1. Control.
2. Molybdenum (Mo) as molybdic acid at 6 lb./ac. of Mo.
3. Copper (Cu) as copper sulphate at 6 lb./ac. of Cu.
4. Boron (B) as commercial borax at 1 lb./ac. of B
5. Sulphur (S) as commercial sulphur at 50 lb./ac. of S.
6. Zinc (Zn) as zinc sulphate at 4 lb./ac. of Zn.

A basal dose of A/S at 30 lb./ac. of N+Super at 15 lb./ac. of P<sub>2</sub>O<sub>5</sub>+Pot. Sulphate at 15 lb./ac. of K<sub>2</sub>O is applied to all treatments. Elements will be applied mixed with fine earth as surface dressing 5-6 days before sowing.

## 3. DESIGN :

(i) L. Sq. (ii) (a) 6. (b) N.A. (iii) 6. (iv) (a) 48'×19'. (b) 44'×15'. (v) 2' around the net plot. (vi) Yes.

## 4. GENERAL :

(i) No lodging. Satisfactory. (ii) Attacked by gundy-25% on ears. (iii) Grain yield. (iv) (a) 1952—1955. (b) No. (c) No. (v) (a) Atarra, Banaras, Bharari (Jhansi), Belatal, Bahraich, Nawabganj (Bareilly) and Lucknow. (vi) Nil. (vii) Conducted by C.P.

## 5. RESULTS :

- (i) 792.2 lb./ac.
- (ii) 127.7 lb./ac.
- (iii) Treatment differences are not significant.
- (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	720.2
2.	814.2
3.	796.3
4.	813.1
5.	741.4
6.	868.0
S.E./meam	=52.64 lb./ac.

Crop :-Paddy.

Ref :-U.P. 53(36).

Site :-Govt. Agri. Farm, Faizabad.

Type :-'M'.

Object :—To study the effect of varying doses of trace elements (Copper, Boron, Zinc) in presence of adequate quantities of N, P, K and Calcium on growth, yield and quality of Paddy.

## 1. BASAL CONDITIONS :

(i) (a) Paddy followed by Berseem. (b) Berseem. (c) Nil. (ii) (a) Clay loam. (b) N.A. (iii) 16, 18.7.1953. (iv) (a) Two ploughings by *praja desi* on 26.6.1953 and 12.7.1953., ploughing with *desi* plough on 16 and 18.7.1953. (b) Transplanting. (c) 12 srs./ac. in nursery bed. (d) Plant spacing 9" and row spacing 12". (e) Single seedling. (v) G.M.+30 lb./ac. of N as A/S+30 lb./ac. of  $P_2O_5$  as Super+15 lb./ac. of  $K_2O$  as Pot. Sulphate+15 lb./ac. of CaO as Gypsum. (vi) T-136 (early). (vii) Irrigated. (viii) Interculturing between rows 3-4 times with hand hoes. Weeding also performed. 1st weeding after 10-15 days of transplanting. (ix) N.A. (x) 6 and 7.10.1953.

## 2. TREATMENTS :

Main-plot treatments :

3 trace elements: Cu=Copper as Copper Sulphate, B=Boron as Borax and Zn=Zinc as Zinc Sulphate.

Sub-plot treatments :

4 levels of trace elements :  $L_0$ ,  $L_1$ ,  $L_2$  and  $L_3$ Levels of Cu :  $L_0=0$ ,  $L_1=3$ ,  $L_2=6$  and  $L_3=12$  lb./ac.Levels of Boron :  $L_0=0$ ,  $L_1=1$ ,  $L_2=2$  and  $L_3=4$  lb./ac.Levels of Zinc :  $L_0=0$ ,  $L_1=1$ ,  $L_2=4$  and  $L_3=4$  lb./ac.

## 3. DESIGN :

(i) Split-plot. (ii) (a) 3 main-plots/replication and 4 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) 28'×37' (b) 25'×34'. (v) Plot bund 1.5'×1' (high) around. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Attack of *Gundhi* bug (35.0%). (iii) Grain and straw yield. (iv) (a) 1952—1955. (b) and (c) No. (v) (a) Banaras, Nawabganj, Bahariach, Banda, and Bharari. (b) N.A. (vi) Nil. (vii) Conducted by C.P.

## 5. RESULTS :

(i) 1479 lb./ac.

(ii) (a) 35.86 lb./ac.

(b) 55.39 lb./ac.

(iii) Main treatments and sub-treatments are both highly significant.

(iv) Av. yield of grain in lb./ac.

	Cu	B	Zn
$L_0$	1450	1531	1485
$L_1$	1395	1671	1349
$L_2$	1518	1388	1654
$L_3$	1215	1483	1610
Mean	1394	1518	1524

S.E. of difference of two

1. main-plot treatment means ;

=14.64 lb./ac.

2. means in the same column

=45.23 lb./ac.

Crop :-Paddy.

Ref :-U.P. 50(114).

Site :-Govt. Agri. School Farm, Hawalbagh.

Type :-'M'.

Object :—To study the effect of time of application of N on growth and yield of late Paddy.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) N.A. (c) N.A. (ii) (a) and (b) N.A. (iii) 9.6.1950, 24 and 25.7.1950. (iv) (a) N.A. (b) Transplanting. (c) — (d) and (e) N.A. (v) N.A. (vi) *Thapachini* (lat.). (vii) N.A. (viii) N.A. (ix) N.A. (x) 12.11.1950.

## 2. TREATMENTS :

All combinations of (1), (2) + a control.

(1) 2 sources of N at 60 lb./ac :  $S_1=A/S$  and  $S_2=A/N$ .

(2) 6 times of application of N :  $T_1$ =Full dose at transplanting,  $T_2$ =Full dose 30 days after transplanting,  $T_3$ =Full dose 50 days after transplanting,  $T_4$ = $\frac{1}{2}$  at transplanting and half 30 days after transplanting,  $T_5$ = $\frac{1}{2}$  at transplanting and half 50 days after transplanting, and  $T_6$ =Half 30 days after and Half 50 days after transplanting.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 13. (b) N.A. (iii) 2. (iv) (a)  $14' \times 40'$ . (b)  $10' \times 36'$ . (v) 2' around the net plot. (vi) Yes.

## 4. GENERAL :

(i) Not satisfactory due to lack of irrigation. (ii) No. (iii) Grain yield. (iv) 1950—1951. (b) No. (c) N.A. (v) (a) Tisuihi (Mirzapur), Lucknow and Barabanki. (vi) Nil. (vii) The S.E. is greater than the G.M. on account of the fact that there is great variation between the yield in different plots. Conducted by C.P.

## 5. RESULTS :

(i) 286.0 lb./ac.

(ii) 310.1 lb./ac.

(iii) None of the treatments and their interaction is significant.

(iv) Av. yield of grain in lb./ac.

Control mean=280.0 lb./ac.							
	$T_1$	$T_2$	$T_3$	$T_4$	$T_5$	$T_6$	Mean
$S_1$	342.3	186.7	93.3	404.5	435.6	186.7	274.8
$S_2$	497.8	217.8	124.5	186.7	513.4	248.9	298.2
Mean	420.0	202.2	108.9	295.6	474.5	217.8	286.5

S.E. of marginal mean of N = 89.52 lb./ac.

S.E. of marginal mean of T = 155.05 lb./ac.

S.E. of body of table = 219.26 lb./ac.

Crop :- Paddy.

Site :- Govt. Agri. School Farm, Hawalbagh.

Ref :- U.P. 51(136).

Type :- 'M'.

Object:—To study the effect of time of application of N on growth and yield of Paddy.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) and (c) N.A. (ii) (a) Clay loam. (b) N.A. (iii) 4.5.1951 3 to 4.7.1951. (iv) (a) N.A. (b) Transplanted. (c) —. (d) and (e) N.A. (v) Nil. (vi) *Thapachini* (late). (vii) N.A. (viii) N.A. (ix) N.A. (x) N.A.

## 2. TREATMENTS :

All combinations of (1) and (2) + a control.

(1) 2 sources of N at 60 lb./ac. :  $S_1=A/S$  and  $S_2=A/N$ .

(2) 6 times of application of N :  $T_1$ =Full dose at transplanting,  $T_2$ =Full dose 30 days after transplanting,  $T_3$ =Full dose 50 days after transplanting,  $T_4$ = $\frac{1}{2}$  at transplanting and half 30 days after transplanting,  $T_5$ = $\frac{1}{2}$  at transplanting and half 50 days after transplanting and  $T_6$ =Half 30 days after and Half 50 days after transplanting.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 13. (b) N.A. (iii) 2. (iv) (a)  $14' \times 40'$ . (b)  $10' \times 36'$ . (v) 2' around the net plot. (vi) Yes.

## 4. GENERAL :

(i) Satisfactory. (ii) Nil. (iii) Grain yield. (iv) (a) 1950-1951. (b) [and (c) No. (v) (a) Tisuihi and Lucknow. (b) N.A. (vi) Nil. (vii) Conducted by C.P.

## 5. RESULTS:

- (i) 886.8 lb./ac.  
 (ii) 483.6 lb./ac.  
 (iii) None of the effects and their interaction is significant.  
 (iv) Av. yield of grain in lb./ac.

Control=728.1 lb./ac.

	T <sub>1</sub>	T <sub>2</sub>	T <sub>3</sub>	T <sub>4</sub>	T <sub>5</sub>	T <sub>6</sub>	Mean
S <sub>1</sub>	576.4	879.8	1152.8	273.0	394.4	1577.5	809.0
S <sub>2</sub>	879.8	455.0	1152.8	1152.8	1395.5	910.1	991.0
Mean	728.1	667.4	1152.8	712.9	895.0	1243.8	900.0

S.E. of marginal mean of S = 139.6 lb./ac.

S.E. of marginal mean of T = 241.8 lb./ac.

S.E. of body of table = 342.0 lb./ac.

Crop :- Paddy (*Kharif*).

Ref :- U.P. 48(122).

Site :- Rice Res. Sub-Stn., Kunraghat.

Type :- 'M'.

Object :- To find out the best manure amongst A/S, *Neem* cake, Castor cake, T.C. and F.Y.M. for early broadcast Paddy.

## 1. BASAL CONDITIONS:

- (i) (a) Nil. (b) Gram. (c) Nil. (ii) (a) Sandy loam. (b) Refer soil analysis, Kunraghat. (iii) 21.6.1948.  
 (iv) (a) 1 ploughing with victory plough and 3 ploughings with *desi* plough. (b) By broadcast. (c) 37 seers/ac.  
 (d) No. (e) —. (v) Nil. (vi) N-22 (early). (vii) Irrigated. (viii) Weedings on 31.7.1948 and 23.8.1948.  
 (ix) 43.59°. (x) 17 and 22.10.1948.

## 2. TREATMENTS:

1. A/S at 50 lb./ac. of N.
2. *Neem* cake at 50 lb./ac. of N.
3. Castor cake at 50 lb./ac. of N.
4. T.C. at 50 lb./ac. of N.
5. F.Y.M. at 50 lb./ac. of N.
6. Control.

A/S and Castor cake top dressed on 28.7.1948, *Neem* cake on 1.8.1948, T.C. and F.Y.M. broadcast as basal dressing on 15.6.1948.

## 3. DESIGN:

- (i) R.B.D. (ii) (a) 6. (b) 79' × 66'-9". (iii) 4. (iv) (a) 37' × 21'-3". (b) 35' × 19'-3". (v) 1' around. (vi) Yes.

## 4. GENERAL:

- (i) Treatments 1, 2 and 5 completely lodged in replication II and treatment 1 completely lodged in replication IV. Partial lodging of other treatments. (ii) There had been a slight attack of white-ants in the central plots of replication I *i.e.*, having treatments 1 and 3. (iii) Height, tillering and yield of paddy grain.  
 (iv) (a) 1946-1949. (b) and (c) No. (v) (a) N.A. (b) Nil. (vi) Nil. (vii) Experiment conducted by Assistant Economic Botanist to Govt. of U.P., Nagina.

## 5. RESULTS:

- (i) 907 lb./ac.  
 (ii) 206.3 lb./ac.  
 (iii) Treatment differences are highly significant.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	1492
2.	980
3.	1132
4.	610
5.	688
6.	538
S.E./mean	= 103.2 lb./ac.

Crop :-Paddy (*Kharif*).

Ref :-U.P. 49(230).

Site :-Rice Res. Sub-Stn., Kunraghat.

Type :-'M'.

Object :-To find out the best manure amongst A/S, *Neem* cake, Castor cake, T.C. and F.Y.M. for early broadcast Paddy.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Gram. (c) Nil. (ii) (a) Sandy loam. (b) Refer soil analysis, Kunraghat. (iii) 12.6.1949. (iv) (a) One ploughing with victory plough and 3 with *desi* plough. (b) Broadcast. (c) 37 seers/ac. (d) and (e) N.A. (v) Nil. (vi) N. 22 (early). (vii) Unirrigated. (viii) Weeding on 17.7.1949 and 12.8.1949 and two hoeings. (ix) 47.37°. (x) 5.10.1949.

2. TREATMENTS :

1. A/S at 50 lb./ac. of N.
2. *Neem* cake at 50 lb./ac. of N.
3. Castor cake at 50 lb./ac. of N.
4. T.C. at 50 lb./ac. of N.
5. F.Y.M. at 50 lb./ac. of N.
6. Control.

F.Y.M. and T.C. broadcasted as B.D. on 10.6.1949, *Neem* cake top dressed on 24.7.1949, A/S and Castor cake top dressed on 21.7.1949.

3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) 79' x 66'—9". (iii) 4. (iv) (a) 37' x 21'—3". (b) 35' x 19'—3". (v) 1' around the net plot. (vi) Yes..

4. GENERAL :

(i) Good growth. (ii) A few sandy plots of replication I and III were attacked by white-ants. This affected the germination adversely. About 50% of the plants were destroyed by the white-ants in some plots. (iii) Height, tillering and yield of paddy grain. (iv) (a) 1946—1949. (b) No. (c) Nil. (v) (a) N.A. (b) Nil. (vi) Nil. (vii) Experiment conducted by Assistant Economic Botanist (Paddy) to Govt. of U.P., Nagina.

5. RESULTS :

(i) 408.6 lb./ac.

(ii) 147.6 lb./ac.

(iii) Treatment differences are significant.

(iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	654.4
2.	425.9
3.	509.1
4.	315.9
5.	292.9
6.	253.4
S.E./mean	=73.8 lb./ac.

Crop :-Paddy (*Kharif*).

Ref :-U.P. 48(123).

Site :-Rice Res. Sub-Stn., Kunraghat.

Type :-'M'.

Object :-To test the qualitative merit of A/N as compared to A/S.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Kesari*. (c) Nil. (ii) (a) Medium loam. (b) Refer soil analysis, Kunraghat. (iii) 14.7.1948. (iv) (a) One ploughing by victory plough and 3 ploughings by *desi* plough. (b) Transplanted. (c) to (e) N.A. (v) Nil. (vi) T. 88 (late). (vii) Unirrigated. (viii) Two hoeings by *kassi* and weeding on 12.9.1948. (ix) 44.24°. (x) 27 and 30.11.1948.

2. TREATMENTS :

All combinations of (1) and (2) + one control

(1) 2 sources of N : S<sub>1</sub>=A/N and S<sub>2</sub>=A/S.

(2) 2 levels of N : N<sub>1</sub>=30 and N<sub>2</sub>=60 lb./ac.

Manures top dressed on 27.7.1948.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 6. (iv) (a) 18'×33'. (b) 16'—6"×31'—6". (v) 9" all round the net plot. (vi) Yes.

## 4. GENERAL :

(i) Uniform growth. (ii) A few *gundhi* bugs were found on two plants only at the flowering time. (iii) Height, tillering and yield of paddy grain. (iv) (a) 1947—1949. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) Nil. (vii) Experiment conducted by Assistant Economic Botanist (Paddy) to Govt. of U.P., Nagina.

## 5. RESULTS :

- (i) 1785 lb./ac.  
 (ii) 454.6 lb./ac.  
 (iii) None of the effects is significant.  
 (iv) Av. yield of grain in lb./ac.

Control = 1528 lb./ac.			
	N <sub>1</sub>	N <sub>2</sub>	Mean
S <sub>1</sub>	1722	1934	1828
S <sub>2</sub>	1817	1923	1870
Mean	1770	1928	1849

S.E. of marginal means of S or N = 131.2 lb./ac.

S.E. of body of table = 185.6 lb./ac.

Crop :- Paddy (*Kharif*).

Site :- Rice Res. Stn., Kunraghat.

Ref :- U.P. 49(231).

Type :- 'M'.

Object :—To test the qualitative merits of A/N as compared to A/S.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) (a) Medium loam. (b) Refer soil analysis, Kunraghat. (iii) 16.7.1949. (iv) (a) One ploughing by victory plough and 3 by *desi* plough. (b) Transplanted. (c) N.A. (d) N.A. (e) N.A. (v) Nil. (vi) T-88 (late). (vii) Unirrigated. (viii) 2 hoeings with *kassi*, weedings on 11.8.1949 and 3.9.1949. (ix) 47.53°. (x) 2.12.1949.

## 2. TREATMENTS :

All combinations of (1) and (2) + a control.

(1) 2 sources of N : S<sub>1</sub> = A/N and S<sub>2</sub> = A/S.

(2) 2 levels of N : N<sub>1</sub> = 30 and N<sub>2</sub> = 60 lb./ac.

N top dressed on 25.8.1949.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 6. (iv) (a) 18'×33'. (b) 16'—6"×31'—6". (v) 9" around the net plot. (vi) Yes.

## 4. GENERAL :

(i) Good growth. (ii) Nil. (iii) Height, tillering and yield of paddy grain. (iv) (a) 1947—1949. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) Nil. (vii) Experiment conducted by Assistant Economic Botanist (Paddy) to Govt. of U.P., Nagina.

## 5. RESULTS :

- (i) 1183 lb./ac.  
 (ii) 207.4 lb./ac.  
 (iii) Only control vs others is highly significant.



(iv) Av. yield of grain in lb./ac.

Control=930 lb./ac.

	N <sub>1</sub>	N <sub>2</sub>	Mean
S <sub>1</sub>	1129	1293	1211
S <sub>2</sub>	1271	1320	1296
Mean	1200	1306	1253

S.E. of marginal mean of S or N  
S.E. of body of table

=59.88 lb./ac.  
=84.69 lb./ac.

Crop :- Paddy (*Kharif*).

Ref :- U.P. 49(224).

Site :- Rice Res. Sub-Stn., Kunraghat.

Type :- 'M'.

Object :- To determine the optimum time of application of manure.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Peas. (c) Nil. (ii) (a) Light loam. (b) Refer soil analysis, Kunraghat. (iii) 27 to 31.5.1949/27.1949. (iv) (a) One victory plough and 3 with *desi* plough. (b) Transplanting. (c) to (e) N.A. (v) Nil. (vi) T-136 (early). (vii) Irrigated. (viii) Weeding on 19.8.1949. (ix) 43.58°. (x) 16.9.1949.

## 2. TREATMENTS :

All combinations of (1), (2) and (3) + one control (no manure).

(1) 2 sources of N : S<sub>1</sub>=A/S and S<sub>2</sub>=Castor cake.(2) 2 levels of N : N<sub>1</sub>=30 and N<sub>2</sub>=60 lb./ac.(3) 2 methods of application : M<sub>1</sub>=Castor cake at transplanting and A/S one week after transplanting and M<sub>2</sub> at transplanting and half 3 weeks after transplanting.

Manuring on 2, 9 and 23.7.1949.

## 3. DESIGN :

(i) 2<sup>3</sup> Fact. in R.B.D. (ii) (a) 9. (b) N.A. (iii) 4. (iv) (a) 28'-6" × 18'. (b) 27' × 16'-6". (v) 9' around the net plot. (vi) Yes.

## 4. GENERAL :

(i) Not good. (ii) There was a very severe attack of *gundhi* bugs on the whole field. The attack occurred in the 3rd week of August. Heavy manuring resulted in gappy growth in certain plots and such plots were seriously attacked by *kharif* grass hoppers and bugs. (iii) Height, tillers and yield of paddy grain. (iv) 1949-1951. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) The plot got flooded two days after first manuring. (ii) Expt. conducted by Assistant Economic Botanist (Paddy) to Govt. of U.P., Nagina.

## 5. RESULTS :

(i) 971.5 lb./ac.

(ii) 250.6 lb./ac.

(iii) Main effect of N is highly significant, interaction N × S is significant. Other effects and interactions are not significant.

(iv) Av. yield of grain in lb./ac.

Control=880 lb./ac.

	N <sub>1</sub>	N <sub>2</sub>	Mean	M <sub>1</sub>	M <sub>2</sub>
S <sub>1</sub>	773	1240	1006	953	1059
S <sub>2</sub>	919	1001	960	853	1067
Mean	846	1120	983	903	1063
M <sub>1</sub>	765	1041			
M <sub>2</sub>	927	1199			

S.E. of any marginal mean  
S.E. of body of any table

=62.65 lb./ac.  
=88.61 lb./ac.

Crop :- Paddy (*Kharif*).

Ref :- U.P. 50(286).

Site :- Rice Res. Sub-Stn., Kunraghat.

Type :- 'M'.

Object :- To determine the optimum time of application of manures to Paddy.

## 1. BASAL CONDITIONS:

(i) (a) Nil. (b) Barley and Peas. (c) Nil. (ii) (a) Medium loam. (b) Refer soil analysis, Kunraghat. (iii) 28, 29.6.1950. (iv) (a) One ploughing by victory plough and 3 by *desi* plough. (b) Transplanting. (c) N.A. (d) N.A. (e) N.A. (v) Nil. (vi) T-136 (early). (vii) Unirrigated. (viii) Weeding on 6.8.1950. (ix) 39.92%. (x) 21 to 23.9.1950.

## 2. TREATMENTS:

All combinations of (1), (2), (3) + 4 controls.

(1) 2 levels of N :  $N_1=30$  and  $N_2=60$  lb./ac. of N.(2) 2 sources of N :  $S_1=A/S$  and  $S_2=$ Castor cake.(3) 2 methods of application :  $M_1=$ Castor cake at transplanting and A/S one week after transplanting and  $M_2=$  at transplanting and half 3 weeks after transplanting.

## 3. DESIGN:

(i) R.B.D. (ii) (a) 12. (b) N.A. (iii) 4. (iv) (a)  $42' \times 18'$ . (b)  $40'-6" \times 16'-6"$ . (v)  $9'$  around the net plot. (vi) Yes.

## 4. GENERAL:

(i) Good growth. (ii) No disease was observed. *Gundhi* bugs and grass hoppers both were found in small numbers and hence the damage was also not very serious. (iii) Height, tillering and yield of paddy grain. (iv) (a) 1950—1951. (b) No. (c) Nil. (v) (a) N.A. (b) No. (vi) Nil. (vii) Experiment conducted by Assistant Economic Botanist (Paddy) to Govt. of U.P., Nagina.

## 5. RESULTS:

(i) 1271 lb./ac.

(ii) 240.8 lb./ac.

(iii) Main effects of N and M alone are highly significant.

(iv) Av. yield of grain in lb./ac.

Control = 877 lb./ac.

	$N_1$	$N_2$	Mean	$M_1$	$M_2$
$S_1$	1229	1757	1493	1305	1680
$S_2$	1216	1669	1442	1347	1538
Mean	1222	1713	1468	1326	1609
$M_1$	1052	1601			
$M_2$	1393	1825			

S.E. of any marginal mean

= 60.2 lb./ac.

S.E. of body of any table

= 85.2 lb./ac.

Crop :- Paddy (*Kharif*).

Ref :- U.P. 51(261).

Site :- Rice Res. Sub-Stn., Kunraghat.

Type :- 'M'.

Object :- To determine the optimum time of application of manures to Paddy.

## 1. BASAL CONDITIONS:

(i) (a) Nil. (b) Barley. (c) N.A. (ii) (a) Medium loam. (b) Refer soil analysis, Kunraghat. (iii) 3.7.1951. (iv) (a) One ploughing by victory and 2 by *desi* plough. (b) Transplanting. (c) N.A. (d) N.A. (e) N.A. (v) Nil. (vi) T-136 (early). (vii) Irrigated. (viii) Weeding on 12.8.1951. (ix) 26.27%. (x) 25 to 27.9.1951.

**2. TREATMENTS :**

All combinations of (1), (2), (3) + 4 controls.

- (1) 2 levels of N :  $N_1=30$  and  $N_2=60$  lb./ac. of N.
- (2) 2 sources of N :  $S_1=A/S$  and  $S_2=$ Castor cake.
- (3) 2 methods of application of N :  $M_1=$ Castor cake at transplanting and A/S one week after transplanting and  $M_2=\frac{1}{2}$  at transplanting and half weeks after transplanting.

**3. DESIGN :**

(i) R.B.D. (ii) (a) 12. (b) N.A. (iii) 4. (iv) (a)  $42' \times 18'$ . (b)  $40'-6'' \times 16'-6''$ . (v) 9' left around the net plot. (vi) Yes.

**4. GENERAL :**

(i) Good growth. No lodging. (ii) Grass hoppers and *Gundhi* bugs were found in abundance in weedy plots due to huge growth of weeds. All the pests were soon controlled by taking out weeds. The damage was very nominal. Borer attacked plants were also removed from some of the manured plots. (iii) Height, tillering and yield of paddy grain. (iv) (a) 1950—1951. (b) No. (c) Nil. (v) (a) N.A. (b) Nil. (vi) Nil. (vii) Experiment conducted by Assistant Economic Botanist (Paddy) to Govt. of U.P., Nagina.

**5. RESULTS :**

- (i) 943 lb./ac.
- (ii) 212.6 lb./ac.
- (iii) Main effect of N is highly significant. Main effect of M is significant ; others are not significant.
- (iv) Av. yield of grain in lb./ac.

Control = 668 lb /ac.

	$N_1$	$N_2$	Mean	$M_1$	$M_2$
$S_1$	940	1219	1080	966	1193
$S_2$	928	1232	1080	1031	1129
Mean	934	1226	1080	998	1161
$M_1$	853	1144			
$M_2$	1015	1307			

S.E. of any marginal mean = 53.1 lb./ac.  
S.E. of body of any table = 75.2 lb./ac.

**Crop :- Paddy (Kharif).**

**Ref :- U.P. 50(282).**

**Site :- Rice Res. Sub-Stn., Kunraghat.**

**Type :- 'M'**

**Object :-**To study the cumulative effect of applying A/S over a number of years to the same field with or without F.Y.M. on the yield of Paddy.

**1. BASAL CONDITIONS :**

(i) (a) Nil. (b) Peas. (c) Nil. (ii) (a) Medium loam. (b) Refer soil analysis, Kunraghat. (iii) 23.6.1950. (iv) (a) 1 ploughing by Punjab plough and 3 ploughings by *desi* plough. (b) Broadcast. (c) 37 seers/ac. (d) and (c) Nil. (v) As per treatments. (vi) N-22 (early). (vii) Unirrigated. (viii) Weeding on 14.7.1950 and 14.8.1950. (ix) 39.92". (x) 30.9.1950 and 1.10.1950.

**2. TREATMENTS :**

All combinations of (1) and (2)

- (1) 3 levels of F.Y.M. :  $F_0=0$ ,  $F_1=50$  and  $F_2=100$  lb./ac. of N.
  - (2) 4 levels of N as A/S :  $N_0=0$ ,  $N_1=20$ ,  $N_2=40$  and  $N_3=60$  lb./ac. of N.
- F.Y.M. broadcast on 1.6.1950 as basal dressing. A/S top dressed on 7.7.1950.

**3. DESIGN :**

(i)  $3 \times 4$  Fact. in R.B.D. (ii) (a) 12. (b) N.A. (iii) 4. (iv) (a)  $42' \times 18'$ . (b)  $40' \times 16'$ . (v) 1' around the net plot. (vi) Yes.

## 4. GENERAL :

(i) Good growth. (ii) There was no disease incidence. Nymphs of grass hoppers were observed in the first week of August but soon they were controlled with the help of Hexiclene dust. (iii) Height, tillering and yield of paddy grain. (iv) (a) 1950-1952. (b) and (c) No. (v) (a) N.A. (b) Nil. (vi) Nil. (vii) Experiment conducted by Assistant Economic Botainst (Paddy) to Govt. of U.P, Nagina.

## 5. RESULTS :

- (i) 969 lb./ac.  
 (ii) 102.3 lb./ac.  
 (iii) Main effect of N is highly significant.  
 (iv) Av. yield of grain in lb./ac.

	N <sub>0</sub>	N <sub>1</sub>	N <sub>2</sub>	N <sub>3</sub>	Mean
F <sub>0</sub>	540	831	1015	1302	922
F <sub>1</sub>	680	825	1006	1316	957
F <sub>2</sub>	676	879	1190	1363	1027
Mean	632	845	1070	1327	969

S.E. of marginal mean of F = 25.6 lb./ac.  
 S.E. of marginal mean of N = 29.5 lb./ac.  
 S.E. of body of table = 51.1 lb./ac.

Crop :- Paddy (*Kharif*).

Site :- Rice Res. Sub-Stn., Kunraghat.

Ref :- U P. 51(265).

Type :- 'M'.

Object :—To study the comulative effect of applying A/S over a number of years to the same field with or without F.Y.M. on the yield of Paddy.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) (a) Medium black. (b) Refer soil analysis, Kunraghat. (iii) 16.6.1951. (iv) 1 ploughing with *gujar* and two ploughings with *desi* plough. (b) Broadcast. (c) 37 scers/ac. (d) Nil. (e) —. (v) As per treatments. (vi) N-22 (early). (vii) Unirrigated. (viii) 3 weedings. (ix) 26.27%. (x) 30.9.1951 and 4.10.1951.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 3 levels of F.Y.M. : F<sub>0</sub>=0, F<sub>1</sub>=50 and F<sub>2</sub>=100 lb /ac. of N.

(2) 4 levels of N as A/S : N<sub>0</sub>=0, N<sub>1</sub>=20, N<sub>2</sub>=40 and N<sub>3</sub>=60 lb./ac.

F.Y.M. broadcast on 2.4.5.1951 as basal dressing. A/S top dressed on 12.7.1951.

## 3. DESIGN :

(i) 3×5 Fact. in R.B.D. (ii) (a) 12. (b) N.A. (iii) 4. (iv) (a) 42'×18'. (b) 40'×16'. (v) 1' left around the net plot. (vi) Yes.

## 4. GENERAL :

(i) Good growth. Some of the heavily manured plots were lodged due to rains. Grass hopper and *Gundhi* bugs were noticed in the heavily manured plots. Height, tillering and yield of paddy grain. (iv) (a) 1950—1952. (b) and (c) No. (v) (a) N.A. (b) Nil. (vi) Nil. (vii) Experiment conducted by Assistant Economic Botainst (Paddy) to Govt. of U.P., Nagina.

## 5. RESULTS :

- (i) 892 lb./ac.  
 (ii) 150.4 lb /ac.  
 (iii) Main effect of N is highly significant. Main effect of F and interaction N×F are not significant.

(iv, Av. yield of grain in lb./ac.

	N <sub>0</sub>	N <sub>1</sub>	N <sub>2</sub>	N <sub>3</sub>	Mean
F <sub>0</sub>	543	713	858	1155	817
F <sub>1</sub>	641	831	1067	1163	926
F <sub>2</sub>	757	792	958	1231	935
Mean	647	779	961	1183	892

S.E. of marginal mean of F = 37.6 lb./ac.  
 S.E. of marginal mean of N = 43.4 lb./ac.  
 S.E. of body of table = 75.2 lb./ac.

Crop :- Paddy (*Kharif*).

Ref :- U.P. 52(311).

Site :- Rice Res. Sub-Strn., Kunraghat.

Type :- 'M'.

Object :- To study the cumulative effect of applying A/S over a number of years to the same field with or without F.Y.M. on the yield of Paddy.

## 1. BASAL CONDITIONS :

(i) Nil. (b) Barley. (c) Nil. (ii) (a) Medium loam. (b) Refer soil analysis, Kunraghat. (iii) 28.7.1952.  
 (iv) (a) 2 ploughings by Punjab plough and 3 ploughings by *desi* plough. (b) Broadcast. (c) 37 srs/ac.  
 (d) — (e) —. (v) Nil. (vi) N-22 (early). (vii) Irrigated. (viii) Weeding on 19.8.1952. (ix) 22.78".  
 (x) 10 and 11.10.1952.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 3 levels of F.Y.M. : F<sub>0</sub>=0, F<sub>1</sub>=50 and F<sub>2</sub>=100 lb./ac. of N.(2) 4 levels of N as A/S : N<sub>0</sub>=0, N<sub>1</sub>=20, N<sub>2</sub>=40 and N<sub>3</sub>=60 lb./ac.

F.Y.M. broadcast on 6 and 7.6.1952. as basal dressing. A/S top dressed on 9.8.1952.

## 3. DESIGN :

(i) 3×4 Fact. in R.B.D. (ii) (a) 12. (b) N.A. (iii) 4. (iv) (a) 42'×18'. (b) 40'×16'. (v) 1' around the net plot. (vi) Yes.

## 4. GENERAL :

(i) Good growth; no lodging. (ii) Spotting of leaves in the later stage was noticed. There has been a serious attack of *gundhi* bug. Dusting with gammaxene was done twice as control measure but with no result. (iii) Height, tillering and yield of paddy grain (iv) (a) 19:0—1952. (b) No. (c) Nil. (v) (a) N.A. (b) No. (vi) Low yields due to less rains during the crop period and very limited supply of tubewell water and that too not proper time. (vii) Experiment conducted by Assistant Economic Botanist (Paddy) to Govt. of U.P., Nagina.

## 5. RESULTS :

(i) 45.47 lb./ac.

(ii) 5.05 lb./ac.

(iii) Main effects of F and N are highly significant. Interaction is not significant.

(iv) Av. yield of grain in lb./ac.

	N <sub>0</sub>	N <sub>1</sub>	N <sub>2</sub>	N <sub>3</sub>	Mean
F <sub>0</sub>	21.70	30.80	47.60	67.90	42.00
F <sub>1</sub>	28.70	30.80	49.70	72.10	45.32
F <sub>2</sub>	37.10	30.80	52.15	76.30	49.09
Mean	29.17	30.80	49.82	72.10	45.47

S.E. of marginal mean of N = 1.26 lb./ac.  
 S.E. of marginal mean of F = 1.46 lb./ac.  
 S.E. of body of table = 2.52 lb./ac.

Crop :- Paddy (*Kharif*).

Ref :-U.P. 49(65).

Site :- Crop Physiological Res. Stn., Lucknow.

Type :- 'M'.

Object :- To study the effect of application of N on growth, performance and yield of Paddy.

## 1. BASAL CONDITIONS :

(i) (a) No. (b) Fallow. (c) Nil. (ii) (a) Sandy loam. (b) N.A. (iii) 5.6.1949 and 12 and 14.7.1949. (iv) (a) 4 ploughings by *desi* plough and planking. (b) N.A. (c) N.A. (d) N.A. (e) N.A. (v) Nil. (vi) N-22 (early) (vii) N.A. (viii) Weeding twice. (ix) N.A. (x) 3.10.1949.

## 2. TREATMENTS :

All combinations of (1) and (2) +Control

(1) 2 sources of N at 60 lb./ac. :  $S_1=A/S$  and  $S_2=A/N$ .

(2) 6 time of application of N :  $T_1$ =Full dose at transplanting,  $T_2$ =Full dose 30 days after transplanting,  $T_3$ =Full dose 50 days after transplanting,  $T_4$ = $\frac{1}{2}$  at transplanting and half 30 days after transplanting,  $T_5$ = $\frac{1}{2}$  at transplanting and half 50 days after transplanting,  $T_6$ =half 30 days after and the other half 50 days after transplanting.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 13. (b) N.A. (iii) 3. (iv) 8'×11'. (b) 5'×8'. (v) 1 $\frac{1}{2}$ ' all round the net plot. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) N.A. (iii) Av. height of plants, av. length of ear, av. no. of tillers per plant, grain and *bhusa* yield. (iv) (a) 1949-1951. (b) and (c) No. (v) (a) Barabanki, (b) N.A. (vi) Nil. (vii) Nil.

## 5. RESULTS :

(i) 624.7 lb./ac.

(ii) 87.62 lb./ac.

(iii) Main effect of T and control vs others are highly significant. Others are not significant.

(iv) Av. yield of grain in lb./ac.

Control = 303.4 lb./ac.

	$T_1$	$T_2$	$T_3$	$T_4$	$T_5$	$T_6$	Mean
$S_1$	933.4	863.4	653.4	746.7	466.7	396.5	676.7
$S_2$	863.4	746.7	583.4	723.4	466.7	373.4	626.2
Mean	898.4	805.0	618.4	735.0	466.7	385.0	651.4

S.E. of marginal mean of S = 20.66 lb./ac.

S.E. of marginal mean of T = 35.78 lb./ac.

S.E. of body of table = 50.59 lb./ac.

Crop :-Paddy.

Ref :-U.P. 50(91).

Site :-Crop Physiological Res. Stn., Lucknow.

Type :- 'M'.

Object :- To study the effect of time of application of N on growth, performance and yield of Paddy.

## 1. BASAL CONDITIONS :

(i) (a) Paddy-Wheat. (b) Wheat. (c) N.A. (ii) (a) Sandy loam. (b) N.A. (iii) 3.6.1950/22 and 23.7.1950. (iv) (a) One ploughing by mould board and two by *desi* plough, one by cultivator and planking etc. (b) Transplanting. (c) —. (d) and (e) N.A. (v) T.C. as basal dressing on 1.6.1950. (vi) N. 22 (early). (vii) Irrigated. (viii) Interculture on 21.7.1950. (ix) N.A. (x) 9 10.1950.

## 2. TREATMENTS :

All combinations of (1) and (2) +a control.

(1) 2 sources of N at 60 lb./ac. :  $S_1=A/S$  and  $S_2=A/N$ .

(2) 6 time of application of N :  $T_1$ =Full dose at transplanting,  $T_2$ =Full dose 30 days after transplanting,  $T_3$ =Full dose 50 days after transplanting,  $T_4$ = $\frac{1}{2}$  at transplanting and half 30 days after transplanting,  $T_5$ = $\frac{1}{2}$  at transplanting and half 50 days after transplanting and  $T_6$ =Half 30 days after and the other half 50 days after transplanting.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 13. (b) N.A. (iii) 2. (iv) (a) 34' × 8'. (b) 30' × 6'. (v) 2' × 1'. (vi) Yes.

## 4. GENERAL :

(i) Ordinary. (ii) No. (iii) Grain yield. (iv) (a) 1949—1951. (b) and (c) No. (v) (a) Hawalbagh, Tisui and Barabanki. (b) N.A. (vi) Nil. (vii) Conducted by C.P.

## 5. RESULTS :

(i) 380.7 lb./ac.  
 (ii) 61.44 lb./ac.  
 (iii) Control vs. Others and T are highly significant. Others are not significant.  
 (iv) Av. yield of grain in lb./ac.

		Control = 202.2 lb./ac.						
		T <sub>1</sub>	T <sub>2</sub>	T <sub>3</sub>	T <sub>4</sub>	T <sub>5</sub>	T <sub>6</sub>	Mean
S <sub>1</sub>		622.3	497.8	311.1	404.5	388.9	311.1	422.6
S <sub>2</sub>		544.5	451.2	264.5	357.8	342.3	248.9	368.2
Mean		583.4	474.5	287.8	381.2	365.6	280.0	395.4

S.E. of marginal mean of S = 17.73 lb./ac.

S.E. of marginal mean of T = 30.72 lb./ac.

S.E. of body of table = 43.44 lb./ac.

Crop :- Paddy.

Ref :- U.P. 51(121).

Site :- Crop Physiological Res. Stn., Lucknow.

Type :- 'M'.

Object :- To investigate the effect of time of application of N on the growth, performance and yield of Paddy.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Wheat. (c) N.A. (ii) (a) Sandy loam. (b) N.A. (iii) 12.6.1951/31.7.1951. (iv) (a) Hot weather cultivation. One ploughing by victory plough. Two by cultivator, one by *kudali* and planking etc. (b) Transplanted. (c) —. (d) and (e) N.A. (v) Nil. (vi) T. 136 (early). (vii) Irrigated. (viii) Interculturing on 17.8.1951, 31.8.1951 and 23.9.1951. (ix) N.A. (x) 27.10.1951.

## 2. TREATMENTS :

All combinations of (1) and (2) + a control

(1) 2 sources of N at 60 lb./ac. : S<sub>1</sub> = A/S and S<sub>2</sub> = A/N.

(2) 6 time of application of N : T<sub>1</sub> = Full dose at transplanting, T<sub>2</sub> = Full dose 30 days after transplanting, T<sub>3</sub> = Full dose 50 days after transplanting, T<sub>4</sub> = ½ at transplanting and half 30 days after transplanting, T<sub>5</sub> = ½ at transplanting and half 50 days after transplanting and T<sub>6</sub> = Half 30 days after and the other half 50 days after transplanting.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 13. (b) N.A. (iii) 2. (iv) (a) 18' × 8'. (b) 16' × 6'. (v) 1' around the net plot. (vi) Yes.

## 4. GENERAL :

(i) Crop was very poor. (ii) Nil. (iii) Grain yield. (iv) (a) 1949—1951. (b) and (c) No. (v) (a) Tisui and Hawalbagh. (b) N.A. (vi) Nil. (vii) Conducted by C.P.

## 5. RESULTS :

(i) 477.9 lb./ac.  
 (ii) 62.0 lb./ac.  
 (iii) Control vs. others and main effect of T are highly significant. Others are not significant.

(iv) Av. yield of grain in lb./ac.

Control = 233.4 lb./ac.

	T <sub>1</sub>	T <sub>2</sub>	T <sub>3</sub>	T <sub>4</sub>	T <sub>5</sub>	T <sub>6</sub>	Mean
S <sub>1</sub>	641.7	816.7	641.7	379.2	291.7	262.5	505.6
S <sub>2</sub>	758.4	729.2	583.4	350.0	262.5	262.5	491.0
Mean	700.0	773.0	612.6	364.6	277.1	262.5	498.3

S.E. of marginal mean of S = 17.9 lb./ac.  
 S.E. of marginal mean of T = 31.0 lb./ac.  
 S.E. of body of table = 43.85 lb./ac.

Crop :- Paddy.

Ref :- U.P. 49(66).

Site :- Crop Physiological Res. Stn., Lucknow.

Type :- 'M'.

Object :- To study the effect of time of application of P<sub>2</sub>O<sub>5</sub> on growth, performance and yield of Paddy.

## 1. BASAL CONDITIONS :

(i) (a) No. (b) Nil. (c) Nil. (ii) (a) Sandy loam. (b) N.A. (iii) 5.6.1949/12, 14.7.1949. (iv) (a) Four ploughings by *desi* plough and planking. (b) to (e) N.A. (v) Nil. (vi) N. 22 (early). (vii) N.A. (viii) 2 weedings. (ix) N.A. (x) 3.10.1949.

## 2. TREATMENTS :

All combinations of (1), (2)+a control

(1) 2 sources of P<sub>2</sub>O<sub>5</sub> (at 40 lb./ac.) : S<sub>1</sub>=Super and S<sub>2</sub>=Ammo. Phos.

(2) 6 times of application of P<sub>2</sub>O<sub>5</sub> : T<sub>1</sub>=Full dose at transplanting, T<sub>2</sub>=Full dose 30 days after transplanting, T<sub>3</sub>=Full dose 50 days after transplanting, T<sub>4</sub>= $\frac{1}{2}$  at transplanting and half 30 days after transplanting, T<sub>5</sub>= $\frac{1}{2}$  at transplanting and half 50 days after transplanting, T<sub>6</sub>=Half 30 days after and the other half 50 days after transplanting.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 13. (b) N.A. (iii) 3. (iv) (a) 8' x 11'. (b) 5' x 8'. (v) 1 $\frac{1}{2}$ ' all round the net plot. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) N.A. (iii) Grain yield. (iv) (a) 1949—1951. (b) No. (c) No. (v) (a) Barabanki. (b) N.A. (vi) Nil. (vii) Conducted by C.P.

## 5. RESULTS :

(i) 540.3 lb./ac.

(ii) 124.6 lb./ac.

(iii) Effect of T and control vs others are highly significant. Others are not significant.

(iv) Av. yield of grain in lb./ac.

Control = 280.0 lb./ac.

	T <sub>1</sub>	T <sub>2</sub>	T <sub>3</sub>	T <sub>4</sub>	T <sub>5</sub>	T <sub>6</sub>	Mean
S <sub>1</sub>	653.4	630.1	443.4	513.4	513.4	373.6	521.2
S <sub>2</sub>	770.1	676.7	536.7	583.4	583.4	467.7	602.8
Mean	711.8	653.4	490.0	548.4	548.4	420.0	562.0

S.E. of marginal mean of S = 29.37 lb./ac.  
 S.E. of marginal mean of T = 50.88 lb./ac.  
 S.E. of body of table = 71.93 lb./ac.



Crop :- Paddy.

Ref :- U.P. 50(92).

Site :- Crop Physiological Res. Stn., Lucknow.

Type :- 'M'.

Object :- To study the effect of time of application of  $P_2O_5$  on growth, performance and yield of Paddy.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Potato. (c) N.A. (ii) (a) Sandy loam. (b) N.A. (iii) 3.6.1950/24.7.1950. (iv) (a) 2 ploughings by mould board plough and two by *desi* plough. (b) Transplanting. (c) —. (d) N.A. (e) N.A. (v) T.C. as basal dressing on 23.7.1950. (vi) N. 22 (early). (vii) Irrigated. (viii) Interculturing on 9.8.1950 and 1.9.1950. (ix) N.A. (x) 6.10.1950.

## 2. TREATMENTS :

All combinations of (1) and (2)+a control

(1) 2 sources of  $P_2O_5$  at 40 lb./ac. :  $S_1$ =Super and  $S_2$ =Ammono. Phos.

(2) 6 times of application of N :  $T_1$ =Full dose at transplanting,  $T_2$ =Full dose 30 days after transplanting,  $T_3$ =Full dose 50 days after transplanting,  $T_4$ = $\frac{1}{2}$  at transplanting and half 30 days after transplanting,  $T_5$ = $\frac{1}{2}$  at transplanting and half 50 days after transplanting and  $T_6$ =Half 30 days after and half 50 days after transplanting.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 13. (b) N.A. (iii) 2. (iv) (a) 20' x 11'. (b) 16' x 7'. (v) 2' around the net plot. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Nil. (iii) Grain yield. (iv) (a) 1949—1951. (b) No. ) No. (v) (a) Tisui and Barabanki. (b) N.A. (vi) Nil. (vii) Conducted by C.P.

## 5. RESULTS :

(i) 830.9 lb./ac.

(ii) 106.2 lb./ac.

(iii) Control vs others and main effects of S and T are highly significant. Interaction S x T is not significant.

(iv) Av. yield of grain in lb./ac.

	Control =450.2 lb./ac.						
	$T_1$	$T_2$	$T_3$	$T_4$	$T_5$	$T_6$	Mean
$S_1$	950	950	550	700	600	550	717
$S_2$	1250	1150	800	1100	1050	700	1008
Mean	1100	1050	675	900	825	625	863

S.E. of marginal mean of S =30.6 lb./ac.

S.E. of marginal mean of T =53.1 lb./ac.

S.E. of body of table =75.1 lb./ac.

Crop :- Paddy.

Ref :- U.P. 51(122).

Site :- Crop Physiological Res. Stn., Lucknow.

Type :- 'M'.

Object :- To study the effect of time of application of  $P_2O_5$  on growth, performance and yield of Paddy.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Wheat. (c) N.A. (ii) (a) Sandy loam. (b) N.A. (iii) 12.6.1951/31.7.1951. (iv) (a) Hot weather cultivation. One ploughing by victory plough ; two by cultivator ; one by *kudali* and planking etc. (b) N.A. (c) 12 sr./ac. (d) and (e) N.A. (v) Nil. (vi) T-136 (early). (vii) Irrigated. (viii) Interculturings on 17, 31.8.1951 and 23.9.1951. (ix) N.A. (x) 27.10.1951.

## 2. TREATMENTS :

All combinations of (1) and (2)+a control

(1) 2 sources of  $P_2O_5$  at 40 lb./ac. :  $S_1$ =Super and  $S_2$ =Ammo. Phos.

(2) 6 times of application of N :  $T_1$ =Full dose at transplanting,  $T_2$ =Full dose 30 days after transplanting,  $T_3$ =Full dose 50 days after transplanting,  $T_4$ = $\frac{1}{2}$  at transplanting and half 30 days after transplanting,  $T_5$ = $\frac{1}{2}$  at transplanting and half 50 days after transplanting and  $T_6$ =Half 30 days after and half 50 days after transplanting.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 13. (b) N.A. (iii) 2. (iv) (a) 18'×8'. (b) 12'×6'. (v) 3'×1'. (vi) Yes.

## 4. GENERAL :

(i) Poor. (ii) Nil. (iii) Grain yield. (iv) (a) 1949—1951. (b) and (c) No. (v) (a) Tisui. (b) N.A. (v) Nil. (vii) Conducted by C.P.

## 5. RESULTS :

- (i) 173.5 lb./ac.  
 (ii) 65.91 lb./ac.  
 (iii) Main effects of S and T are significant. Control vs others and interaction S×T are not significant.  
 (iv) Av. yield of grain in lb./ac.

Control=116.7 lb./ac.							
	$T_1$	$T_2$	$T_3$	$T_4$	$T_5$	$T_6$	Mean
$S_1$	233.4	155.6	155.6	116.7	116.7	77.8	142.6
$S_2$	350.0	311.1	233.4	155.6	116.7	116.7	213.9
Mean	291.7	233.4	194.5	136.2	116.7	97.2	178.3

S.E. of marginal mean of S =19.32 lb./ac.  
 S.E. of marginal mean of T =33.45 lb./ac.  
 S.E. of body of table =47.31 lb./ac.

Crop :- Paddy.

Ref :- U.P. 53(34).

Site :- Crop Physiological Res. Stn., Lucknow.

Type :- 'M'.

Object :- To study the effect of varying doses of N in presence of adequate quantities of  $K_2O$ ,  $P_2O_5$ , Calcium, Copper, Zinc and Boron on growth and yield of Paddy.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Nil. (c) Potato. (ii) (a) Sandy loam. (b) N.A. (iii) 12, 13.7.1953. (iv) (a) N.A. (b) Transplanted. (v) —. (d) Plant spacing 9" and row spacing 12". (e) One. (v) Green manuring with *sana* and F.Y.M. at 80 mds./ac. Super at 40 lb./ac. of  $P_2O_5$ , Sulphate of Potash at 48 lb./ac. Gypsum at 32.5 lb./ac., Copper Sulphate at 25.46 lb./ac. and Zinc Sulphate at 1 lb./ac. (vi) T-136. (vii) Irrigated. (viii) Weeding and hoeing on 27.7.1953, 9 and 23.8.1953. (ix) 49.36". (x) 4.10.1953.

## 2. TREATMENTS :

- |                      |                      |
|----------------------|----------------------|
| 1. Control           | 6. 250 lb./ac. of N. |
| 2. 50 lb./ac. of N.  | 7. 300 lb./ac. of N. |
| 3. 100 lb./ac. of N. | 8. 350 lb./ac. of N. |
| 4. 150 lb./ac. of N. | 9. 400 lb./ac. of N. |
| 5. 200 lb./ac. of N. |                      |

## 3. DESIGN :

(i) R.B.D. (ii) (a) 9. (b) N.A. (iii) 4. (iv) (a) 20'×11.5'. (b) 19'×10.5'. (v)  $\frac{1}{2}$ ' around. (vi) Yes.

## 4. GENERAL :

(i) Lodging occurred in plots receiving more than 100 lb./ac. of N. (ii) Nil. (iii) Grain and *bhusa* yield. (iv) (a) No. (b) and (c) No. (v) (a) and (b) Nil. (vi) Nil. (vii) Conducted by C.P.

## 5. RESULTS :

- (i) 860 lb./ac.  
 (ii) 253.4 lb./ac.  
 (iii) Treatment differences are highly significant.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield	Treatment	Av. yield
1.	842	6.	779
2.	1628	7.	716
3.	997	8.	695
4.	730	9.	597
5.	758		

S.E./mean = 126.7 lb./ac.

Crop :- Paddy.

Ref :- U.P. 53(211).

Site :- Crop Physiological Res. Stn., Lucknow.

Type :- 'M'.

Object :—To study the effect of different doses of Calcium in presence of adequate quantities of N, P, K, Copper, Zinc and Boron on growth and yield of Paddy.

## 1. BASAL CONDITIONS :

- (i) (a) No. (b) Potato. (c) N.A. (ii) (a) Sandy loam. (b) N.A. (iii) 1.6.1953/18.7.1953. (iv) (a) N.A. (b) Transplanting. (c) 10 —. (d) and (e) N.A. (v) Green manuring by *sanai* with 40 lb./ac. ( $P_2O_5$ ) F.Y.M. at 80 maunds/ac. A/S at 40 lb./ac of N, Super at 40 lb./ac. of  $P_2O_5$  and Pot. Sulphate at 20 lb./ac. of  $K_2O$  and trace elements-dose N.A. (vi) T-136 (medium-early). (vii) N.A. (viii) N.A. (ix) N.A. (x) 5.10.1953.

## 2. TREATMENTS :

- |                       |                        |
|-----------------------|------------------------|
| 1. Control.           | 6. 100 lb./ac. of CaO. |
| 2. 20 lb./ac. of CaO. | 7. 120 lb./ac. of CaO. |
| 3. 40 lb./ac. of CaO. | 8. 140 lb./ac. of CaO. |
| 4. 60 lb./ac. of CaO. | 9. 160 lb./ac. of CaO. |
| 5. 80 lb./ac. of CaO. |                        |

CaO applied as Gypsum on 18.8.1953.

## 3. DESIGN :

- (i) R.B.D. (ii) (a) 9. (b) N.A. (iii) 3. (iv) (a)  $20' \times 11\frac{1}{2}'$ . (b)  $16 \times 7.5'$ . (v) 2' all round the net plot. (vi) Yes.

## 4. GENERAL :

- (i) N.A. (ii) N.A. (iii) Grain yield. (iv) (a) to (c) N.A. (v) (a) and (b) No. (vi) Nil. (vii) Conducted by C.P.

## 5. RESULTS :

- (i) 1379 lb./ac.  
 (ii) 112.2 lb./ac.  
 (iii) Treatment differences are not significant.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield	Treatment	Av. yield
1.	1275	6.	1368
2.	1399	7.	1368
3.	1462	8.	1337
4.	1555	9.	1244
5.	1399		

S.E./mean = 64.75 lb./ac.

Crop :- Paddy,

Ref :- U.P. 50(126).

Site :- Crop Physiological Res. Stn., Lucknow.

Type :- 'M'.

Object :—To study the response of Paddy to application of Sulphur and Calcium.

**1. BASAL CONDITIONS :**

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) (a) Sandy loam. (b) N.A. (iii) 3.6.1950/9.7.1950. (iv) (a) 2 ploughings by mould board, 2 ploughings by *desi* and planking. (b) Transplanting. (c) (d) and (e) N.A. (v) 50 lb./ac. of N on 4.7.1950. (vi) T-136 (medium early). (viii) Unirrigated. (viii) Interculturings on 13.7.1950, 19.8.1950 and 24.9.1950. (ix) N.A. (x) 6.10.1950.

**2. TREATMENTS :**

All combinations of (1) and (2)

(1) 3 levels of Ca as Gypsum :  $C_0=0$ ,  $C_1=30$  and  $C_2=60$  lb./ac.(2) 3 levels of Sulphur :  $S_0=0$ ,  $S_1=10$  and  $S_2=20$  lb./ac.

Manures applied on 24.7.1950.

**3. DESIGN :**

(i)  $3 \times 3$  Fact. in R.B.D. (ii) (a) 9. (b) N.A. (iii) 2. (iv) (a)  $10' \times 7'$ . (b)  $9' \times 6'$ . (v) Half foot round the net plot. (vi) Yes.

**4. GENERAL :**

(i) N.A. (ii) Length of shoot, length of leaf etc. and grain yield. (iv) (a) to (c) No. (v) (a) and (b) No. (vi) Nil. (vii) Conducted by C.P.

**5. RESULTS :**

(i) 2240 lb./ac.

(ii) 271.3 lb./ac.

(iii) Main effect of C and S are highly significant. Interaction is not significant.

(iv) Av. yield of grain in lb./ac.

	$C_0$	$C_1$	$C_2$	Mean
$S_0$	1451	1503	1814	1589
$S_1$	2177	3265	3524	2989
$S_2$	1451	2280	2695	2142
Mean	1693	2349	2678	2240

S.E. of any marginal mean = 110.8 lb./ac.

S.E. of body of table = 191.9 lb./ac.

Crop :- Paddy.

Ref :- U.P. 52(183).

Site :- Crop Physiological Res. Stn., Lucknow.

Type :- 'M'.

Object :—To study the effect of Boron, Molybdenum, Copper, Sulphur and Zinc in presence of adequate quantities of N, P and K on yield and quality of Paddy.

**1. BASAL CONDITIONS :**

(i) (a) Nil. (b) Potato. (c) N.A. (ii) (a) Sandy loam. (b) N.A. (iii) 18.7.1952/9.8.1952. (iv) (a) N.A. (b) Transplanting. (c) —. (d) Line to line  $6''$ ; plant to plant  $3'$ . (e) N.A. (v) Super at 15 lb./ac. of  $P_2O_5$  to be applied  $6''$  deep in furrows while preparing the field. A/S at 30 lb./ac. of N and Pot. Sulphate at 15 lb./ac. of  $K_2O$  as top dressing at least one week before transplanting. (vi) T-136 (Medium early). (vii) Irrigated. (viii) Weedings and hoeings on 2, 9.8.1952 and 11, 20.8.1952. (ix) N.A. (x) 21.10.1952.

**2. TREATMENTS :**

1. Control.
2. Molybdenum (Mo) as Molybdic acid at 6 lb./ac. of Mo.
3. Copper (Cu) as Copper sulphate at 6 lb./ac. of Cu.
4. Boron (B) as Commercial Borax at 1 lb./ac. of B.
5. Sulphur (S) as Commercial Sulphur at 50 lb./ac. of S.
6. Zinc (Zn) as Zinc Sulphate at 4 lb./ac. of Zn.

A basal dose of A/S at 30 lb./ac. of N+Super at 15 lb./ac. of  $P_2O_5$ +Pot. Sulphate at 15 lb./ac. of  $K_2O$  is supplied to all treatments. Trace elements mixed with fine earth and applied as top dressing 5-6 days before transplanting.

**3. DESIGN :**

- (i) L. Sq. (ii) (a) 6. (b) N.A. (iii) 6. (iv) (a) 26'×10' (b) 24'×8'. (v) 1' around the net plot. (vi) Yes.

**4. GENERAL :**

- (i) N.A. (ii) N.A. (iii) Grain yield. (iv) (a) to (c) No. (v) (a) Atarra, Faizabad, Banaras, Bharari Belatal, Bahraich and Nawabganj. (vi) Nil. (vii) Conducted by C.P.

**5. RESULTS :**

- (i) 610.1 lb./ac.  
 (ii) 215.3 lb./ac.  
 (iii) Treatment differences are not significant.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	515.3
2.	622.3
3.	568.8
4.	763.3
5.	612.6
6.	578.5
S.E./mean	=87.90 lb./ac.

Crop :- Paddy.

Ref :- U.P. 51(88).

Site :- Tarai State Farm (Western Block), Matkota. Type :- 'M'.

Object :- To study the effect of N and P applied alone and in combination on the yield and quality of Paddy crop.

**1. BASAL CONDITIONS :**

- (i) (a) to (c) N.A. (ii) (a) Clayey loam. (b) Refer soil analysis, Matkota. (iii) 27.6.1951. (iv) (a) The field was ploughed and harrowed by tractor. (b) to (e) N.A. (v) Nil. (vi) N.A. (vii) Un-irrigated. (viii) Two weedings. (ix) N.A. (x) End of Nov., 1951

**2. TREATMENTS :**

All combinations of (1) and (2)

- (1) 3 levels of N :  $N_0=0$ ,  $N_1=25$  and  $N_2=50$  lb./ac.

- (2) 3 levels of  $P_2O_5$  :  $P_0=0$ ,  $P_1=50$  and  $P_2=100$  lb./ac.

N as A/S and  $P_2O_5$  as Super. N applied by broadcast and P placed 3"-4" deep in furrows behind *desi* plough and *pata* applied. Manuring on 26.6.1951.

**3. DESIGN :**

- (i) 3×3 Fact. in R.B.D. (ii) (a) 9. (b) N.A. (iii) 6. (iv) (a) N.A. (b) 46'×23'-7". (v) A distance of one to three feet from plot to plot. (vi) Yes.

**4. GENERAL :**

- (i) Not good, below normal due to heavy infection of weeds and late rains. (ii) No. (iii) Grain yield. (iv) (a) 1951-1952. (b) and (c) No. (v) (a) Nawabganj. (b) N.A. (vi) N.A. (vii) Conducted by A.C.

## 5. RESULTS

- (i) 579.3 lb./ac.  
(ii) 176.3 lb./ac.  
(iii) Main effect of N is highly significant, main effect of P and interaction N×P are not significant.  
(iv) Av. yield of grain in lb./ac.

	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>	Mean
N <sub>0</sub>	381.5	508.6	428.3	439.5
N <sub>1</sub>	609.0	575.5	642.5	609.0
N <sub>2</sub>	615.7	609.0	843.2	689.3
Mean	535.4	564.4	638.0	579.5

S.E. of marginal mean of P or N = 41.56 lb./ac.  
S.E. of body of table = 71.98 lb./ac.

Crop :- Paddy (*Kharif*).

Ref :- U.P. 52(1).

Site :- Tarai State Farm (Western Block), Matkota.

Type :- 'M'.

Object :- To study the effect of N and P applied alone and in combination on the yield and quality of Paddy crop.

## 1. BASAL CONDITIONS :

- (i) (a) N.A. (b) N.A. (c) N.A. (ii) (a) Silt loam. (b) Refer soil analysis, Matkota. (iii) 24.6.1952. (iv) (a) Field prepared by tractor ploughing and disc harrowing. (b) Seedlings were sown in rows according to local practices. (c) to (e) N.A. (v) Nil. (vi) N.A. (vii) N.A. (viii) N.A. (ix) N.A. (x) 16.10.1952.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 3 levels of N : N<sub>0</sub>=0, N<sub>1</sub>=25 and N<sub>2</sub>=50 lb./ac.

(2) 3 levels of P<sub>2</sub>O<sub>5</sub> : P<sub>0</sub>=0, P<sub>1</sub>=50 and P<sub>2</sub>=100 lb./ac.

N as A/S and P<sub>2</sub>O<sub>5</sub> as Super. A/S applied by broadcast as surface dressing and Super drilled in furrows 4" deep behind the plough. Date of application 22, 23.6.1952 and 11, 14.7.1952.

## 3. DESIGN :

- (i) 3×3 Fact. in R.B.D. (ii) (a) 9. (b) N.A. (iii) 6. (iv) (a) 22'×49.5'. (b) 22'×49.5'. (v) Nil. (vi) Yes.

## 4. GENERAL:

- (i) Effected by excessive weeds. (ii) Nil. (iii) Grain and straw yield. (iv) (a) 1951—1952. (b) No. (c) No. (v) (a) Kalyanpur, Banaras, Partapgarh, Nawabganj, Bharari and Atarra. (b) N.A. (vi) Nil. (vii) Conducted by A.C.

## 5. RESULTS :

- (i) 1156 lb./ac.  
(ii) 229.2 lb./ac.  
(iii) None of the effects and their interaction is significant.  
(iv) Av. yield of grain in lb./ac.

	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>	Mean
N <sub>0</sub>	1180	1247	1320	1249
N <sub>1</sub>	1273	1087	1000	1120
N <sub>2</sub>	1207	1073	1013	1098
Mean	1220	1136	1111	1156

S.E. of marginal mean of N or P = 54.0 lb./ac.  
S.E. of body of table = 93.6 lb./ac.

Crop :- Paddy.  
Site :- Rice Res. Stn., Nagina.

Ref :- U.P. 49(40).  
Type :- 'M'.

Object :- To study the cumulative effect of applying A/S over a number of years to the same field with or without F.Y.M. on the yield of Paddy.

1. BASAL CONDITIONS :

- (i) (a) Paddy-Fallow. (b) Fallow. (c) Nil. (ii) (a) Silt loam. (b) N.A. (iii) 1.6.1949/8.7.1949. (iv) (a) One deep ploughing and 2 shallow ploughings. (b) to (c) N.A. (v) Nil. (vi) Anjana Pilibhit. (vii) N.A. (viii) Two weedings by hand. (ix) N.A. (x) 3.10.1949.

2. TREATMENTS :

All combinations of (1) and (2)

(1) 3 levels of F.Y.M. :  $F_0=0$ ,  $F_1=50$  and  $F_2=100$  lb./ac. of N

(2) 4 levels of N as A/S :  $N_0=0$ ,  $N_1=20$ ,  $N_2=40$  and  $N_3=60$  lb./ac.

F.Y.M. applied on 7.7.1949 and A/S on 16.7.1949.

3. DESIGN :

- (i)  $3 \times 4$  Fact. in R.B.D. (ii) (a) 12. (b) N.A. (iii) 4. (iv) (a)  $41' \times 15'$ . (b) 1/87.43 ac. (v) N.A. (vi) Yes.

4. GENERAL :

- (i) Good. (ii) Nil. (iii) Grain yield. (iv) (a) 1949—1953. (b) Yes. (c) N.A. (v) (a) No. (b) N.A. (vi) Nil. (vii) Conducted by A. E. B. (P).

5. RESULTS :

- (i) 2337 lb./ac.  
(ii) 241.9 lb./ac.  
(iii) Main effects of N and F are highly significant. Interaction is not significant.  
(iv) Av. yield of grain in lb./ac.

	$N_0$	$N_1$	$N_2$	$N_3$	Mean
$F_0$	1716	2113	2332	2451	2153
$F_1$	2054	2225	2678	2726	2421
$F_2$	1873	2442	2813	2623	2438
Mean	1881	2260	2608	2600	2337

S.E. of marginal mean of F = 60.4 lb./ac.  
S.E. of marginal mean of N = 69.8 lb./ac.  
S.E. of body of table = 120.9 lb./ac.

Crop :- Paddy.  
Site :- Rice Res. Stn., Nagina.

Ref :- U.P. 50(44)/49(40).  
Type :- 'M'.

Object :- To study the cumulative effect of applying A/S over a number of years to the same field with or without F.Y.M. on the yield of Paddy.

1. BASAL CONDITIONS :

- (i) (a) N.A. (b) Paddy followed by fallow. (ii) (a) Light loam. (b) N.A. (iii) 1.6.1950/30.6.1950. (iv) (a) One deep ploughing and 2 shallow ploughings. (b) to (c) N.A. (v) Nil. (vi) Anjana Pilibhit. (vii) N.A. (viii) 2 weedings. (ix) N.A. (x) 2.10.1950.

2. TREATMENTS :

All combinations of (1) and (2)

(1) 3 levels of F.Y.M. :  $F_0=0$ ,  $F_1=50$  and  $F_2=100$  lb./ac. of N.

(2) 4 levels of N as A/S :  $N_0=0$ ,  $N_1=20$ ,  $N_2=40$  and  $N_3=60$  lb./ac.

F.Y.M. applied on 28.6.1950 and A/S on 7.7.1950.

3. DESIGN :

- (i)  $3 \times 4$  Fact. in R.B.D. (ii) (a) 12. (b) N.A. (iii) 4. (iv) (a)  $41' \times 15'$ . (v) 1/81.68 ac. (vi) N.A. (vi) Yes.

## 4. GENERAL:

(i) Normal. (ii) Nil. (iii) Grain yield. (iv) (a) 1949—1953. (b) Yes. (c) N.A. (v) (a) and (b) No. (vi) Nil. (vii) Conducted by A.E.B. (P).

## 5. RESULTS:

(i) 1610 lb./ac.

(ii) 314.7 lb./ac.

(iii) Main effect of N is highly significant. Main effect of F and interaction  $N \times F$  are not significant.

(iv) Av. yield of grain in lb./ac.

	N <sub>0</sub>	N <sub>1</sub>	N <sub>2</sub>	N <sub>3</sub>	Mean
F <sub>0</sub>	1034	1072	1715	2113	1484
F <sub>1</sub>	1178	1558	1615	2111	1616
F <sub>2</sub>	1387	1483	2034	2017	1730
Mean	1199	1371	1788	2080	1610

S.E. of marginal mean of F = 78.68 lb./ac.

S.E. of marginal mean of N = 90.85 lb./ac.

S.E. of body of table = 157.36 lb./ac.

Crop :- Paddy.

Ref :- U.P. 51(47)/50(44)/49(40).

Site :- Rice Res. Stn., Nagina.

Type :- 'M'.

Object :- To study the cumulative effect of application of A/S over a number of years to the same field with and without F.Y.M. on the yield of Paddy.

## 1. BASAL CONDITIONS:

(i) (a) Paddy-Fallow. (b) Fallow. (c) Nil. (ii) (a) Silt loam. (b) N.A. (iii) 13.7.1951. (iv) (a) One deep ploughing and 2 shallow ploughings. (b) to (c) N.A. (v) Nil. (vi) T-138(early). (vii) N.A. (viii) Two weedings by hand. (ix) N.A. (x) 22.10.1951.

## 2. TREATMENTS:

All combinations of (1) and (2)

(1) 3 levels of F.Y.M. : F<sub>0</sub>=0, F<sub>1</sub>=50 and F<sub>2</sub>=100 lb./ac. of N

(2) 4 levels of N as A/S : N<sub>0</sub>=0, N<sub>1</sub>=20, N<sub>2</sub>=40 and N<sub>3</sub>=60 lb./ac. of N.

F.Y.M. applied on 30.6.1951 and A/S on 4.8.1951.

## 3. DESIGN:

(i) 3×4 Fact. in R.B.D. (ii) (a) 12. (b) N.A. (iii) 4. (iv) (a) 41'×15'. (b) 39.5'×13.5'. (v) One row at each end of the plot. (vi) Yes.

## 4. GENERAL:

(i) Poor. (ii) Nil. (iii) Grain yield. (iv) (a) 1949—1953. (b) Yes. (c) N.A. (v) (a) and (b) No. (vi) Nil. (vii) Conducted by A.E.B. (P).

## 5. RESULTS:

(i) 664.4 lb./ac.

(ii) 165.8 lb./ac.

(iii) Main effects of F and N are highly significant. Interaction  $N \times F$  is not significant.

(iv) Av. yield of grain in lb./ac.

	N <sub>0</sub>	N <sub>1</sub>	N <sub>2</sub>	N <sub>3</sub>	Mean
F <sub>0</sub>	399.8	387.5	651.8	722.4	540.4
F <sub>1</sub>	402.1	687.7	545.4	912.8	637.0
F <sub>2</sub>	679.8	749.3	984.5	850.1	815.9
Mean	493.9	608.2	727.2	828.4	664.4

S.E. of marginal mean of F = 41.45 lb./ac.

S.E. of marginal mean of N = 47.86 lb./ac.

S.E. of body of table = 82.88 lb./ac.



Crop :- Paddy.

Ref :- U.P. 52(141)/51(47)/50(44)/49(40).

Site :- Rice Res. Stn., Nagina.

Type :- 'M'.

Object :- To study the cumulative effect of application of A/S over a number of years to the same field with and without F.Y.M. on the yield of Paddy.

## 1. BASAL CONDITIONS:

(i) (a) Paddy—Fallow—Paddy—Fallow—Paddy—Wheat. (b) Wheat. (ii) (a) Silt loam. (b) N.A.  
(iii) 30.6.1952. (iv) (a) 1 deep ploughing and 2 shallow ploughings. (b) to (e) N.A. (v) Nil. (vi) T-138 (early). (vii) N.A. (viii) 2 weedings. (ix) N.A. (x) 10.10.1952.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 3 levels of F.Y.M. :  $F_0=0$ ,  $F_1=50$  and  $F_2=100$  lb./ac. of N.(2) 4 levels of N as A/S :  $N_0=0$ ,  $N_1=20$ ,  $N_2=40$  and  $N_3=60$  lb./ac. of N.

## 3. DESIGN:

(i)  $3 \times 4$  Fact. in R.B.D. (ii) (a) 12. (b) N.A. (iii) 4. (iv) (a)  $41' \times 15'$ . (b)  $39\frac{1}{2}' \times 13\frac{1}{2}'$ . (v) 0.75' border around the plot. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Nil. (iii) Grain yield. (iv) (a) 1949—1953. (b) Yes. (c) N.A. (v) (a) and (b) No. (vi) Nil. (vii) Conducted by A.E.B. (P).

## 5. RESULTS :

(i) 1985 lb./ac.

(ii) 352.8 lb./ac.

(iii) Main effect of F is highly significant. Main effect of N and interaction  $N \times F$  are not significant.

(iv) Av. yield of grain in lb./ac.

	$N_0$	$N_1$	$N_2$	$N_3$	Mean
$F_0$	1466	1761	1732	1699	1664
$F_1$	1738	2148	1999	2214	2025
$F_2$	2275	2120	2356	2318	2267
Mean	1826	2010	2029	2077	1985

S.E. of marginal mean of F = 88.2 lb./ac.

S.E. of marginal mean of N = 101.8 lb./ac.

S.E. of body of table = 176.4 lb./ac.

Crop :- Paddy (*Kharif*).

Ref :- U.P. 53(165)/52(141)/51(47)/50(44)/49(40).

Site :- Rice Res. Stn., Nagina.

Type :- 'M'.

Object :- To study the cumulative effect of application of A/S over a number of years to the same field with and without F.Y.M. on the yield of Paddy.

## 1. BASAL CONDITIONS :

(i) (a) Paddy—Berseem. (b) Fallow. (c) Nil. (ii) (a) Silt loam. (b) N.A. (iii) 6.7.1953. (iv) (a) 1 deep ploughing and 2 shallow ploughings. (b) to (e) N.A. (v) Nil. (vi) T-138 (medium). (vii) Irrigated. (viii) 2 weedings. (ix) 46.28°. (x) 19.10.1953.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 3 levels of F.Y.M. :  $F_0=0$ ,  $F_1=50$  and  $F_2=100$  lb./ac. of N.(2) 4 levels of N as A/S :  $N_0=0$ ,  $N_1=20$ ,  $N_2=40$  and  $N_3=60$  lb./ac. of N.

## 3. DESIGN :

(i)  $3 \times 4$  Fact. in R.B.D. (ii) (a) 12. (b) N.A. (iii) 4. (iv) (a)  $41' \times 15'$ . (b)  $39.5' \times 13.5'$ . (v) .75' border around each experimental plot (vi) Yes.

## 4. GENERAL :

(i) 50 to 75% lodging was noted. (ii) N.A. (iii) Grain yield. (iv) (a) 1949—1953. (b) No. (c) N.A. (v) (a) and (b) Nil. (vi) Nil. (vii) Conducted by A.E.B. (P).

## 5. RESULTS :

- (i) 2213 lb./ac.  
 (ii) 334.4 lb./ac.  
 (iii) Only the interaction  $N \times F$  is significant.  
 (iv) Av. yield of grain in lb./ac.

	N <sub>0</sub>	N <sub>1</sub>	N <sub>2</sub>	N <sub>3</sub>	Mean
F <sub>0</sub>	1760	1916	2226	2377	2070
F <sub>1</sub>	2112	2712	2132	2230	2296
F <sub>2</sub>	2367	2308	2279	2138	2273
Mean	2080	2312	2212	2248	2213

S.E. of marginal mean of N = 96.5 lb./ac.  
 S.E. of marginal mean of F = 83.6 lb./ac.  
 S.E. of body of table = 167.2 lb./ac.

Crop :- Paddy.

Site :- Rice Res. Stn., Nagina.

Ref :- U.P. 50(39).

Type :- 'M'.

Object :—To find out the effect of application of Phosphate to a legume Berseem in *Rabi*, on subsequent Paddy crop.

## 1. BASAL CONDITIONS :

(i) (a) Paddy-Berseem. (b) Berseem. (c) As per treatments. (ii) (a) Silt loam. (b) N.A. (iii) 1.6.1950/30.6.1950. (iv) (a) 1 deep ploughing and 2 shallow ploughings. (b) to (c) N.A. (v) Nil. (vi) *Arjana* Pilibhit. (vii) N.A. (viii) 2 weedings by hand. (ix) N.A. (x) 6.10.1950.

## 2. TREATMENTS :

- No. P<sub>2</sub>O<sub>5</sub>.
- P<sub>2</sub>O<sub>5</sub> at 25 lb./ac.
- P<sub>2</sub>O<sub>5</sub> at 50 lb./ac.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 3. (b) N.A. (iii) 8. (iv) (a) 41' × 15'. (b) 1/87.43 ac. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) Satisfactory. (ii) Nil. (iii) Grain yield. (iv) (a) 1950—1952. (b) Yes. (c) N.A. (v) (a) No. (b) No. (vi) Nil. (vii) Conducted by A.E.B. (P).

## 5. RESULTS :

- (i) 1484 lb./ac.  
 (ii) 327.0 lb./ac.  
 (iii) Treatment differences are not significant.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	1512
2.	1519
3.	1421
S.E./mean	= 115.6 lb./ac.

Crop :- Paddy.  
Site :- Rice Res. Stn., Nagina.

Ref :- U.P. 51(48)/50(39).  
Type :- 'M'.

Object :- To find out the effect of application of Super to a legume Berseem in *Rabi* on subsequent Paddy crop.

1. BASAL CONDITIONS :

(i) (a) Paddy-Berseem. (b) Berseem. (c) As per treatments. (ii) (a) Silt loam. (b) N.A. (iii) 15.7.1951/N.A. (iv) (a) One deep ploughing and 2 shallow ploughings. (b) to (e) N.A. (v) Nil. (vi) T-138 (early). (vii) Irrigated. (viii) 2 weedings by hand. (ix) N.A. (x) 23.10.1951.

2. TREATMENTS :

1. No  $P_2O_5$ .
  2. Super at 50 lb./ac. of  $P_2O_5$
  3. Super at 100 lb./ac. of  $P_2O_5$
- Super was applied 4" deep behind the plough.

3. DESIGN :

(i) R.B.D. (ii) (a) 3. (b) N.A. (iii) 8. (iv) (a) 41' x 15'. (b) 1/87.43 ac. (v) One row at each end of the plot. (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) Nil. (iii) Grain yield. (iv) (a) 1950—1952. (b) Yes. (c) N.A. (v) (a) No. (b) No. (vi) Nil. (vii) Conducted by A.E.B. (P).

5. RESULTS :

- (i) 819.1 lb./ac.  
(ii) 269.9 lb./ac.  
(iii) Treatment differences are not significant.  
(iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	842.2
2.	733.6
3.	881.4
S.E./mean	=95.4 lb./ac.

Crop :- Paddy.  
Site :- Rice Res. Stn., Nagina.

Ref :- U.P. 52(142)/51(48)/50(39).  
Type :- 'M'.

Object :- To find out the effect of application of Super to a legume Berseem in *Rabi* on subsequent Paddy crop.

1. BASAL CONDITIONS :

(i) (a) Paddy-Berseem. (b) Paddy followed by Berseem. (c) As per treatments. (iii) 1.7.1952. (iv) (a) One deep ploughing and 2 shallow ploughings. (b) to (e) N.A. (v) Nil. (vi) T-138 (early). (vii) Irrigated. (viii) Two weedings by hand. (ix) N.A. (x) 13.10.1952.

2. TREATMENTS :

1. No  $P_2O_5$ .
  2.  $P_2O_5$  at 50 lb./ac.
  3.  $P_2O_5$  at 100 lb./ac.
- $P_2O_5$  as Super was applied 4" deep behind the plough.

3. DESIGN :

(i) R.B.D. (ii) (a) 3. (b) N.A. (iii) 8. (iv) (a) 1/70.8 ac. (b) 1/70.8 ac. (v) No. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Grain yield. (iv) (a) 1950—1952. (b) Yes. (c) N.A. (v) (a) and (b) No. (vi) Nil. (vii) Conducted by A.E.B. (P).

## 5. RESULTS :

- (i) 1584 lb./ac.  
(ii) 182.56 lb./ac.  
(iii) Treatment differences are not significant.  
(iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	1537
2.	1523
3.	1692
S.E./mean	= 64.54 lb./ac.

Crop :- Paddy.

Site :- Rice Res. Stn., Nagina.

Ref :- U.P. 49(108).

Type :- 'M'.

Object :—To study the response of Paddy to the application of N, P and calcium.

## 1. BASAL CONDITIONS :

- (i) (a) No. (b) N.A. (c) N.A. (ii) (a) and (b) N.A. (iii) 1.6.1949/14.7.1949. (iv) (a) to (e) N.A. (v) Nil. (vi) T-36 (late). (vii) N.A. (viii) N.A. (ix) N.A. (x) 28.9.1949.

## 2. TREATMENTS :

All combinations of (1), (2) and (3).

- (1) 3 levels of N :  $N_0=0$ ,  $N_1=30$  and  $N_2=60$  lb./ac.  
(2) 3 levels of  $P_2O_5$  :  $P_0=0$ ,  $P_1=20$  and  $P_2=40$  lb./ac.  
(3) 3 levels of Calcium :  $C_0=0$ ,  $C_1=30$  and  $C_2=60$  lb./ac.

N as A/S,  $P_2O_5$  as Super and Ca as Gypsum.

## 3. DESIGN :

- (i)  $3^3$  confounded factorial. (ii) (a) 3 blocks/replication, 9 plots/block. (b) N.A. (iii) 2. (iv) (a)  $18' \times 37'$ . (b)  $12' \times 31'$ . (v) 3' ring round the net plot. (vi) Yes.

## 4. GENERAL :

- (i) N.A. (ii) N.A. (iii) Height of plants, length of leaf, breadth of leaf, no. of tillers, no. of green leaves and grain yield. (v) (a) 1949—1952. (b) and (c) No. (v) (a) Bharari (Jhansi), Nawabganj (Bareilly) and Banaras. (b) N.A. (vi) Nil. (vii) Conducted by C.P.

## 5. RESULTS :

- (i) 1602 lb./ac.  
(ii) 196.59 lb./ac.  
(iii) Main effect of N alone is highly significant. Others are not significant.  
(iv) Av. yield of grain in lb./ac.

	$P_0$	$P_1$	$P_2$	Mean	$C_0$	$C_1$	$C_2$
$N_0$	1194	1485	1364	1348	1349	1399	1294
$N_1$	1595	1585	1600	1593	1490	1655	1635
$N_2$	1941	1926	1730	1866	1856	1821	1921
Mean	1577	1665	1565	1602	1565	1625	1617
$C_0$	1615	1635	1444				
$C_1$	1600	1665	1610				
$C_2$	1515	1695	1640				

S.E. of any marginal mean  
S.E. of body of table

=46.33 lb./ac.  
=80.27 lb./ac.

Crop :- Paddy.  
Site :- Rice Res. Stn., Nagina.

Ref :- U.P. 50(158).  
Type :- 'M'.

Object :- To study the response of Paddy to application of N, P and calcium.

1. BASAL CONDITIONS :

(i) (a) No. (b) Oats. (c) N.A. (ii) (a) Loam. (b) N.A. (iii) 1.6.1950/12.7.1950. (iv) (a) 3 ploughings. (b) Transplanting. (c) —. (d) and (e) N.A. (v) Nil. (vi) Paddy T-36 (early). (vii) Irrigated. (viii) 1 weeding on 7.8.1950. (ix) N.A. (x) 9.10.1950.

2. TREATMENTS :

All combinations of (1), (2) and (3)

(1) 3 levels of N:  $N_0=0$ ,  $N_1=30$  and  $N_2=60$  lb./ac.

(2) 3 levels of  $P_2O_5$ :  $P_0=0$ ,  $P_1=20$  and  $P_2=40$  lb./ac.

(3) 3 levels of Calcium:  $C_0=0$ ,  $C_1=30$  and  $C_2=60$  lb./ac.

N as A/S,  $P_2O_5$  as Super and Ca as Gypsum. Manures applied on 5, 6 and 26.7.1950.

3. DESIGN :

(i)  $3^3$  confd. Fact. (ii) (a) 3 blocks/replication, 9 plots/block. (b) N.A. (iii) 2. (iv) (a)  $18' \times 37'$ . (b)  $12' \times 31'$ . (v) 3' ring round the net plot. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) N.A. (iii) Grain yield. (iv) (a) 1949—1952. (b) and (c) No. (v) (a) and (b) N.A. (vi) Nil. (vii) Conducted by C.P.

5. RESULTS :

(i) 1392 lb./ac.

(ii) 331.05 lb./ac.

(iii) Main effect of N alone is highly significant. others are not significant.

(iv) Av. yield of grain in lb./ac.

	$P_0$	$P_1$	$P_2$	Mean	$C_0$	$C_1$	$C_2$
$N_0$	745	885	1023	884	840	1011	802
$N_1$	1382	1460	1332	1391	1304	1429	1439
$N_2$	2117	1878	1708	1901	1996	1660	2046
Mean	1415	1408	1354	1392	1380	1367	1429
$C_0$	1362	1409	1369				
$C_1$	1394	1382	1324				
$C_2$	1487	1432	1369				

S.E. of any marginal mean = 78.02 lb./ac.

S.E. of body of table = 135.17 lb./ac.

Crop :- Paddy.  
Site :- Rice Res. Stn., Nagina.

Ref :- U.P. 51(164).  
Type :- 'M'.

Object :- To study the response of late Paddy to three levels of N, P and calcium.

1. BASAL CONDITIONS :

(i) (a) Paddy—Oats. (b) Oats. (c) N.A. (ii) (a) Loam. (b) N.A. (iii) First week of June/last week of June. (iv) (a) N.A. (b) Transplanted. (c) —. (d) and (e) N.A. (v) N.A. (vi) T-136 (early). (vii) N.A. (viii) N.A. (ix) N.A. (x) N.A.

**2. TREATMENTS :**

All combinations of (1), (2) and (3)

(1) 3 levels of N :  $N_0=0$ ,  $N_1=30$  and  $N_2=60$  lb./ac.

(2) 3 levels of  $P_2O_5$  :  $P_0=0$ ,  $P_1=20$  and  $P_2=40$  lb./ac.

(3) 3 levels of Calcium :  $C_0=0$ ,  $C_1=30$  and  $C_2=60$  lb./ac.

N as A/S.  $P_2O_5$  as Super and Ca as Gypsum. Manures applied 3 days before transplanting.

**3. DESIGN :**

(i)  $3^3$  partially confounded. (ii) (a) 9 plots/block, 3 blocks/replication. (iii) 2. (iv) (a)  $18' \times 37'$ . (b)  $12' \times 31'$ . (v) 3' around. (vi) Yes.

**4. GENERAL :**

(i) No lodging ; moderate. (ii) Nil. (iii) Grain yield (iv)(a) 1949—1952. (b) and (c) No. (v) (a) Nawabganj (Bareilly), Tissuhi (Mirzapur). Bharari (Jhansi), Atarra (Banda), Pachperwa (Gonda) and Faizabad. (b) N.A. (vi) Nil. Conducted by C.P.

**5. RESULTS :**

(i) 1019 lb./ac.

(ii) 248.85 lb /ac.

(iii) Main effect of N is highly significant. All other effects and interactions are not significant.

(iv) Av. yield of grain in lb./ac.

	$P_0$	$P_1$	$P_2$	Mean	$C_0$	$C_2$	$C_2$
$N_0$	644	724	796	721	730	780	653
$N_1$	886	1046	1085	1005	878	1110	1028
$N_2$	1499	1203	1290	1330	1325	1201	1466
Mean	1009	991	1057	1019	977	1030	1049
$C_0$	921	950	1061				
$C_1$	1136	912	1044				
$C_2$	972	1110	1056				

S.E. of any marginal mean = 58.66 lb./ac.

S.E. of body of table = 101.60 lb./ac.

Crop :- Paddy.

Site :- Rice Res. Stn., Nagina.

Ref :- U.P.52(215).

Type :- 'M'.

Object :- To study the response of late Paddy to 3 levels of N, P and calcium.

**BASAL CONDITIONS :**

(i) (a) Nil. (b) Oats. (c) N.A. (ii) (a) Loam. (b) N.A. (iii) 30.5.1952/10.7.1952. (iv) (a) N.A. (b) Transplanting. (c) —. (d) and (e) N.A. (v) Nil. (vi) T-136 (early). (vii) N.A. (viii) N.A. (ix) N.A. (x) N.A.

**2. TREATMENTS:**

All combinations of (1), (2) and (3)

(1) 3 levels of N :  $N_0=0$ ,  $N_1=30$  and  $N_2=60$  lb./ac.

(2) 3 levels of  $P_2O_5$  :  $P_0=0$ ,  $P_1=20$  and  $P_2=40$  lb./ac.

(3) 3 levels of Calcium :  $C_0=0$ ,  $C_1=30$  and  $C_2=60$  lb./ac.

N as A/S,  $P_2O_5$  as Super and Ca as Gypsum. N applied on 15.7.1952, Gypsum on 9.7.1952 and  $P_2O_5$  on 7.7.1952.

**3. DESIGN :**

(i)  $3^3$  Partially Confd. (ii) (a) 9 plots/block and 3 blocks/replication. (b) N.A. (iii) 2. (iv) (a)  $18' \times 37'$ . (b)  $12' \times 31'$ . (v) 3' around. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) N.A. (iii) Grain yield. (iv) (a) 1949—1952. (b) and (c) No. (v) (a) Nawabganj (Bareilly), Bharari, Faizabad, Tisuihi and Pachperwa (Gonda). (b) N.A. (vi) Nil. (vii) Conducted by C.P.

## 5. RESULTS :

(i) 2679 lb./ac.

(ii) 486.3 lb./ac.

(iii) Main effect of N alone is highly significant. Others are not significant.

(iv) Av. yield of grain in lb./ac.

	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>	Mean	C <sub>0</sub>	C <sub>1</sub>	C <sub>2</sub>
N <sub>0</sub>	1701	2194	2434	2110	2203	2063	2063
N <sub>1</sub>	2645	2437	2745	2609	2093	2750	2984
N <sub>2</sub>	3202	3458	3297	3319	3403	3011	3543
Mean	2516	2696	2825	2679	2566	2608	2863
C <sub>0</sub>	2269	2564	2865				
C <sub>1</sub>	2439	2555	2830				
C <sub>2</sub>	2841	2968	2780				

S.E. of any marginal mean = 114.6 lb./ac.

S.E. of body of table = 198.5 lb./ac.

Crop :- Paddy.

Site :- Rice Res. Stn., Nagina.

Ref :- U.P. 48(28).

Type :- 'M'.

Object :- To determine the residual effect of different doses of T.C. as manure applied in previous years on the yield of Paddy crop.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fallow. (c) No. (ii) (a) Light loam. (b) N.A. (iii) 1.6.1948/5.7.1948. (iv) (a) 1 deep ploughing and 2 shallow ploughings. (b) Transplanting. (c) —. (d) and (e) N.A. (v) Nil. (vi) T-21. (vii) N.A. (viii) 2 weedings. (ix) N.A. (x) 15.10.1948.

## 2. TREATMENTS :

1. Control.

2. T.C. at 50 lb./ac. of N.

3. T.C. at 100 lb./ac. of N.

4. T.C. at 150 lb./ac. of N.

Manures applied last year. No manure was applied this year.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 6. (iv) (a) 41' × 18'. (b) 1/76.81 ac. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) Normal. No lodging. (ii) Nil. (iii) Grain yield. (iv) (a) 1945—1948. (b) Yes. (c) N.A. (v) (a) and (b) No. (vi) Nil. (vii) Conducted by A.E.B. (P).

## 5. RESULTS :

(i) 1566 lb./ac.

(ii) 243.0 lb./ac.

(iii) Treatment differences are not significant.

(iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	1472
2.	1723
3.	1534
4.	1533
S.E./mean	= 99.22 lb./ac.

Crop :- Paddy (*Kharif*).

Ref :- U.P. 53(166).

Site :- Rice Res. Stn., Nagina.

Type :- 'M'.

Object :—To find out the most economic dose of N in the form of A/S.

1. BASAL CONDITIONS :

(i) (a) Paddy. (b) Berseem. (c) No. (ii) (a) Silt loam. (b) N.A. (iii) 6.7.1953. (iv) (a) One deep ploughing, 2 shallow ploughings. (b) to (c) N.A. (v) Nil. (vi) T-138 (medium). (vii) Irrigated. (viii) 2 weedings. (ix) 46.28". (x) 13.10.1953.

2. TREATMENTS :

1. No manure.
  2. A/S at 30 lb./ac. of N.
  3. A/S at 60 lb./ac. of N.
  4. A/S at 90 lb./ac. of N.
  5. A/S at 120 lb./ac. of N.
  6. A/S at 150 lb./ac. of N.
- 1st dose applied on 29.7.1953 and 2nd dose applied on 29.8.1953.

3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) 41' x 15'. (b) 1/81.35th ac. (v) 1' border around each experimental plot. (vi) Yes.

4. GENERAL :

(i) Poor ; 50 to 75% crop lodged in different plots. (ii) Not recorded. (iii) Grain yield. (iv) (a) No. (b) No. (c) No. (v) (a) and (b) No. (vi) Treatment no. 5 (A/S at 120 lb./ac.) was missing in all the four replicates and so it was totally eliminated while analysis was done. (vii) Conducted by A.E.B.(P).

5. RESULTS :

- (i) 2433 lb./ac.
- (ii) 367.4 lb./ac.
- (iii) Treatment differences are not significant.
- (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	2028
2.	2169
3.	2595
4.	2678
5.	—
6.	2694
S.E./mean	= 183.7 lb./ac.

Crop :- Paddy.

Ref :- U.P. 52(143).

Site :- Rice Res. Stn., Nagina.

Type :- 'M'.

Object :—To study the effect of A/S/N in comparison with A/S on the yield of Paddy.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Oats. (c) No. (ii) (a) Silt loam. (b) N.A. (iii) Transplanting on 1.7.1952. (iv) (a) One deep ploughing and 2 shallow ploughings. (b) Transplanting. (c) —. (d) & (e) N.A. (v) Nil. (vi) T-138. (vii) Irrigated. (viii) 2 weedings by hand. (ix) N.A. (x) 6.10.1952.

2. TREATMENTS :

All combinations of (1) and (2) + a Control.

- (1) 2 sources of N :  $S_1 = A/S$  and  $S_2 = A/S/N$ .
- (2) 3 levels of N :  $N_1 = 30$ ,  $N_2 = 60$  and  $N_3 = 90$  lb./ac.

$N_1$  applied one week after transplantation ;  $N_2$  applied one to three weeks after transplanting and  $N_3$  applied one, three and 5 weeks after transplantation.

3. DESIGN :

(i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 6. (iv) (a) 55' x 15'. (b) 1/58.34th ac. (v) No. of lines/plot = 23 ; no. of lines/plot = 21 at harvest. (vi) Yes.



**4 GENERAL :**

(i) Good. (ii) Nil. (iii) Grain yield. (iv) (a) No. (b) No. (c) No. (v) (a) No. (b) No. (vi) Nil. (vii) Conducted by A.E.B. (P).

**5. RESULTS :**

- (i) 2214 lb./ac.  
 (ii) 274.40 lb./ac.  
 (iii) Main effect of N and control vs. others are highly significant. Main effect of S is significant. Interaction N×S is not significant.  
 (iv) Av. yield of grain in lb./ac.

	Control =1488 lb./ac.		
	S <sub>1</sub>	S <sub>2</sub>	Mean
N <sub>1</sub>	1829	1775	1802
N <sub>2</sub>	2342	2201	2272
N <sub>3</sub>	3127	2734	2930
Mean	2433	2237	2335

S.E. of marginal mean of N = 79.21 lb./ac.

S.E. of marginal mean of S = 64.68 lb./ac.

S.E. of body of table =112.02 lb./ac.

**Crop :- Paddy.**

**Site :- Rice Res. Stn., Nagina.**

**Ref :- U.P. 51(49).**

**Type :- 'M'.**

**Object :-**To study the effect of C/N in comparison with A/S on the yield of Paddy crop.

**1. BASAL CONDITIONS :**

(i) (a) N.A. (b) Berseem and fallow. (c) Nil. (ii) (a) Light loam. (b) N.A. (iii) 31.5.1951/14.7.1951.  
 (iv) (a) N.A. (b) Transplanting. (c) —. (d) & (e) N.A. (v) Nil. (vi) T-137. (vii) Irrigated. (viii) 2 weedings.  
 (ix) N.A. (x) 24.10.1951.

**2. TREATMENTS :**

All combinations of (1) and (2) + a control.

(1) 2 sources of N : S<sub>1</sub>=A/S and S<sub>2</sub>=C/N.

(2) 3 levels of N : N<sub>1</sub>=20, N<sub>2</sub>=40 and N<sub>3</sub>=60 lb./ac.

C/N and A/S applied on 4.8.1951.

**3. DESIGN :**

(i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 6. (iv) (a) 55'×15'. (b) 53'×13'. (v) One row at each end of the plot.  
 (vi) Yes.

**4. GENERAL :**

(i) Normal. (ii) Nil. (iii) Grain yield. (iv) (a) No. (b) and (c) No. (v) (a) and (b) No. (vi) Nil.  
 (vii) Conducted by A.E.B. (P).

**5. RESULTS :**

- (i) 990 lb./ac.  
 (ii) 152.3 lb./ac.  
 (iii) Control vs. others and main effect of N are highly significant. Main effect of S and interaction S×N are not significant.

(iv) Av. yield of grain in lb./ac.

Control=670 lb./ac.			
	S <sub>1</sub>	S <sub>2</sub>	Mean
N <sub>1</sub>	766	880	823
N <sub>2</sub>	1024	1091	1057
N <sub>3</sub>	1271	1228	1249
Mean	1020	1066	1043

S.E. of marginal mean of N =43.97 lb./ac.

S.E. of marginal mean of S =35.91 lb./ac.

S.E. of body of table =62.18 lb./ac.

Crop :- Paddy.

Ref :- U.P. 48(30).

Site :- Rice Res. Stn., Nagina.

Type :- 'M'.

Object :- To test efficacy of different sources of compost and its manurial value on Paddy.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) Fallow. (c) Nil. (ii) (a) Light loam. (b) N.A. (iii) 1.6.1948/9.7.1948. (iv) (a) One deep plough and 2 shallow ploughing. (b) Transplanting. (c) —. (d) & (e) N.A. (v) Nil. (vi) T-21 (medium-early). (vii) N.A. (viii) 2 weedings. (ix) N.A. (x) 16.10.1948.

## 2. TREATMENTS :

1. Control.
2. Maya Das compost at 50 lb./ac. of N.
3. Indore compost at 50 lb./ac. of N.
4. Acharya's compost at 50 lb./ac. of N.
5. T.C. at 50 lb./ac. of N.
6. A/S at 50 lb./ac. of N.

Manuring of treatments 2, 3, 4 and 5 on 9.7.1948 and treatment 6 on 19.7.1948.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 5. (iv) (a) 33'×18'. (b) 1/92.64th ac. (v) N.A. (vi) Yes.

## GENERAL :

(i) No lodging. Normal. (ii) Nil. (iii) Grain yield. (iv) (a) 1945—1948. (b) and (c) No. (v) (a) and (b) N.A. (vi) Nil. (vii) Conducted by A.E.B. (P).

## 5. RESULTS :

- (i) 2160 lb./ac.
- (ii) 455.8 lb./ac.
- (iii) Treatment differences are significant.
- (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	1645
2.	2477
3.	2206
4.	2388
5.	2418
6.	1827
S.E./mean	=203.9 lb./ac.

Crop :- Paddy.

Ref :- U.P. 48(27).

Site :- Rice Res. Stn., Nagina.

Type :- 'M'.

Object :- To test the comparative merits of A/S and A/N on the yield of Paddy.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) (a) Light loam. (b) N.A. (iii) 1.6.1948/5.7.1948. (iv) (a) 1 deep ploughing and 2 shallow ploughings. (b) Transplanting. (c) —. (d) & (e) N.A. (v) Nil. (vi) Anjana Pilibhit. (vii) N.A. (viii) 2 weedings. (ix) N.A. (x) 11.10.1948.

## 2. TREATMENTS :

All combinations of (1) and (2) + a control.

(1) 2 sources of N :  $S_1 = A/S$  and  $S_2 = A/N$ .(2) 2 levels of N :  $N_1 = 30$  and  $N_2 = 60$  lb./ac.

Manuring on 9.8.1948.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 6. (iv) (a)  $33' \times 18'$ . (b) 1/92.63th ac. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) No lodging. Normal. (ii) Nil. (iii) Grain yield. (iv) (a) 1946—1948. (b) and (c) No. (v) (a) and (b) No. (vi) Nil. (vii) Conducted by A.E.B. (P).

## 5. RESULTS :

(i) 1978 lb./ac.

(ii) 306.0 lb./ac.

(iii) Only control vs. others is highly significant. Others are not significant.

(iv) Av. yield of grain in lb./ac.

Control = 1342 lb./ac.

	$S_1$	$S_2$	Mean
$N_1$	2177	1961	2069
$N_2$	2257	2152	2204
Mean	2217	2056	2137

S.E. of marginal mean of N or S = 88.3 lb./ac.

S.E. of body of table = 124.9 lb./ac.

Crop :- Paddy.

Ref :- U.P. 49(43).

Site :- Rice Res. Stn., Nagina.

Type :- 'M'.

Object :- To study the manurial value of coconut cake on Paddy.

## 1. BASAL CONDITIONS :

(i) (a) Paddy—Oats. (b) Oats. (c) Nil. (ii) (a) Silt loam. (b) N.A. (iii) 8.6.1949/2.8.1949. (iv) (a) 1 deep ploughing and 2 shallow ploughings. (b) Transplanting. (c) —. (d) & (e) N.A. (v) Nil. (vi) T-17 (late). (vii) N.A. (viii) 2 weedings by hand. (ix) N.A. (x) 6.12.1949.

## 2. TREATMENTS :

1. No manure.

2. Coconut cake at 25 lb./ac. of N.

3. Coconut cake at 50 lb./ac. of N.

4. Coconut cake at 75 lb./ac. of N.

5. Coconut cake at 100 lb./ac. of N.

Manuring on 15.7.1949.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 6. (iv) (a) 1/73.3th ac. (b) 1/59.0th ac. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Nil. (iii) Grain yield. (iv) (a) 1949—1950. (b) Yes. (c) N.A. (v) (a) No. (b) N.A. (vi) Nil. (vii) Conducted by A.E.B. (P).

## 5. RESULTS :

- (i) 1721 lb./ac.  
 (ii) 144.5 lb./ac.  
 (iii) Treatment differences are significant.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	1548
2.	1723
3.	1747
4.	1856
5.	1729
S.E./mean	= 58.98 lb./ac.

Crop :- Paddy.

Site :- Rice Res. Stn, Nagina.

Ref :- U.P. 50(41)/49(43).

Type :- 'M'.

Object :- To study the manurial value of coconut cake on Paddy.

## 1. BASAL CONDITIONS :

(i) (a) Paddy-Oats. (b) Paddy followed by oats. (c) Nil. (ii) (a) Silt loam. (b) N.A. (iii) 10.6.1950/15.7.1950. (iv) (a) One deep ploughing and 2 shallow ploughings. (b) Transplanting. (c) —. (d) & (e) N.A. (v) Nil. (vi) T-17 (late). (vii) N.A. (viii) 2 weedings by hand. (ix) N.A. (x) 6.12.1950.

## 2. TREATMENTS :

1. No manure.
  2. Coconut cake at 25 lb./ac. of N.
  3. Coconut cake at 50 lb./ac. of N.
  4. Coconut cake at 75 lb./ac. of N.
  5. Coconut cake at 100 lb./ac. of N.
- Manuring on 15, 16.6.1950.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 6. (iv) (a) 33'×18'. (b) 1/92.64th ac. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Nil. (iii) Grain yield. (iv) (a) 1949—1950. (b) Yes. (c) N.A. (v) (a) No. (b) No. (vi) Nil. (vii) Conducted by A.E.B. (P).

## 5. RESULTS :

- (i) 1984 lb./ac.  
 (ii) 233.0 lb./ac.  
 (iii) Treatment differences are highly significant.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	1435
2.	1836
3.	2019
4.	2438
5.	2194
S.E./mean	= 95.1 lb./ac.

Crop :- Paddy.

Ref :- U.P. 51(45).

Site :- Rice Res. Stn., Nagina.

Type :- 'M'.

Object :- To find out the response of Paddy to application of super singly or in combination with compost and A/S.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Wheat. (c) N.A. (ii) (a) Silt loam. (b) N.A. (iii) 31.5.1951/14, 15.7.1951. (iv) (a) One deep ploughing and 2 shallow ploughing. (b) Transplanting. (c) — (d) N.A. (e) N.A. (v) Nil. (vi) T-138 (early). (vii) Irrigated. (viii) 2 weedings by hand. (ix) N.A. (x) 29.10.1951.

## 2. TREATMENTS :

All combinations of (1) and (2) + a selective treatment.

(1) 3 sources of N:  $S_0$  = No manure,  $S_1$  = 50 lb./ac. of N as A/S and  $S_2$  = 50 lb./ac. of N as compost.

(2) 2 levels of  $P_2O_5$ :  $P_0$  = 0 and  $P_1$  = 40 lb./ac. of  $P_2O_5$  as Super.

Selective treatment = A/S at 25 lb./ac. of N + compost at 25 lb./ac. of N + Super at 40 lb./ac. of  $P_2O_5$ . Compost applied on 2.7.1951, Super on 14.7.1951 and A/S on 6.8.1951.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 6. (iv) (a) 55' x 15'. (b) 1/58.34th ac. (v) One row at each end of the plot. (vi) Yes.

## 4. GENERAL :

(i) Poor. (ii) N.A. (iii) Grain yield. (iv) (a) 1951-1953. (b) Yes. (c) N.A. (v) (a) No. (b) No. (vi) Nil. (vii) Conducted by A.E.B. (P).

## 5. RESULTS :

(i) 653.8 lb./ac.

(ii) 146.9 lb./ac.

(iii) Main effect of S is highly significant; interaction  $S \times P$  is significant. Main effect of P and selective treatment vs others are not significant.

(iv) Av. yield of grain in lb./ac.

Selective treatment = 682.6 lb./ac.

	$P_0$	$P_1$	Mean
$S_0$	490.1	400.6	445.4
$S_1$	912.0	763.3	837.6
$S_2$	588.3	739.9	664.1
Mean	663.5	634.6	649.0

S.E. of marginal mean of S = 42.41 lb./ac.

S.E. of marginal mean of P = 34.63 lb./ac.

S.E. of body of table = 59.97 lb./ac.

S.E. of selective treatment = 59.97 lb./ac.

Crop :- Paddy.

Ref :- U.P. 52(145)/51(45)

Site :- Rice Res. Stn. Nagina.

Type :- 'M'

Object :- To find out the response of Paddy to application of super singly or in combination with compost and A/S.

## 1. BASAL CONDITIONS :

(i) (a) Paddy—Berseem—Paddy—Oats. (b) Oats. (c) Nil. (ii) (a) Silt Loam. (b) N.A. (iii) Transplanting on 2.7.1952. (iv) (a) One deep ploughing and 2 shallow ploughings. (b) Transplanting (c) —. (d) & (e) N.A. (v) Nil. (vi) T. 138. (early). (vii) N.A. (viii) 2 weedings by hand. (ix) N.A. (x) 4.10.1952.

**2. TREATMENTS :**

All combinations of (1) and (2) + a selective treatment.

(1) 3 sources of N :  $S_0$ =No manure,  $S_1$ =50 lb./ac. of N as A/S and  $S_2$ =50 lb./ac. of N as compost.

(2) 2 levels of  $P_2O_5$  :  $P_0$ =0 and  $P_1$ =40 lb./ac. of  $P_2O_5$  as Super.

Selective treatment=A/S at 25 lb./ac. of N + Compost at 25 lb./ac. of N + Super at 40 lb./ac. of  $P_2O_5$ .

**3. DESIGN :**

(i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 6. (iv) (a) 1/52.8th ac. (b) 1/58.34th ac. (v) N.A. (vi) Yes.

**4. GENERAL :**

(i) Good. (ii) Nil. (iii) Yield of grain. (iv) (a) 1951-1953. (b) yes. (c) N.A. (v) (a), (b) No. (vi) Nil. (vii) Conducted by A.E. B(P).

**5. RESULTS :**

(i) 2039 lb./ac.

(ii) 276.7 lb./ac.

(iii) Main effect of S is highly significant, others are not significant.

(iv) Av. yield of grain in lb /ac.

Selective treatment=2218 lb./ac.

	$P_0$	$P_1$	Mean
$S_0$	1798	1808	1893
$S_1$	2259	2309	2284
$S_2$	1987	1893	1940
Mean	2015	2003	2009

S.E. of marginal mean of S = 79.87 lb./ac.

S.E. of marginal mean of P = 65.22 lb./ac.

S.E. of body of table = 112.95 lb./ac.

S.E. of selective treatment = 112.95 lb./ac.

Crop :- Paddy (*Kharif*).

Ref. :- U.P. 53(167)/52(145)/51(45)

Site :- Rice Res. Stn., Nagina

Type :- 'M'

Object :- To find out the response of Paddy to application of super singly or in combination with compost and A/S.

**1. BASAL CONDITIONS :**

(i) (a) Paddy-Berseem. (b) Berseem. (c) Nil. (ii) (a) Silt loam. (b) N.A. (iii) 14.7.1953. (iv) (a) One deep ploughing and 2 shallow ploughings. (b) to (e) N.A. (v) Nil. (vi) T-138 (medium). (vii) Irrigated (viii) 2 weedings. (ix) 46.28°. (x) 23.10.1953.

**2. TREATMENTS :**

All combinations of (1) and (2) + a selective treatment.

(1) 3 sources of N :  $S_0$ =no manure,  $S_1$ =50 lb./ac. of N as A/S and  $S_2$ =50 lb./ac. of N as compost.

(2) 2 levels of  $P_2O_5$  :  $P_0$ =0 and  $P_1$ =40 lb./ac. of  $P_2O_5$  as super.

Selective treatment=A/S at 25 lb./ac. of N + compost at 25 lb./ac. of N + super at 40 lb./ac. of  $P_2O_5$ .

**3. DESIGN :**

(i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 6. (iv) (a) 55'x15'. (b) 1/58.34th ac. (v) 1' border around each experimental plot. (vi) Yes.

**4. GENERAL :**

(i) Good ; no lodging. (ii) Not recorded. (iii) Nil. (iv) (a) 1951 to 1953. (b) Yes. (c) N.A. (v) (a), (b) Nil. (vi) Nil. (vii) Conducted by A.E.B.(P).

**5. RESULTS :**

(i) 1314 lb./ac.

(ii) 2770 lb./ac.

(iii) None of the effects is significant.

(iv) Av. yield of grain in lb./ac.

Selective treatment = 1152 lb./ac.

	P <sub>0</sub>	P <sub>1</sub>	Mean
S <sub>0</sub>	1384	1294	1339
S <sub>1</sub>	1155	1547	1351
S <sub>2</sub>	1331	1332	1332
Mean	1290	1391	1341

S.E. of marginal mean of S = 79.9 lb./ac.  
 S.E. of marginal mean of P = 65.3 lb./ac.  
 S.E. of body of table = 113.1 lb./ac.  
 S.E. of selective treatment = 113.1 lb./ac.

Crop :- Paddy.

Site :- Regional Res. Stn., Nawabganj.

Ref :- U.P. 49(116).

Type :- 'M'.

Object :- To study the response of Paddy to three levels of N, P and calcium (Ca).

## 1. BASAL CONDITIONS:

(i) (a) Nil. (b) Gram. (c) N.A. (ii) (a) N.A. (b) N.A. (iii) 12.5.1949/16, 17.6.1949. (iv) (a) 2 ploughings. (b) Transplanting. (c) — (d) and (e) N.A. (v) Nil. (vi) T-136. (vii) Irrigated. (viii) 1 weeding on 5.8.1949. (ix) N.A. (x) 8.9.1949.

## 2. TREATMENTS:

All combinations of (1), (2) and (3)

(1) 3 levels of N : N<sub>0</sub>=0, N<sub>1</sub>=30 and N<sub>2</sub>=60 lb./ac.(2) 3 levels of P<sub>2</sub>O<sub>5</sub> : P<sub>0</sub>=0, P<sub>1</sub>=20 and P<sub>2</sub>=40 lb./ac.(3) 3 levels of Calcium : C<sub>0</sub>=0, C<sub>1</sub>=30 and C<sub>2</sub>=60 lb./ac.

N as A/S, P<sub>2</sub>O<sub>5</sub> as Super and Ca as Gypsum. N applied on 23.6.1949, P<sub>2</sub>O<sub>5</sub> on 14.6.1949 and 25.7.1949 and Ca on 14.6.1949.

## 3. DESIGN :

(i) 3<sup>3</sup> Confounded Fact. (ii) (a) 3 blocks/replication, 9 plots/block. (b) N.A. (iii) 2. (iv) (a) 18'×42'. (b) 12'×36'. (v) 3' ring round the net plot. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) N.A. (iii) Ht. of plants, no. of tillers, no. of green leaves, grain yield and straw yield. (iv) (a) 1949—1953. (b) and (c) No. (v) (a) Bharari (Jhansi), Nagina (Bijnor) and Banaras. (b) N.A. (vi) Nil. (vii) Conducted by C.P.

## 5. RESULTS :

(i) 1118 lb./ac.  
 (ii) 254.4 lb./ac.  
 (iii) None of the effects is significant.  
 (iv) Av. yield of grain in lb./ac.

	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>	Mean	C <sub>0</sub>	C <sub>1</sub>	C <sub>2</sub>
N <sub>0</sub>	1078	1032	1058	1056	1082	1032	1054
N <sub>1</sub>	1153	1039	1158	1117	1125	1082	1142
N <sub>2</sub>	1168	1108	1268	1181	1216	1214	1114
Mean	1133	1060	1161	1118	1141	1109	1103
C <sub>0</sub>	1062	1097	1263				
C <sub>1</sub>	1188	952	1188				
C <sub>2</sub>	1149	1129	1032				

S.E. of any marginal mean = 60.0 lb./ac.  
 S.E. of body of table = 104.0 lb./ac.

Crop :- Paddy.

Ref :- U.P. 50(167).

Site :- Regional Res. Stn., Nawabganj.

Type :- 'M'.

Object :- To study the response of Paddy to three levels of N, P and calcium (Ca).

## 1. BASAL CONDITIONS :

(i) (a) Paddy—Berseem. (b) Berseem. (c) Nil. (ii) (a) N.A. (b) N.A. (iii) 6.5.1950/18.6.1950. (iv) (a) Ploughing, turn-wrest plough on 23,24.5.1950 and Meston plough on 29 and 30.5.1950 (b) Transplanting. (c) —. (d) and (e) N.A. (v) Nil. (vi) CH-4 (early). (vii), Irrigated. (viii) Interculture on 19.8.1950. (ix) N.A. (x) 27.9.1950.

## 2. TREATMENTS :

All combinations of (1), (2) and (3)

(1) 3 levels of N :  $N_0=0$ ,  $N_1=30$  and  $N_2=60$  lb./ac.(2) 3 levels of  $P_2O_5$  :  $P_0=0$ ,  $P_1=20$  and  $P_2=40$  lb./ac.(3) 3 levels of Calcium :  $C_0=0$ ,  $C_1=30$  and  $C_2=60$  lb./ac.N as A/S,  $P_2O_5$  as Super and Ca as Gypsum. N applied on 15.6.1950, Super on 15.6.1950 and Ca on 17.6.1950.

## 3. DESIGN :

(i)  $3^3$  Partially confd. (ii) (a) 3 blocks/replication, 9 plots/block. (b) N.A. (iii) 2. (iv) (a)  $18' \times 42'$ . (b)  $12' \times 36'$ . (v) 3' ring round the net plot. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) N.A. (iii) Grain yield. (iv) (a) 1949—1953. (b) and (c) No. (v) (a) Bharari, Nagina and Banaras. (b) N.A. (vi) Nil. (vii) Conducted by C.P.

## 5. RESULTS :

(i) 2617 lb./ac.

(ii) 505.1 lb./ac.

(iii) None of the effects is significant.

(iv) Av. yield of grain in lb./ac.

	$P_0$	$P_1$	$P_2$	Mean	$C_0$	$C_1$	$C_2$
$N_0$	2437	2532	2688	2552	2835	2515	2308
$N_1$	2792	2671	2334	2599	2619	2861	2316
$N_2$	2740	2671	2692	2701	2766	2800	2537
Mean	2656	2625	2571	2617	2740	2725	2387
$C_0$	2843	2619	2757				
$C_1$	2774	2826	2576				
$C_2$	2351	2429	2381				

S.E. of any marginal mean = 119.0 lb./ac.

S.E. of body of table = 206.2 lb./ac.

Crop :- Paddy.

Ref :- U.P. 51(163).

Site :- Regional Res. Stn., Nawabganj.

Type :- 'M'.

Object :- To study the response of Paddy to three levels of N, P and calcium (Ca).

## 1. BASAL CONDITIONS :

(i) (a) Paddy-Berseem. (b) Berseem. (c) No. (ii) (a) Clay loam. (b) N.A. (iii) 2nd week of May/last week of June. (iv) (a) N.A. (b) Transplanted. (c) —. (d) and (e) N.A. (v) N.A. (vi) CH. 4 (early.) (vii) Irrigated. (viii) One weeding. (ix) N.A. (x) N.A.



**2. TREATMENTS :**

All combinations of (1), (2) and (3)

(1) 3 levels of N :  $N_0=0$ ,  $N_1=30$  and  $N_2=60$  lb./ac.

(2) 3 levels of  $P_2O_5$  :  $P_0=0$ ,  $P_1=20$  and  $P_2=40$  lb./ac.

(3) 3 levels of Calcium :  $C_0=0$ ,  $C_1=30$  and  $C_2=60$  lb./ac.

N as A/S,  $P_2O_5$  as Super and Ca as Gypsum. Manures applied 3 days before transplanting.

**3. DESIGN :**

(i)  $3^3$  partially confounded. (ii) (a) 9 plots/block, 3 blocks/replication. (iii) 2. (iv) (a)  $18' \times 42'$ . (b)  $12' \times 36'$ . (v) 3' on all sides of plot. (vi) Yes.

**4. GENERAL :**

(i) No lodging. (ii) Nil. (iii) Grain yield. (iv) (a) 1949—1953. (b) and (c) No. (v) (a) Nagina, Tisuih (Mirzapur), Atarra (Banda), Pachperwa (Gonda) and Faizabad. (b) N.A. (vi) Nil. (vii) Conducted by C.P.

**5. RESULTS :**

(i) 1519 lb./ac.

(ii) 263.1 lb./ac.

(iii) Main effect of C is significant. Other effects are not significant.

(iv) Av. yield of grain in lb./ac.

	$P_0$	$P_1$	$P_2$	Mean	$C_0$	$C_1$	$C_2$
$N_0$	1487	1642	1798	1642	1487	1659	1780
$N_1$	1452	1547	1392	1464	1340	1383	1668
$N_2$	1521	1400	1435	1452	1348	1435	1573
Mean	1487	1530	1541	1519	1391	1492	1674
$C_0$	1400	1322	1452				
$C_1$	1383	1435	1659				
$C_2$	1677	1832	1512				

S.E. of any marginal mean

= 62.0 lb./ac.

S.E. of body of table

= 107.4 lb./ac.

Crop :- Paddy.

Ref :- U.P. 52(216).

Site :- Regional Res. Stn., Nawabganj.

Type :- 'M'.

Object :- To study the response of Paddy to three levels of N, P and calcium (Ca).

**1. BASAL CONDITIONS :**

(i) (a) Paddy-Berseem. (b) Berseem-Fallow. (c) N.A. (ii) (a) Heavy loam. (b) N.A. (iii) 9.6.1952/27.7.1952. (iv) (a) N.A. (b) Transplanted. (c) —. (d) and (e) N.A. (v) Nil. (vi) CH-4 (early). (vii) N.A. (viii) N.A. (ix) N.A. (x) N.A.

**2. TREATMENTS :**

All combinations of (1), (2) and (3).

(1) 3 levels of N :  $N_0=0$ ,  $N_1=30$  and  $N_2=60$  lb./ac.

(2) 3 levels of  $P_2O_5$  :  $P_0=0$ ,  $P_1=20$  and  $P_2=40$  lb./ac.

(3) 3 levels of Calcium :  $C_0=0$ ,  $C_1=30$  and  $C_2=60$  lb./ac.

N as A/S,  $P_2O_5$  as Super and Ca as Gypsum. Date of manuring 13, 14.7.1952.

**3. DESIGN :**

(i)  $3^3$  partially confounded. (ii) (a) 9 plots/block, 3 blocks/replication. (b) N.A. (iii) 2. (iv) (a)  $18' \times 42'$ . (b)  $12' \times 36'$ . (v) 3' around. (vi) Yes.

## 4. GENERAL :

(i) Nil. (ii) Nil. (iii) Grain yield. (iv) (a) 1949—1953. (b) and (c) No. (v) (a) Pachperwa (Gonda), Tisui, Nagina (Bijnor), Banaras, Faizabad, Attara (Banda) and Bharari. (b) N.A. (vi) Nil. (vii) Conducted by C.P.

## 5. RESULTS :

- (i) 1306 lb./ac.  
 (ii) 309.0 lb./ac.  
 (iii) Main effects and their interactions are not significant.  
 (iv) Av. yield of grain in lb./ac.

	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>	Mean	C <sub>0</sub>	C <sub>1</sub>	C <sub>2</sub>
N <sub>0</sub>	1350	1134	1214	1233	1234	1415	1050
N <sub>1</sub>	1344	1281	1314	1313	1214	1329	1396
N <sub>2</sub>	1370	1301	1448	1373	1359	1350	1409
Mean	1355	1239	1325	1306	1269	1365	1285
C <sub>0</sub>	1240	1199	1368				
C <sub>1</sub>	1506	1309	1279				
C <sub>2</sub>	1318	1208	1329				

S.E. of any marginal mean

= 72.8 lb./ac.

S.E. of body of table

= 126.1 lb./ac.

Crop :- Paddy.

Ref :- U.P. 53(43).

Site :- Regional Res. Stn., Nawabganj.

Type :- 'M'.

Object :- To study the response of late Paddy to three levels of N, P and calcium (Ca).

## 1. BASAL CONDITIONS :

(i) (a) Paddy followed by gram or Berseem. (b) Gram. (c) Nil. (ii) (a) Clay loam. (b) N.A. (iii) 4.8.1953. (iv) (a) Two ploughings and *pata* on 25, 26, 30.7.1953 and 1.8.1953. (b) Transplanting. (c) (d) Plant spacing 9" and row spacing 12". (e) Single. (v) Nil. (vi) CH-4 (late). (vii) Irrigated. (viii) NA. (ix) N.A. (x) 7.11.1953.

## 2. TREATMENTS :

All combinations of (1), (2) and (3).

(1) 3 levels of N : N<sub>0</sub>=0, N<sub>1</sub>=30 and N<sub>2</sub>=60 lb./ac.

(2) 3 levels of P<sub>2</sub>O<sub>5</sub> : P<sub>0</sub>=0, P<sub>1</sub>=20 and P<sub>2</sub>=40 lb./ac.

(3) 3 levels of Calcium : C<sub>0</sub>=0, C<sub>1</sub>=30 and C<sub>2</sub>=60 lb./ac.

N as A/S, P<sub>2</sub>O<sub>5</sub> as Super and Ca as Gypsum, N applied on 20.8.1953, P<sub>2</sub>O<sub>5</sub> on 2.8.8953 and Ca on 3.8.1953.

## 3. DESIGN :

(i) 3<sup>3</sup> Confounded Fact. (ii) (a) 9 plots/block, 3 blocks/replication. (b) N.A. (iii) 2. (iv) (a) 18'×42' (b) 12×36'. (v) 3'×1' around. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Nil. (iii) Grain and straw yield. (iv) (a) 1949—1953. (b) No. (c) No. (v) (a) Atarra, (Banda), Bharari (Jhansi), Banaras and Faizabad. (b) N.A. (vi) Nil. (vii) Conducted by C.P.

## 5. RESULTS :

- (i) 2030 lb./ac.  
 (ii) 601.0 lb./ac.  
 (iii) None of the effects is significant.

(iv) Av. yield of grain in lb./ac.

	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>	Mean	C <sub>0</sub>	C <sub>1</sub>	C <sub>2</sub>
N <sub>0</sub>	1884	1607	1781	1757	1677	1400	2195
N <sub>1</sub>	2454	2160	1746	2120	1832	2126	2402
N <sub>2</sub>	2195	2195	2247	2212	2507	1935	2195
Mean	2178	1988	1924	2030	2005	1821	2264
C <sub>0</sub>	1832	1902	2281				
C <sub>1</sub>	1832	1728	1902				
C <sub>2</sub>	2869	2333	1590				

S.E. of any marginal mean = 141.7 lb./ac.  
 S.E. of body of table = 347.0 lb./ac.

Crop :- Paddy.

Ref :- U.P. 51(95).

Site :- Regional Res. Stn., Nawabganj.

Type :- 'M'.

Object :- To study the effect of N and P applied alone and in combination with each other, on the yield and quality of Paddy.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) N.A. (c) N.A. (ii) (a) *Domat* (Bareilly Type 3). (b) N.A. (iii) 23, 24.7.1951. (iv) (a) The field was prepared by ploughing with *de si* plough. (b) to (e) N.A. (v) Nil. (vi) N.A. (vii) Irrigated. (viii) N.A. (ix) N.A. (x) 16.11.1951.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 3 levels of N : N<sub>0</sub>=0, N<sub>1</sub>=25 and N<sub>2</sub>=50 lb./ac.

(2) 3 levels of P<sub>2</sub>O<sub>5</sub> : P<sub>0</sub>=0, P<sub>1</sub>=50 and P<sub>2</sub>=100 lb./ac.

N as A/S and P<sub>2</sub>O<sub>5</sub> as Super. A/S applied broadcast and Super placed 3"-4" deep in furrows behind the plough, manuring of N on 27th August 1951 and P<sub>2</sub>O<sub>5</sub> on 23.7.1951.

## 3. DESIGN :

(i) 3×3 Fact. in R.B.D. (ii) (a) 9. (b) N.A. (iii) 6. (iv) (a) N.A. (b) 62'×17'-7". (v) A distance of one to three feet from plot to plot and three to four feet from block to block was left out. (vi) Yes.

## 4. GENERAL :

(i) Monsoon was abnormally delayed and canal Irrigation could not be obtained in time. The crop in general, was unsatisfactory. (ii) No. (i) Grain yield. (iv) (a) 1951-1952. (b) No. (c) No. (v) (a) Matkota and Nainital. (b) N.A. (vi) Nil. (vii) Conducted by A.C.

## 5. RESULTS :

(i) 748 lb./ac.

(ii) 202.7 lb./ac.

(iii) Main effect of N is highly significant. Main effect of P is significant. Interaction is not significant.

(iv) Av. yield of grain in lb./ac.

	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>	Mean
N <sub>0</sub>	506	653	720	626
N <sub>1</sub>	626	705	806	713
N <sub>2</sub>	806	859	1053	906
Mean	646	739	859	748

S.E. of marginal mean of N or P = 47.79 lb./ac.  
 S.E. of body of table = 82.76 lb./ac.

Crop :- Paddy.

Ref :- U.P. 52(5).

Site :- Regional Res. Stn., Nawabganj.

Type :- 'M'.

Object :—To study the effect of N and  $P_2O_5$  applied alone and in combination with each other, on yield and quality of *Kharif* crop.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) and (c) N.A. (ii) (a) Clay loam (Bareilly type-3 E). (b) N.A. (iii) 6 to 8.7.1952. (iv) (a) 3 ploughings with desi plough. (b) Seedlings planted in rows according to local practices. (c) —. (d) and (e) N.A. (v) Nil. (vi) N.A. (vii) N.A. (viii) N.A. (ix) N.A. (x) 21 to 23.10.1952.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 3 levels of N :  $N_0=0$ ,  $N_1=15$  and  $N_2=30$  lb./ac.

(2) 3 levels of  $P_2O_5$  :  $P_0=0$ ,  $P_1=30$  and  $P_2=60$  lb./ac.

N as A/S and  $P_2O_5$  as Super. A/S applied as surface dressing by broadcast and Super drilled in furrows 4" deep behind plough. Date of manuring 5, 6 and 9.7.1952.

## 3. DESIGN :

(i) 3×3 Fact. in R.B.D. (ii) (a) 9. (b) N.A. (iii) 6. (iv) (a) 22'×49.5'. (b) 22'×49.5'. (v) Nil. (vi) Yes.

## 4. GENERAL :

(i) Normal, crop lodged during formation of seeds and was severely damaged specially in those plots which had bumper crop. (ii) Attacked by rats. (iii) Grain and straw yield. (iv) (a) 1951—1952 (b) Yes (c) N.A. (v) (a) Partapgarh, Banaras, Atarra (Banda), Matkota (Nainital), Kalyanpur (Kanpur) and Bharari (Jhansi). (vi) Nil. (vii) Conducted by A.C.

## 5. RESULTS :

(i) 1668 lb./ac.

(ii) 254.8 lb./ac.

(iii) Main effect of N is highly significant. Main effect of P is significant. Interaction is not significant.

(iv) Av. yield of grain in lb./ac.

	$P_0$	$P_1$	$P_2$	Mean
$N_0$	1352	1407	1600	1453
$N_1$	1633	1793	1766	1731
$N_2$	1760	1667	2033	1820
Mean	1582	1622	1800	1668

S.E. of marginal mean of N or P = 60.1 lb./ac.

S.E. of body of table = 104.0 lb./ac.

Crop :- Paddy.

Ref :- U.P. 52(171).

Site :- Regional Res. Stn., Nawabganj.

Type :- 'M'.

Object :—To study the effect of boron, molybdenum, copper, sulphur and zinc in presence of adequate quantities of N, P and K on growth, yield and quality of Paddy.

## 1. BASAL CONDITIONS :

(i) (a) Paddy—Barseem. (b) Barseem. (c) Nil. (ii) (a) Clayey loam. (b) N.A. (iii) 9.6.1952/23.7.1952. (iv) (a) N.A. (b) Transplanted. (c) —. (d) and (e) N.A. (v)  $P_2O_5$  to be applied 6" deep in furrows while preparing field, A/S as top dressing and Pot sulphate as top dressing at least one week before transplanting (applied on 13.7.1952). (vi) CH-4 (medium). (vii) N.A. (viii) N.A. (ix) 26.95". (x) N.A.

## 2. TREATMENTS :

1. Control.
2. Molybdenum (Mo) as molybdic acid at 5 lb./ac. of Mo.
3. Copper (Cu) as copper sulphate at 6 lb./ac. of Cu.
4. Boron (B) as commercial borax fit 1 lb./ac. of B.
5. Sulphur (S) as commercial sulphur at 50 lb./ac. of S.
6. Zinc (Zn) as zinc sulphate at 4 lb./ac. of Zn.

A basal dose of A/S at 30 lb./ac. of N+Super at 15 lb./ac. of  $P_2O_5$ +Pot. sulphate at 15 lb./ac. of  $K_2O$  is applied to all plots. Trace elements mixed with soil and applied as surface dressings 5-6 days before sowing.

## 3. DESIGN :

- (i) L. Sq. (ii) (a) 6. (b) N.A. (iii) 6. (iv) (a) 35'×27'. (b) 31'×23'. (v) 2' around the net plot. (vi) Yes.

## 4. GENERAL :

(i) No lodging. Satisfactory. (ii) Nil. (iii) Grain yield. (iv) (a) 1952—1953. (b) and (c) No. (v) (a) Atarra, Faizabad, Banaras, Bharari (Jhansi), Belatal, Bahraich and Lucknow. (b) N.A. (vi) Nil. (vii) Conducted by C.P.

## 5. RESULTS :

- (i) 1341 lb./ac.  
 (ii) 201.6 lb./ac.  
 (iii) Treatment differences are not significant.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	1407
2.	1370
3.	1207
4.	1378
5.	1312
6.	1372
S.E./mean	= 82.30 lb./ac.

Crop :- Paddy.

Ref :- U.P. 50(213).

Site :- Late Paddy Res. Sub-Stn., Pachperwa.

Type :- 'M'.

Object :- To study the response of late Paddy to three levels of N, P and calcium (Ca).

## 1. BASAL CONDITIONS :

- (i) (a) Nil (b) Gram. (c) N.A. (ii) (a) Clayey. (b) N.A. (iii) 10.7.1950/ 22 to 24.8.1950. (iv) (a) 3 ploughings by *dest* plough. (b) Transplanted. (c) —. (d) Single plant 9"×9" distance. (e) 1. (v) N.A. (vi) T-88 (late). (vii) Irrigated. (viii) One weeding. (ix) 41.43°. (x) 4.12.1950.

## 2. TREATMENTS :

All combinations of (1), (2) and (3)

- (1) 3 levels of N :  $N_0=0$ ,  $N_1=30$  and  $N_2=60$  lb./ac.
- (2) 3 levels of  $P_2O_5$  :  $P_0=0$ ,  $P_1=20$  and  $P_2=40$  lb./ac.
- (3) 3 levels of Calcium :  $C_0=0$ ,  $C_1=30$  and  $C_2=60$  lb./ac.

N as A/S,  $P_2O_5$  as Super and Ca as Gypsum. Manuring on 19.8.1950.

## 3. DESIGN :

- (i) 3<sup>3</sup> partially confounded. (ii) (a) 9 plots/block, 3 blocks/replication. (b) N.A. (iii) 2. (iv) (a) 19.5'×34.5'. (b) 13.5'×28.5'. (v) 3' around the net plot. (vi) Yes.

## 4. GENERAL :

(i) Crop suffered due to no irrigation arrangement and failure of monsoon. (ii) N.A. (iii) Grain yield. (iv) (a) 1950—1952. (b) No. (c) Nil. (v) (a) Attara (Banda), Tisui (Mirzapur), Bharari (Jhansi), Banaras, Nawabgunj (Barilly) and Nagina (Bijnor). (b) N.A. (vi) Nil. (vii) Conducted by C.P.

## 5. RESULTS :

- (i) 453.6 lb./ac.  
 (ii) 128.6 lb./ac.  
 (iii) None of the effects is significant.  
 (iv) Av. yield of grain in lb./ac.

	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>	Mean	C <sub>0</sub>	C <sub>1</sub>	C <sub>2</sub>
N <sub>0</sub>	354.3	378.6	463.6	398.8	349.5	429.6	417.4
N <sub>1</sub>	439.3	550.9	475.7	488.6	463.6	524.2	478.1
N <sub>2</sub>	364.0	531.5	524.2	473.6	439.3	502.4	478.1
Mean	385.9	487.0	487.8	453.6	417.5	485.4	457.9
C <sub>0</sub>	371.3	429.6	451.4				
C <sub>1</sub>	402.9	526.7	526.7				
C <sub>2</sub>	383.5	504.8	485.4				

S.E. of marginal mean of N, P or C  
 S.E. of body of table

=30.32 lb./ac.  
 =52.48 lb./ac.

Crop :- Paddy.

Ref :- U.P. 51(280).

Site :- Late Paddy Res. Sub-Stn., Pachperwa.

Type :- 'M'.

Object :- To study the response of late Paddy to three levels of N, P and calcium (Ca).

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) (a) Heavy soil. (b) N.A. (iii) 17.7.1951/27, 28.8.1951. (iv) (a) N.A. (b) Transplanting. (c) —. (d) N.A. (e) N.A. (v) N.A. (vi) T-88 (late). (vii) Irrigated. (viii) N.A. (ix) N.A. (x) N.A.

## 2. TREATMENTS :

All combinations of (1), (2) and (3)

(1) 3 levels of N : N<sub>0</sub>=0, N<sub>1</sub>=30 and N<sub>2</sub>=60 lb./ac.

(2) 3 levels of P<sub>2</sub>O<sub>5</sub> : P<sub>0</sub>=0, P<sub>1</sub>=20 and P<sub>2</sub>=40 lb./ac.

(3) 3 levels of Ca : C<sub>0</sub>=0, C<sub>1</sub>=30 and C<sub>2</sub>=60 lb./ac.

N as A/S, P<sub>2</sub>O<sub>5</sub> as Super and Calcium (Ca) as Gypsum.

## 3. DESIGN :

(i) 3<sup>3</sup> confounded Factorial. (ii) (a) 9 plots/block, 3 blocks/replication. (b) N.A. (iii) 2. (iv) (a) 19.5'×34.5'. (b) 13.5'×38.5'. (v) 3' around the net plot. (vi) Yes.

## 4. GENERAL :

(i) No lodging, crop very poor, failed due to non availability of water and late transplanting. (ii) There was attack of borer and the damage was about 15%. (iii) Grain yield. (iv) (a) 1950-1952. (b) No. (c) Nil. (v) (a) Nagina, Tisui (Mirzapur), Bharari (Jhansi), Atarra (Banda), Nawabgunj (Bareilly) and Faizabad. (b) Nil. (vi) Nil. (vii) The expt. was conducted by C.P.

## 5. RESULTS :

- (i) 1644 lb./ac.  
 (ii) 421.7 lb./ac.  
 (iii) Main effect of N and interaction P×C is significant. All other effects and interactions are not significant.

(iv) Av. yield of grain in lb./ac.	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>	Mean	C <sub>0</sub>	C <sub>1</sub>	C <sub>2</sub>
N <sub>0</sub>	1361	1463	1298	1374	1419	1300	1402
N <sub>1</sub>	1698	1938	1747	1794	1754	1892	1737
N <sub>2</sub>	1941	1630	1720	1764	1676	1681	1934
Mean	1667	1677	1588	1644	1617	1625	1691
C <sub>0</sub>	2006	1502	1342				
C <sub>1</sub>	1436	1827	1611				
C <sub>2</sub>	1558	1703	1812				

S.E. of marginal mean of N, P or C  
S.E. of body of table

= 99.4 lb./ac.  
= 172.2 lb./ac.

Crop :- Paddy.

Ref :- U.P. 52(196).

Site :- Late Paddy Res. Sub-Stn., Pachperwa.

Type :- 'M'.

Object :- To study the response of late Paddy to 3 levels of nitrogen, phosphate and calcium.

#### 1. BASAL CONDITIONS :

(i) (a) Paddy-Fallow. (b) Fallow. (c) N.A. (ii) (a) Heavy clay. (b) N.A. (iii) 10.7.1952/14.8.1952.  
(iv) (a) N.A. (b) Transplanting. (c) —. (d) & (e) N.A. (v) Nil. (vi) T-58 (late). (vii) N.A. (viii) N.A.  
(ix) N.A. (x) N.A.

#### 2. TREATMENTS :

All combinations of (1), (2) and (3)

- (1) 3 levels of N : N<sub>0</sub>=0, N<sub>1</sub>=30 and N<sub>2</sub>=60 lb/ac.  
(2) 3 levels of P<sub>2</sub>O<sub>5</sub> : P<sub>0</sub>=0, P<sub>1</sub>=20 and P<sub>2</sub>=40 lb/ac.  
(3) 3 levels of Calcium : C<sub>0</sub>=0, C<sub>1</sub>=30 and C<sub>2</sub>=60 lb/ac.

N as A/S, P<sub>2</sub>O<sub>5</sub> as super and Ca as Gypsum. Date of manuring 9,11.8.1952.

#### 3. DESIGN :

(i) 3<sup>3</sup> Conf. Fact. (ii) (a) 3 blocks/replication, 9 plots/block. (b) N.A. (iii) 2. (iv) (a) 19.5'×34.5'. (b) 13.5'×28.5'. (v) 3' ring round the net plot. (vi) Yes.

#### 4. GENERAL :

(i) N.A. (ii) N.A. (iii) Grain and straw yield. (iv) (a) 1953-1952. (b) and (c) No. (v) (a) and (b) N.A.  
(vi) Nil. (vii) Conducted by C.P.

#### 5. RESULTS :

- (i) 1726 lb./ac.  
(ii) 286.1 lb./ac.  
(iii) Only the main effect of N is significant. All other effects and interactions are not significant.  
(iv) Av. yield of grain in lb./ac.

	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>	Mean	C <sub>0</sub>	C <sub>1</sub>	C <sub>2</sub>
N <sub>0</sub>	1520	1603	1525	1549	1695	1336	1617
N <sub>1</sub>	1683	1896	1894	1824	1695	1954	1823
N <sub>2</sub>	1781	1838	1800	1806	1703	1849	1867
Mean	1661	1779	1739	1726	1698	1713	1769
C <sub>0</sub>	1500	1724	1826				
C <sub>1</sub>	1658	1823	1785				
C <sub>2</sub>	1826	1652	1697				

S.E. of any marginal mean = 67.4 lb/ac.  
S.E. of body of table = 116.8 lb./ac.

Crop :- Paddy.

Ref :- U.P. 50(288).

Site :- Late Paddy Res. Sub-Stn., Pachperwa.

Type :- 'M'.

Object :- To find out best manure amongst A/S, green manure and F.Y.M. for late Paddy.

## 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Heavy loam. (b) N.A. (iii) N.A. (iv) (a) to (c) N.A. (v) N.A. (vi) N.A. (vii) N.A. (viii) N.A. (ix) 41.43". (x) N.A.

## 2. TREATMENTS :

1. A/S at 50 lb./ac. of N.
2. Castor cake at 50 lb./ac. of N.
3. F.Y.M. at 50 lb./ac. of N.
4. *Dhaincha* at 50 lb./ac. of N.
5. Control (no manure).

## 3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 5. (iv) (a) N.A. (b) 1/92.52th ac. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) N.A. (iii) Grain yield. (iv) (a) 1950—1952. (b) N.A. (c) Nil. (v) (a) and (b) N.A. (vi) Nil. (vii) The experiment was conducted by A.E.B. (P).

## 5. RESULTS :

- (i) 877 lb./ac.  
(ii) 185.1 lb./ac.  
(iii) Treatment differences are highly significant.  
(iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	882
2.	1280
3.	949
4.	617
5.	656
S.E./mean	= 82.8 lb./ac.

Crop :- Paddy (*Kharif*).

Ref :- U.P. 52(315).

Site :- Late Paddy Res. Sub-Stn., Pachperwa.

Type :- 'M'.

Object :- To find out the best manure among A/S, green manure and F.Y.M.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) N.A. (c) N.A. (ii) (a) Heavy loam. (b) N.A. (iii) 24.6.1952/13.8.1952. (iv) (a) N.A. (b) Transplanting. (c) —. (d) N.A. (e) N.A. (v) N.A. (vi) T-88 (late). (vii) N.A. (viii) N.A. (ix) N.A. (x) 28.11.1952.

## 2. TREATMENTS :

1. A/S at 50 lb./ac. of N.
2. Castor cake at 50 lb./ac. of N.
3. F.Y.M. at 50 lb./ac. of N.
4. *Dhanicha* at 50 lb./ac. of N.
5. Control.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 6. (iv) (a) N.A. (b) 1/56 ac. (v) N.A. (vi) N.A.

## 4. GENERAL :

(i) N.A. (ii) N.A. (iii) N.A. (iv) (a) 1950—1952. (b) N.A. (c) Nil. (v) (a) N.A. (b) N.A. (vi) Nil. (vii) Experiment conducted by A.E.B. (P) to Govt. of U.P. Experiment failed in 1951.



## 5. RESULTS :

- (i) 1324 lb./ac.  
 (ii) 211.0 lb./ac.  
 (iii) Treatment differences are highly significant.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	1374
2.	1495
3.	1357
4.	1399
5.	997
S.E./mean	=86.14 lb./ac.

Crop :- Paddy (*Kharif*).

Ref :- U.P. 49(235).

Site :- Late Paddy Res. Sub-Stn., Pachperwa.

Type :- 'M'.

Object :- To find out the best manure among A/S, F.Y.M. and Castor cake for late Paddy.

## 1. BASAL CONDITIONS :

- (i) (a) N.A. (b) N.A. (c) N.A. (ii) (a) Heavy loam. (b) N.A. (iii) N.A. (iv) (a) to (c) N.A. (v) N.A.  
 (vi) N.A. (vii) N.A. (viii) N.A. (ix) N.A. (x) N.A.

## 2. TREATMENTS :

1. A/S at 50 lb./ac. of N.
2. Castor cake at 50 lb./ac. of N.
3. F.Y.M. at 50 lb./ac. of N.
4. Control (no manure).

Date and method of application—N.A.

## 3. DESIGN :

- (i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 6. (iv) (a) N.A. (b) 1/90.5 ac. (v) N.A. (vi) Yes.

## 4. GENERAL :

- (i) N.A. (ii) N.A. (iii) Grain yield. (iv) (a) No. (b) Nil. (c) Nil. (v) (a) and (b) N.A. (vi) Nil. (vii) The experiment was conducted by A.E.B. (P) to Govt. of U.P.

## 5. RESULTS :

- (i) 1487 lb./ac.  
 (ii) 267.7 lb./ac.  
 (iii) Treatment differences are highly significant.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	1818
2.	1585
3.	1381
4.	1165
S.E./mean	=109.3 lb./ac.

Crop :- Paddy (*Kharif*).

Ref :- U.P. 53(319)

Site :- Late Paddy Res. Sub-Stn., Pachperwa

Type :- 'M'.

Object :- To find out the best manure among A/S, green manure and compost for late Paddy.

## 1. BASAL CONDITIONS :

- (i) (a) N.A. (b) N.A. (c) N.A. (ii) (a) Heavy Loam. (b) N.A. (iii) N.A. (iv) (a) to (c) N.A.  
 (v) N.A. (vi) N.A. (vii) N.A. (viii) N.A. (ix) N.A. (x) N.A.

**2. TREATMENTS.**

1. A/S at 50 lb./ac. of N.
2. G.N.C. at 50 lb./ac. of N.
3. Compost at 50 lb./ac. of N.
4. Dhaincha (Green manuring).
5. Control.

Date and method of application—N.A.

**3. DESIGN :**

- (i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 6. (iv) (a) 32'×27'. (b) 30'×25'. (v) N.A. (vi) Yes.

**4. GENERAL :**

- (i) N.A. (ii) Slight attack of stem borer. (iii) N.A. (iv) (a) 1953—N.A. (b) N.A. (c) Nil. (v) (a) and (b) N.A. (vi) Nil. (vii) The expt. was conducted by AEB (P) to Govt. of U.P.

**5. RESULTS :**

- (i) 1914 lb./ac.  
 (ii) 342.1 lb./ac.  
 (iii) Treatment differences are highly significant.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	2148
2.	2513
3.	1783
4.	1629
5.	1498
S.E./mean	=139.7 lb./ac.

Crop :- Paddy (*Kharif*)

Ref. :- U.P. 53(320)

Site :- Late Paddy Res. Sub-Strn., Pachperwa

Type :- 'M'

Object :- To find out the efficacy of Japanese method of paddy cultivation.

**1. BASAL CONDITIONS:**

- (i) (a) to (c) N.A. (ii) (a) Heavy Loan. (b) N.A. (iii) 28.6.1953/28.7.1953. (iv) (a) N.A. (b) Transplanting. (c) —. (d) N.A. (e) N.A. (v) N.A. (vi) N.A. (vii) N.A. (viii) N.A. (ix) N.A. (x) 7.12.1953.

**2. TREATMENTS:**

1. Local method of Paddy cultivation as followed at sub-station.
  2. Japanese method as recommended by the state Department of Agriculture.
- Compost applied at 20 C.L./ac. and A/S applied at 1.25 mds. per acre under the Japanese method.

**3. DESIGN :**

- (i) R.B.D. (ii) (a) 2. (b) N.A. (iii) 4. (iv) (a) 25'×85'. (b) 23'×83'. (v) N.A. (vi) Yes.

**4. GENERAL :**

- (i) N.A. (ii) Slight attack of stem borer, (iii) Grain yield. (iv) (a) 1953—N.A. (b) Nil. (c) Nil. (v) (a) N.A. (b) N.A. (vi) Nil. (vii) The expt. was conducted by AEB (P) to Govt. of U.P.

**5. RESULTS :**

- (i) 1981 lb./ac.  
 (ii) 244.3 lb./ac.  
 (iii) Treatment difference is not significant.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	1931
2.	2031
S.E./mean	=127.1 lb./ac.

Crop :- Paddy (*Kharif*).  
Site :- Govt. Agri. Farm, Pura.

Ref :- U.P. 53(357).  
Type :- 'M'.

Object :- To study the residual effect of N and P applied to previous crop on the yield of Paddy.

### 1. BASAL CONDITIONS :

(i) (a) N.A. (b) Wheat. (c) As per treatments. (ii) (a) Kanpur Type 2 soil. (b) Refer soil analysis, Pura. (iii) 12.5.1953. (iv) (a) *Palewa* given in the first week of May and then it was ploughed twice with *Gujar* plough and *pata* was given. (c) N.A. (d) N.A. (e) N.A. (v) Nil. (vi) N.A. (vii) Irrigated. (viii) N.A. (ix) 38.9°. (x) 27, 28.9.1953.

### 2. TREATMENTS :

All combinations of (1) and (2)

(1) 3 levels of N :  $N_0=0$ ,  $N_1=30$ , and  $N_2=60$  lb./ac.

(2) 3 levels of  $P_2O_5$  :  $P_0=0$ ,  $P_1=60$ , and  $P_2=120$  lb./ac.

N as A/S and  $P_2O_5$  as Super. Manures applied to wheat in 1952—1953.

### 3. DESIGN :

(i)  $3 \times 3$  Fact. in R.B.D. (ii) (a) 9. (b) N.A. (iii) 6. (iv) (a) N.A. (b)  $53' \times 15'$  (v) N.A. (vi) Yes.

### 4. GENERAL :

(i) Germination was good ; growth good. (ii) N.A. (iii) Grain and *bhusa*. yield (iv) (a) 1953—N.A. (b) N.A. (c) Nil. (v) (a) Tissuhi. (b) Nil. (vi) Nil. (vii) Experiment conducted by A.C.

### 5. RESULTS :

(i) 1442 lb./ac.

(ii) 251.4 lb./ac.

(iii) Effect of P is highly significant. Effect of N and interaction  $N \times P$  are not significant.

(iv) Av. yield of grain in lb./ac.

	$P_0$	$P_1$	$P_2$	Mean
$N_0$	1101	1520	1680	1434
$N_1$	1443	1361	1461	1422
$N_2$	1388	1365	1657	1470
Mean	1311	1415	1599	1442

S.E. of marginal mean of N or P

= 59.3 lb./ac.

S.E. of body of table

= 102.6 lb./ac.

Crop :- Paddy (*Kharif*).  
Site :- Govt. Agri. Farm, Tissuhi.

Ref :- U.P. 53(353).  
Type :- 'M'.

Object :- To study the residual effect of N and P applied to previous crop on the yield of Paddy.

### 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Wheat. (c) As per treatments. (ii) (a) *Karail* clay loam. (b) N.A. (iii) 27.6.1953. (iv) (a) 4 ploughings on 14.6.1953, 22.6.1953, 29.6.1953 and 2.7.1953. (b) Sown in lines. (c) N.A. (d) N.A. (e) N.A. (v) The experiment was given a uniform manuring at 20 lb./ac. of N on 17.8.1953. (vi) N-22. (vii) Nil. (viii) Nil. (ix) 35.61°. (x) 8 to 12.10.1953.

### 2. TREATMENTS :

All combinations of (1) and (2)

(1) 3 levels of N :  $N_0=0$ ,  $N_1=30$ , and  $N_2=60$  lb./ac.

(2) 3 levels of  $P_2O_5$  :  $P_0=0$ ,  $P_1=60$ , and  $P_2=120$  lb./ac.

N as A/S and  $P_2O_5$  as Super. Manures applied to previous crop wheat in 1952-53.

## 3. DESIGN :

(i) 3×3 Fact. in R.B.D. (ii) (a) 9. (b) N.A. (iii) 6. (iv) (a) and (b) 26'×42'. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) N.A. (iii) Grain and straw yield. (iv) (a) 1953—N.A. (b) N.A. (c) Nil. (v) (a) to (b) Pura. (vi) Nil. (vii) Experiment conducted by A.C.

## 5. RESULTS :

(i) 412.7 lb./ac.  
 (ii) 83.16 lb./ac.  
 (iii) Effects of N and P are highly significant. Interaction N×P is significant.  
 (iv) Av. yield of grain in lb./ac.

	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>	Mean
N <sub>0</sub>	266.9	315.8	388.6	323.8
N <sub>1</sub>	295.2	377.3	505.9	392.8
N <sub>2</sub>	351.7	490.0	723.0	521.6
Mean	304.6	394.4	539.2	412.7

S.E. of marginal mean of N or P = 19.60 lb./ac.

S.E. of body of table = 33.95 lb./ac.

Crop :- Paddy.

Ref :- U.P. 50(127).

Site :- Govt. Agri. Farm, Tissuhi.

Type :- 'M'.

Object :- To study the effect of varying doses of Sulphur and Boron in combination with N and P on late Paddy.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) and (c) N.A. (ii) (a) Hard clay. (b) N.A. (iii) 25.6.1950/24 to 27.8.1950. (iv) (a) N.A. (b) Transplanting. (c) —. (d) 9'×9'. (e) N.A. (v) Nil. (vi) T-36 (late). (vii) N.A. (viii) N.A. (ix) N.A. (x) N.A.

## 2. TREATMENTS :

All combinations (1), (2) and (3)

(1) 3 fertilizers : O=No manure, N=40 lb./ac. of N and P=20 lb./ac. of P<sub>2</sub>O<sub>5</sub>.

(2) 3 levels of Boron : B<sub>0</sub>=0, B<sub>1</sub>=5 and B<sub>2</sub>=10 lb./ac.

(3) 3 levels of Sulphur : S<sub>0</sub>=0, S<sub>1</sub>=5 and S<sub>2</sub>=10 lb./ac. of Sulphur.

N as A/S, P<sub>2</sub>O<sub>5</sub> as Super and Boron as Borax applied on 21,22.8.1950.

## 3. DESIGN :

(i) 3<sup>3</sup> Fact. in R.B.D. (ii) (a) 27. (b) N.A. (iii) 3. (iv) (a) 58'×18'. (b) 52'×12'. (v) 3' ring round the net plot. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) N.A. (iii) Grain yield. (iv) (a) 1950—1951. (b) and (c) No. (v) (a) and (b) No. (vi) Nil. (vii) Conducted by C.P.

## 5. RESULTS :

(i) 2235 lb./ac.  
 (ii) 319.3 lb./ac.  
 (iii) None of the effects and their interaction is significant.

(iv) Av. yield of grain in lb./ac.

	O	N	P	Mean	B <sub>0</sub>	B <sub>1</sub>	B <sub>2</sub>
S <sub>0</sub>	2063	2210	2379	2384	2120	2520	2452
S <sub>1</sub>	1827	1752	2583	2054	2392	1911	1860
S <sub>2</sub>	1836	2625	2066	2176	2030	2219	2278
Mean	1909	2196	2510	2205	2201	2217	2197
B <sub>0</sub>	1674	2219	2709				
B <sub>1</sub>	1950	2120	2580				
B <sub>2</sub>	2102	2249	2240				

S.E. of any marginal mean = 61.45 lb./ac.

S.E. of body of table = 106.43 lb./ac.

Crop :- Paddy.

Ref :- U.P. 51(137).

Site :- Govt. Agri. Farm, Tissuhi.

Type :- 'M'.

Object :- To study the effect of varying doses of Sulphur and Boron in combination with N and P on late Paddy.

**1. BASAL CONDITIONS :**

(i) (a) Nil (b) Wheat. (c) N.A. (ii) (a) Hard clay. (b) N.A. (iii) 30.6.1951/24,25.8.1951. (iv) (a) N.A. (b) Transplanting (c) —. (d) 9'×9'. (e) N.A. (v) Nil. (vi) T-36 (late). (vii) Unirrigated. (viii) N.A. (ix) 29.80'. (x) N.A.

**2. TREATMENTS :**

All combinations of (1), (2) and (3)

(1) 3 fertilizers : O=No manure, N=40 lb./ac. of N and P=20 lb./ac. of P<sub>2</sub>O<sub>5</sub>.(2) 3 levels of Boron : B<sub>0</sub>=0, B<sub>1</sub>=5 and B<sub>2</sub>=10 lb./ac.(3) 3 levels of Sulphur : S<sub>0</sub>=0, S<sub>1</sub>=5 and S<sub>2</sub>=10 lb./ac.N as A/S, P<sub>2</sub>O<sub>5</sub> as Super, Sulphur as commercial Sulphur and Boron as commercial Borax. Manuring on 19.20.8.1951.**3. DESIGN :**(i) 3<sup>rd</sup> Fact. in R.B.D. (ii) (a) 27. (b) N.A. (iii) 3. (iv) (a) 66'×20'. (b) 52'×12'. (v) Plot bund- 1'. field border—4' and irrigation channel—4'. (vi) Yes.**4. GENERAL :**

(i) No lodging, there was no water in the canal and the crop suffered very much for want of water. (ii) Nil. (iii) Grain yield. (iv) (a) 1950—1951. (b) and (c) No. (v) (a) and (b) No. (vi) Nil. (vii) Conducted by C.P.

**5. RESULTS :**

(i) 2387 lb./ac.

(ii) 440.7 lb./ac.

(iii) None of the main effects and their interaction is significant.

(iv) Av. yield of grain in lb./ac.

	O	N	P	Mean	B <sub>0</sub>	B <sub>1</sub>	B <sub>2</sub>
S <sub>0</sub>	1967	2138	2748	2284	1824	2547	2482
S <sub>1</sub>	1701	2604	2320	2208	2212	2320	2093
S <sub>2</sub>	2129	3606	2269	2373	2927	2532	2544
Mean	1932	2783	2446	2387	2321	2467	2373
B <sub>0</sub>	1782	2676	2505				
B <sub>1</sub>	1994	2984	2422				
B <sub>2</sub>	2021	2688	2410				

S.E. of any marginal mean = 84.8 lb./ac.

S.E. of body of any table = 146.9 lb./ac.

Crop :- Paddy.

Site :- Late Paddy Res. Sub-Stn., Tissuhi.

Ref :- U.P. 50(93).

Type :- 'M'.

Object :- To study the effect of time of application of N on growth, performance and yield of late Paddy.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Kesari*. (c) N.A. (ii) (a) Hard clayey with *Usar* patches at places. (b) N.A. (iii) 23.6.1950/31.8.1950 to 3.9.1950. (iv) (a) Ploughing 3 times by *desi* plough. (b) Transplanted. (c) —. (d) 9" × 9". (e) Single plant. (v) Nil. (vi) T-36 (late). (vii) Irrigated. (viii) 2 weedings (ix) 35.67". (x) 2nd week of December.

## 2. TREATMENTS :

All combinations of (1) and (2) + a control.

(1) 2 sources at 6 lb./ac. of N : S<sub>1</sub> = A/S and S<sub>2</sub> = A/N.

(2) 6 times of application of N : T<sub>1</sub> = Full dose at transplanting, T<sub>2</sub> = Full dose 30 days after transplanting, T<sub>3</sub> = Full dose 50 days after transplanting, T<sub>4</sub> = ½ at transplanting and half 30 days after transplanting, T<sub>5</sub> = ½ at transplanting and half 50 days after transplanting and T<sub>6</sub> = Half 30 days after transplanting and the other half 50 days after transplanting.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 13. (b) N.A. (iii) 3. (iv) (a) 28' × 29'. (b) 22' × 23'. (v) 3' around. (vi) Yes.

## 4. GENERAL :

(i) The crop was severely damaged due to the total failure of rains at the right moment. Late transplanting due to late rains further depressed the yield. (ii) Slight attack of *poricularia oryzac* and Stem-borer. (iii) Grain yield. (iv) (a) 1950—1951. (b) and (c) No. (v) (a) Hawalbagh, Lucknow and Barabanki. (b) N.A. (vi) Nil. (vii) Conducted by C.P.

## 5. RESULTS :

(i) 128.7 lb./ac.  
(ii) 92.96 lb./ac.  
(iii) None of the effects is significant.  
(iv) Av. yield of grain in lb./ac.

Control = 122.1 lb./ac.

	T <sub>1</sub>	T <sub>2</sub>	T <sub>3</sub>	T <sub>4</sub>	T <sub>5</sub>	T <sub>6</sub>	Mean
S <sub>1</sub>	87.4	163.5	87.4	100.8	137.8	80.6	109.6
S <sub>2</sub>	218.4	107.5	168.0	172.5	48.2	179.2	148.9
Mean	152.9	135.5	127.7	136.6	93.0	129.9	129.3

S.E. of marginal mean of S

= 21.91 lb./ac.

S.E. of marginal mean of T

= 37.96 lb./ac.

S.E. of body of table

= 53.67 lb./ac.

Crop :- Paddy.

Site :- Late Paddy Res. Sub-Stn., Tissuhi.

Ref :- U.P. 51(124).

Type :- 'M'.

Object:—To study the effect of time of application of N on the growth, performances and yield of late Paddy.

## 1. BASAL CONDITIONS :

- (i) (a) Nil. (b) N.A. (c) N.A. (ii) (a) Hard clayey. (b) N.A. (iii) Middle of June/3rd week of July.  
 (iv) (a) N.A. (b) Transplanted. (c) —. (d) and (e) N.A. (v) (vi) T. 36 (late). Nil. (vii) N.A. (viii) N.A.  
 (ix) N.A. (x) N.A.

## 2. TREATMENTS :

All combinations of (1), (2) + one control.

(1) 2 sources at 60 lb./ac. of N:  $S_1 = A/S$  and  $S_2 = A/N$ .

(2) 6 times of application of N:  $T_1 =$  Full dose at transplanting,  $T_2 =$  Full dose 30 days after transplanting,  $T_3 =$  Full dose 50 days after transplanting,  $T_4 = \frac{1}{2}$  at transplanting and half 30 days after transplanting,  $T_5 = \frac{1}{2}$  at transplanting and half 50 days after transplanting, and  $T_6 =$  Half 30 days after transplanting and the other half 50 days after transplanting.

## 3. DESIGN :

- (i) R.B.D. (ii) (a) 13. (b) N.A. (iii) 3. (iv) (a) 28' × 29'. (b) 22' × 23'. (v) 3' around. (vi) Yes.

## 4. GENERAL :

- (i) Very poor growth and yield of Paddy. (ii) Nil. (iii) Grain yield. (iv) (a) 1950—1951. (b) and (c) No.  
 (v) (a) Lucknow and Hawalbagh (Almora). (b) N.A. (vi) Nil. (vii) Conducted by C.P.

## 5. RESULTS :

- (i) 338.9 lb./ac.  
 (ii) 106.4 lb./ac.  
 (iii) Main effects of S and T are significant.  
 (iv) Av. yield of grain in lb./ac.

Control = 210.3 lb./ac.

	$T_1$	$T_2$	$T_3$	$T_4$	$T_5$	$T_6$	Mean
$S_1$	380.0	262.0	394.8	276.7	483.3	313.6	351.7
$S_2$	158.7	464.9	461.2	453.8	180.8	365.3	347.4
Mean	269.4	363.4	428.0	365.2	332.0	339.4	349.6

S.E. of marginal mean of S = 25.09 lb./ac.

S.E. of marginal mean of T = 43.46 lb./ac.

S.E. of body of table = 61.45 lb./ac.

Crop :- Paddy.

Site :- Late Paddy Res. Sub-Stn., Tissuhi.

Ref :- U.P. 50(94).

Type :- 'M'.

Object:—To study the effect of time of application of  $P_2O_5$  on growth, performance and yield of late Paddy.

## 1. BASAL CONDITIONS :

- (i) (a) Nil. (b) *Kesari*. (c) N.A. (ii) (a) Hard clayey with *Usar* patches at places. (b) N.A. (iii) 23.6.1950/31.8.1950 to 3.9.1950. (iv) (a) Ploughings 3 times with *dest* plough. (b) Transplanted. (c) —. (d) 9' × 9'. (e) 1. (v) Nil (vi) T-36 (late). (vii) Irrigated. (viii) 2 weedings. (ix) 35.67". (x) 2nd week of December

## 2. TREATMENTS :

All combinations of (1) and (2) + one control.

(1) 2 sources of  $P_2O_5$  (at 40 lb./ac.) :  $S_1$ =Super and  $S_2$ =Ammo. Phos.

(2) 6 times of application of  $P_2O_5$  :  $T_1$ =Full dose at transplanting,  $T_2$ =Full dose 30 days after transplanting,  $T_3$ =Full dose 50 days after transplanting,  $T_4$ = $\frac{1}{2}$  at transplanting and half 30 days after transplanting,  $T_5$ = $\frac{1}{2}$  at transplanting and half 50 days after transplanting and  $T_6$ =Half 30 days after transplanting and the other half 50 days after transplanting.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 13. (b) N.A. (iii) 3. (iv) (a) 28'×29'. (b) 22'×23'. (v) 3' around. (vi) Yes.

## 4. GENERAL :

(i) The crop was severely damaged due to the total failure of rains at the right moment. Late transplanting due to late rains further depressed the yield. (iii) Attack of *pori cularia oryzac* and stem borer. (iii) Grain yield. (iv) (a) 1950-1951. (b) and (c) No. (v) (a) Lucknow and Barabanki. (b) N.A. (vi) Nil. (vii) Conducted by C.P.

## 5. RESULTS :

(i) 68.41 lb./ac.

(ii) 30.24 lb./ac.

(iii) None of the effects is significant.

(iv) Av. yield of grain in lb./ac.

Control=57.12 lb./ac.							
	$T_1$	$T_2$	$T_3$	$T_4$	$T_5$	$T_6$	Mean
$S_1$	61.60	91.84	50.40	63.84	67.20	57.12	65.33
$S_2$	50.40	57.12	54.88	122.08	59.36	96.32	73.36
Mean	56.00	74.48	52.63	92.96	63.28	76.72	69.34

S.E. of marginal mean of S = 7.13 lb./ac.

S.E. of marginal mean of T = 12.35 lb./ac.

S.E. of body of table = 17.46 lb./ac.

Crop :- Paddy.

Ref :- U.P. 51(123).

Site :- Late Paddy Res. Sub-Strn., Tisuihi.

Type :- 'M'.

Object :- To study the effect of time of application of  $P_2O_5$  on the growth, performance and yield of Paddy.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) and (c) N.A. (ii) (a) Hard clayey. (b) N.A. (iii) Middle of June/3rd week of July. (iv) (a) N.A. (b) Transplanted. (c) —. (d) and (e) N.A. (v) Nil. (vi) T-36 (late). (vii) N.A. (viii) N.A. (ix) N.A. (x) N.A.

## 2. TREATMENTS :

All combinations of (1) and (2) + a control

(1) 2 sources of  $P_2O_5$  (at 40 lb./ac.) :  $S_1$ =Super and  $S_2$ =Ammo. Phos.

(2) 6 times of application of  $P_2O_5$  :  $T_1$ =Full dose at transplanting,  $T_2$ =Full dose 30 days after transplanting,  $T_3$ =Full dose 50 days after transplanting,  $T_4$ = $\frac{1}{2}$  at transplanting and half 30 days after transplanting,  $T_5$ = $\frac{1}{2}$  at transplanting and half 50 days after transplanting and  $T_6$ =Half 30 days after transplanting and the other half 50 days after transplanting.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 13. (b) N.A. (iii) 3. (iv) (a) 28'×29'. (b) 22'×23'. (v) 3' around. (vi) Yes.

## 4. GENERAL :

(i) Very poor growth and yield of Paddy. (ii) Nil. (iii) Grain yield. (iv) (a) 1950-1951. (b) and (c) No. (v) (a) Lucknow. (b) N.A. (vi) Nil. (vii) Conducted by C.P.



## 5. RESULTS :

- (i) 436.8 lb./ac.  
(ii) 24.16 lb./ac.  
(iii) Main effect of S is highly significant, control vs. treated is significant and main effect of T and interaction S×T are not significant.  
(iv) Av. yield of grain in lb./ac.

	T <sub>1</sub>	T <sub>2</sub>	T <sub>3</sub>	T <sub>4</sub>	T <sub>5</sub>	T <sub>6</sub>	Mean
S <sub>1</sub>	402.2	199.2	199.2	287.8	468.6	446.4	333.9
S <sub>2</sub>	778.5	660.4	339.4	733.5	619.8	420.6	591.5
Mean	590.4	429.8	269.3	509.2	544.2	433.5	462.7

S.E. of marginal mean of S = 57.56 lb./ac.  
S.E. of marginal mean of T = 99.69 lb./ac.  
S.E. of body of table = 140.97 lb./ac.

Crop :- Paddy.

Ref :- U.P. 51(138).

Site :- Late Paddy Res. Sub-Stn., Tisuihi.

Type :- 'M'.

Object :- To study the effect of varying doses of trace elements in combination with N, P, and K on the growth and yield of Paddy.

## 1. BASAL CONDITIONS :

- (i) (a) N.A. (b) N.A. (c) N.A. (ii) (a) Hard clay. (b) N.A. (iii) 30.6.1951/24.25.8.1951 (iv) (a) N.A. (b) Transplanting. (c) —, (d) 9'×9'. (e) N.A. (v) 30 lb./ac. of N as A/S, 15 lb./ac. of P<sub>2</sub>O<sub>5</sub> as Super (single) and 15 lb./ac. of K<sub>2</sub>O as Sulphate of potash. (vi) T-36 (late). (vii) N.A. (viii) N.A. (ix) 34.31'. (x) N.A.

## 2. TREATMENTS :

1. Control.
2. Molybdic acid (41.1%Mo) at 1 lb./ac. of Mo.
3. Molybdic acid (41.1%Mo) at 3 lb./ac. of Mo.
4. Molybdic acid (41.1%Mo) at 6 lb./ac. of Mo.
5. Copper Sulphate (25.46%Cu) at 3 lb./ac. of Cu.
6. Copper Sulphate (25.46%Cu) at 6 lb./ac. of Cu.
7. Copper Sulphate (25.46%Cu) at 12 lb./ac. of Cu.
8. Commercial Borax (9.4%B) at 1 lb./ac. of B.
9. Commercial Borax (9.4%B) at 2 lb./ac. of B.
10. Commercial Borax (9.4%B) at 4 lb./ac. of B.
11. Commercial Sulphur (85%S) at 15 lb./ac. of S.
12. Commercial Sulphur (85%S) at 30 lb./ac. of S.
13. Commercial Sulphur (85%S) at 50 lb./ac. of S.
14. Zinc Sulphate (22.74%Zn) at 1 lb./ac. of Zn
15. Zinc Sulphate (22.74%Zn) at 4 lb./ac. of Zn.
16. Zinc Sulphate (22.74%Zn) at 10 lb./ac. of Zn.

## 3. DESIGN :

- (i) R.B.D. (ii) (a) 16. (b) N.A. (iii) 4. (iv) (a) 58'×18'. (b) 52'×12'. (v) 3' around. (vi) Yes.

## 4. GENERAL :

- (i) No lodging. (ii) Nil. (iii) Grain yield. (iv) (a) 1951—1952. (b), (c) No. (v) (a), (b) No. (vi) Nil. (vii) Conducted by C.P.

## 5. RESULTS :

- (i) 1302 lb./ac.  
(ii) 343.3 lb./ac.  
(iii) Treatments do not differ significantly.

(iv) Av. yield of grain in lb./ac.			
Treatment	Av. yield	Treatment	Av. yield
1.	1321	9.	1177
2.	1041	10.	1552
3.	946	11.	1207
4.	1047	12.	1303
5.	1429	13.	1370
6.	1494	14.	1408
7.	1597	15.	1171
8.	1115	16.	1655
S.E./mean = 171.7 lb./ac.			

Crop :- Paddy.

Ref :- U.P. 52(162).

Site :- Late Paddy Res. Sub-Stn., Tissuhi.

Type :- 'M'.

Object :- To study the effect of varying doses of trace elements in combination with N, P and K on growth and yield of late Paddy.

### 1. BASAL CONDITIONS :

(i) (a) N.A. (b) N.A. (c) N.A. (ii) (a) Heavy clay. (b) N.A. (iii) N.A. (iv) (a) to (e) N.A. (v) As per treatment. (vi) T-36 (late). (vii) N.A. (viii) N.A. (ix) 30.02%. (x) N.A.

### 2. TREATMENTS :

1. Control (5 plots/block).
  2. Molybdenum (Mo) as Molybdic acid at 1 lb./ac. of Mo.
  3. Molybdenum (Mo) as Molybdic acid at 3 lb./ac. of Mo.
  4. Molybdenum (Mo) as Molybdic acid at 6 lb./ac. of Mo.
  5. Copper (Cu) as Copper Sulphate at 3 lb./ac. of Cu.
  6. Copper (Cu) as Copper Sulphate at 6 lb./ac. of Cu.
  7. Copper (Cu) as Copper Sulphate at 12 lb./ac. of Cu.
  8. Boron (B) as commercial Borax at 1 lb./ac. of B.
  9. Boron (B) as commercial Borax at 2 lb./ac. of B.
  10. Boron (B) as commercial Borax at 4 lb./ac. of B.
  11. Zinc (Zn) as Zinc Sulphate at 1 lb./ac. of Zn.
  12. Zinc (Zn) as Zinc Sulphate at 4 lb./ac. of Zn.
  13. Zinc (Zn) as Zinc Sulphate at 10 lb./ac. of Zn.
  14. Sulphur (S) as commercial Sulphur at 15 lb./ac. of S.
  15. Sulphur (S) as commercial Sulphur at 30 lb./ac. of S.
  16. Sulphur (S) as commercial Sulphur at 50 lb./ac. of S.
- A basal dressing of 30 lb./ac. of N as A/S + 15 lb./ac. of  $P_2O_5$  as Super + 15 lb./ac. of  $K_2O$  as Pot. Sulphate was applied to all treatments including control plots

### 3. DESIGN :

(i) R.B.D. (ii) (a) 20. (b) N.A. (iii) 4. (iv) (a) 58' x 18'. (b) 52' x 12'. (v) 3' around. (vi) Yes.

### 4. GENERAL :

(i) Satisfactory. (ii) No. (iii) Grain yield. (iv) (a) 1951-1952. (b) No. (c) No. (v) (a) No. (b) No. (vi) Nil. (vii) Conducted by C.P.

### 5. RESULTS :

- (i) 1306 lb./ac.  
(ii) 363.3 lb./ac.  
(iii) Treatment differences are not significant.  
(iv) Av. yield of grain in lb./ac.

Treatment	Av. yield	Treatment	Av. yield
1.	1321	9.	1178
2.	1041	10.	1553
3.	947	11.	1207
4.	1048	12.	1304
5.	1429	13.	1371
6.	1494	14.	1409
7.	1598	15.	1171
8.	1115	16.	1656
S.E./mean (excluding control mean)		= 181.6 lb./ac.	
S.E. for control mean		= 81.2 lb./ac.	

Crop :- Paddy.

Ref :- U.P. 50(195).

Site :- Late Paddy Res. Sub-Stn., Tisuihi.

Type :- 'M'.

Object :- To study the response of Paddy to N, P and Calcium (CaO).

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Kesari*. (c) N.A. (ii) (a) Hard clay. (b) N.A. (iii) 23.6.1950/16 and 17.8.1950. (iv) (a) 3 ploughing with *dest* plough. (b) Transplanted. (c) —. (d) N.A. (e) N.A. (v) Nil. (vi) T-36 (late). (vii) Irrigated. (viii) 2 weedings. (ix) N.A. (x) N.A.

## 2. TREATMENTS :

All combinations of (1), (2) and (3)

(1) 3 levels of N :  $N_0=0$ ,  $N_1=30$  and  $N_2=60$  lb./ac.(2) 3 levels of  $P_2O_5$  :  $P_0=0$ ,  $P_1=20$  and  $P_2=40$  lb./ac.(3) 3 levels of Ca :  $C_0=0$ ,  $C_1=30$  and  $C_2=60$  lb./ac.N as A/S,  $P_2O_5$  as Super and Ca as Gypsum. N applied on 14.8.50,  $P_2O_5$  on 13.8.1950 and Ca on 12.8.1950.

## 3. DESIGN :

(i) 3<sup>3</sup> partially confounded. (ii) (a) 9 plots/block, 3 blocks/replication. (b) N.A. (iii) 2. (iv) (a) 21' x 36'. (b) 15' x 30'. (v) 3' around. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) N.A. (iii) Grain yield. (iv) (a) 1950—1952. (b) No. (c) No. (v) (a) Atarra (Banda) Banaras, Bharari (Jhansi) Pachperwa (Gonda), Nawabganj (Baroilly) and Nagina (Bijnor). (b) N.A. (vi) Nil. (vii) Conducted by C.P.

## 5. RESULTS :

(i) 454.9 lb./ac.

(ii) 323.7 lb./ac.

(iii) Only the main effect of N is significant.

(iv) Av. yield of grain in lb./ac.

	$P_0$	$P_1$	$P_2$	Mean	$C_0$	$C_1$	$C_2$
$N_0$	178.3	396.2	385.8	320.1	302.8	278.0	379.6
$N_1$	253.1	555.9	657.5	488.8	512.3	535.2	419.0
$N_2$	383.7	522.7	761.3	555.9	659.6	550.0	458.4
Mean	271.7	491.6	601.5	454.9	491.6	454.4	419.0
$C_0$	396.2	460.5	618.1				
$C_1$	157.6	526.9	678.3				
$C_2$	261.4	487.5	508.2				

S.E. of marginal mean of N, P or C

= 76.3 lb./ac.

S.E. of body of table

= 132.1 lb./ac.

Crop :- Paddy.

Ref :- U.P. 51(162).

Site :- Late Paddy Res. Sub-Stn., Tisuihi.

Type :- 'M'.

Object :- To study the response of late Paddy to N, P and Calcium (CaO).

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) (a) Hard clay. (b) N.A. (iii) 17.6.1951/30.7.1951 and 31.7.1951. (iv) (a) N.A. (b) Transplanted. (c) —. (d) and (e) N.A. (v) N.A. (vi) T-36 (late). (vii) Irrigated. (viii) 2 weedings. (ix) 35.29%. (x) 18th, 19th, and 20th November 1951.

**2. TREATMENTS :**

All combinations of (1), (2) and (3)

(1) 3 levels of N :  $N_0=0$ ,  $N_1=30$  and  $N_2=60$  lb./ac.(2) 3 levels of  $P_2O_5$  :  $P_0=0$ ,  $P_1=20$ , and  $P_2=40$ (3) 3 levels of Calcium :  $C_0=0$ ,  $C_1=30$  and  $C_2=60$  lb./ac.N as A/S,  $P_2O_5$  as Super and Ca as Gypsum. Ca applied on 28.7.1951,  $P_2O_5$  on 29.7.1951 and N on 30.7.1951.**3. DESIGN :**(i)  $3^3$  Partially confounded. (ii) (a) 9 plots/block, 3 blocks/replication. (b) N.A. (iii) 2. (iv) (a)  $21' \times 36'$ . (b)  $15' \times 30'$ . (v) 3' around. (vi) Yes.**4. GENERAL :**

(i) No lodging. (ii) Nil. (iii) Grain yield. (iv) (a) 1950—1952. (b) and (c) No. (v) (a) Nagina (Bijnor), Nawabgunj (Bareilly), Bharari (Jhansi), Atarra (Banda), Pachperwa (Gonda) and Faizabad. (b) N.A. (vi) Crop was transplanted very late. (vii) Conducted by C.P.

**5. RESULTS :**

- (i) 952 lb./ac.  
(ii) 594.4 lb./ac.  
(iii) Main effects and their interactions are not significant.  
(iv) Av. yield of grain in lb./ac.

	$P_0$	$P_1$	$P_2$	Mean	$C_0$	$C_1$	$C_2$
$N_0$	1011	622	965	865	751	487	1360
$N_1$	1117	425	1246	929	1196	893	698
$N_2$	1259	1230	690	1059	1487	825	866
Mean	1129	759	967	952	1145	735	975
$C_0$	1093	1124	1217				
$C_1$	1078	520	607				
$C_2$	1216	633	1076				

S.E. of marginal mean of N, P or C = 140.1 lb./ac.

S.E. of body of table = 242.7 lb./ac.

Crop :- Paddy.

Ref :- U.P. 52(213).

Site :- Late Paddy Res. Sub-Stn., Tissuhi.

Type :- 'M'.

Object :- To study the response of Paddy to N, P and Calcium (CaO).

**1. BASAL CONDITIONS :**

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) (a) Heavy clay. (b) N.A. (iii) 20.6.1952/12 and 13.8.1952. (iv) (a) to (c) N.A. (v) Nil. (vi) T-36 (late). (vii) N.A. (viii) N.A.. (ix) 30.02°. (x) N.A.

**2. TREATMENTS :**

All combinations of (1), (2) and (3)

(1) 3 levels of N :  $N_0=0$ ,  $N_1=30$  and  $N_2=60$  lb./ac.(2) 3 levels of  $P_2O_5$  :  $P_0=0$ ,  $P_1=20$  and  $P_2=40$  lb./ac.(3) 3 levels of Calcium :  $C_0=0$ ,  $C_1=30$  and  $C_2=60$  lb./ac.N as A/S,  $P_2O_5$  as Super and Ca as Gypsum. N applied on 12.8.1952,  $P_2O_5$  on 10.8.1952 and Ca on 9.8.1952.**3. DESIGN :**(i)  $3^3$  Partially confounded. (ii) (a) 9 plots/block, 3 blocks/replication. (iii) 2. (iv) (a)  $21' \times 36'$ . (b)  $15' \times 30'$ . (v) 3' around. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) N.A. (iii) Grain yield. (iv) (a) 1950—1952. (b) and (c) No. (v) Pachperwa (Gonda), Banaras, Nagina (Bijnor), Nawabgunj (Bareilly) Faizabad, Atarra (Banda), Bharari (Jhansi). (b) N.A. (vi) Nil. (vii) Conducted by C.P.

## 5. RESULTS :

- (i) 1103 lb./ac.  
 (ii) 586.0 lb./ac.  
 (iii) Main effects and their interactions are not significant.  
 (iv) Av. yield of grain in lb./ac.

	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>	Mean	C <sub>0</sub>	C <sub>1</sub>	C <sub>2</sub>
N <sub>0</sub>	1026	660	1021	902	975	560	1172
N <sub>1</sub>	1215	701	1311	1076	1344	1170	714
N <sub>2</sub>	1545	1444	1006	1332	1776	1095	1124
Mean	1263	935	1113	1103	1365	942	1003
C <sub>0</sub>	1143	1278	1674				
C <sub>1</sub>	1243	776	807				
C <sub>2</sub>	1402	751	857				

S.E. of marginal mean of N, P or C  
 S.E. of body of table

=138.1 lb./ac.  
 =239.2 lb./ac.

Crop :- Paddy (*Kharif*).

Site :- Rate Paddy Res. Sub-Stn., Tisuihi.

Ref :- U.P. 50(292).

Type :- 'M'.

Object :- To find out the best manure for late Paddy.

## 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Light clay to hard clay with greyish black colour. (b) N.A. (iii) N.A. (iv) (a) to (e) N.A. (v) N.A. (vi) N.A. (vii) N.A. (viii) N.A. (ix) 45.43°. (x) N.A.

## 2. TREATMENTS :

1. Castor cake.
  2. Compost.
  3. *Dhaincha*.
  4. A/S.
  5. Control.
- Rate of application—N.A.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 6. (iv) (a) N.A. (b) 1/86.71 ac. (v) N.A. (vi) N.A.

## 4. GENERAL :

(i) N.A. (ii) N.A. (iii) N.A. (iv) (a) 1950—1953. (b) N.A. (c) Nil. (v) (a) and (b) N.A. (vi) N.A. (vii) Raw data N.A. The experiment was conducted by A.E.B. (P) T.

## 5. RESULTS :

- (i) 738.0 lb./ac.  
 (ii) N.A.  
 (iii) Treatment differences are not significant.

(iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	1016.6
2.	924.5
3.	647.7
4.	566.3
5.	535.1
S.E./mean	= N.A.

Crop :- Paddy (*Kharif*).

Ref :- U.P. 51(276).

Site :- Late Paddy Res. Sub-Stn., Tissuhi.

Type :- 'M'.

Object :- To select the best manure for late Paddy.

## 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Light clay to hard clay with greyish black colour. (b) N.A. (iii) N.A. (iv) (a) to (e) N.A. (v) N.A. (vi) N.A. (vii) N.A. (viii) N.A. (ix) 48.12". (x) N.A.

## 2. TREATMENTS :

1. Castor cake.
2. Compost.
3. A/S.
4. *Dhaincha*.
5. Control.

Rate of application—N.A.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 6. (iv) (a) N.A. (b) 1/86.71 ac. (v) N.A. (vi) N.A.

## 4. GENERAL :

(i) N.A. (ii) N.A. (iii) N.A. (iv) (a) 1950—1953. (b) N.A. (c) Nil. (v) (a) and (b) N.A. (vi) Nil. (vii) Raw data N.A. The experiment was conducted by A.E.B. (P) T.

## 5. RESULTS :

(i) 1135 lb./ac.

(ii) N.A.

(iii) Treatment differences are not significant.

(iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	1661
2.	1122
3.	995
4.	978
5.	917
S.E./mean	= N.A.

Crop :- Paddy (*Kharif*).

Ref :- U.P.52(318).

Site :- Late Paddy Res. Sub-Stn., Tissuhi.

Type :- 'M'.

Object :- To select best manure for late Paddy.

## 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Light clay to hard clay with greyish black colour. (b) N.A. (iii) N.A. (iv) (a) to (e) N.A. (v) N.A. (vi) N.A. (vii) N.A. (viii) N.A. (ix) N.A. (x) N.A.

## 2. TREATMENTS :

1. Castor cake.
2. Compost.
3. *Dhaincha* green manure.
4. A/S.
5. Control.

Rate of application — N.A.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 6. (iv) (a) N.A. (b) 1/86.7 a. (v) N.A. (vi) N.A.

## 4. GENERAL :

(i) N.A. (ii) N.A. (iii) N.A. (iv) (a) 1950—1953. (b) N.A. (c) No. (v) (a) and (b) N.A. (vi) Nil. (vii) Raw data N.A. The experiment was conducted by A.E.B. (P) T.

## 5. RESULTS :

(i) 1125 lb./ac.

(ii) N.A.

(iii) N.A.

(iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	2016
2.	1099
3.	939
4.	893
5.	677
S.E./mean	= N.A.

Crop :- Paddy.

Ref :- U.P. 53(324).

Site :- Late Paddy Res. Sub- Stn., Tissuhi.

Type :- 'M'.

Object :- To select the best among different manures.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) N.A. (c) N.A. (ii) (a) Light clay to hard clay with greyish black colour. (b) N.A. (iii) 19.7.1953. (iv) (a) N.A. (b) Transplanted. (c) —. (d) 9"×9". (e) N.A. (v) N.A. (vi) N.A. (vii) N.A. (viii) N.A. (ix) N.A. (x) N.A.

## 2. TREATMENTS :

1. A/S at 50 lb./ac. of N.
2. Castor cake at 50 lb./ac. of N.
3. Compost at 50 lb./ac. of N.
4. *Dhaincha* green manuring.
5. Control.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 5. (iv) (a) N.A. (b) 35'-3"×14'-3". (v) N.A. (vi) N.A.

## 4. GENERAL :

(i) N.A. (ii) N.A. (iii) Grain yield. (iv) (a) 1950—1953. (b) N.A. (c) Nil. (v) (a) N.A. (b) N.A. (vi) Nil. (vii) The expt. was conducted by A.E.B (PT.).

## 5. RESULTS :

(i) 1052 lb./ac.

(ii) 506.7 lb./ac.

(iii) Treatment differences are significant.

(iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	854
2.	1869
3.	935
4.	622
5.	979
S.E./mean	= 226.6 lb./ac.

Crop :- Paddy.

Ref :- U.P. 49(107).

Site :- Regional Res. Stn., Varanasi.

Type :- 'M'.

Object :- To study the response of Paddy to N, P and Calcium.

## 1. BASAL CONDITIONS :

(i) (a) No. (b) Peas and Barley. (c) *Sanai* green manured. (ii) (a) Medium alluvium. (b) Refer soil analysis, Varanasi. (iii) 5.5.1949/26, 27.6.1949. (iv) (a) Hot weather cultivation by tractor, *Palewa* on 19.6.1949. Ploughings on 20.6.1949, 21, 22.6.1949. (b) to (e) N.A. (v) Nil. (vi) T-136 (early). (vii) Irrigated. (viii) N.A. (ix) 43.16". (x) 23 and 24.9.1949.

## 2. TREATMENTS :

All combinations of (1), (2) and (3)

(1) 3 levels of N :  $N_0=0$ ,  $N_1=30$  and  $N_2=60$  lb./ac.(2) 3 levels of  $P_2O_5$  :  $P_0=0$ ,  $P_1=20$  and  $P_2=40$  lb./ac.(3) 3 levels of Calcium :  $C_0=0$ ,  $C_1=30$  and 60 lb./ac. of Ca.  
N as A/S,  $P_2O_5$  as Super and Ca as Gypsum.

## 3. DESIGN :

(i)  $3^3$  Partially confounded. (ii) (a) 3 blocks/replication, 9 plots/block. (b) N.A. (iii) 2. (iv) (a)  $18' \times 42'$ . (b)  $12' \times 36'$ . (v) 3' around the net plot. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) D.D.T. spray on 26.8.1949. (iii) Height of paddy plants in cm. No. of tillers/plant, green leaves, dry leaves, length of green leaves and grain yield. (iv) (a) 1949—1953. (b) and (c) No. (v) (a) Bharari (Jhansi), Nawabgunj (Bareilly) and Nagina (Bijnor). (vi) Nil. (vii) Conducted by C.P

## 5. RESULTS :

- (i) 1779 lb./ac.  
(ii) 272.6 lb./ac.  
(iii) Main effects of N alone is highly significant. Others are not significant.  
(iv) Av. yield of grain in lb./ac.

	$N_0$	$N_1$	$N_2$	Mean	$C_0$	$C_1$	$C_2$
$P_0$	1691	1961	1613	1755	1583	1877	1805
$P_1$	1628	1995	1775	1799	1728	1792	1879
$P_2$	1779	1859	1710	1783	1764	1792	1792
Mean	1699	1938	1699	1779	1692	1820	1825
$C_0$	1587	1846	1641				
$C_1$	1715	1961	1786				
$C_2$	1797	2008	1671				

S.E. of any marginal mean = 64.26 lb./ac.

S.E. of body of any table = 111.31 lb./ac.

Crop :- Paddy.

Ref :- U.P. 50(193).

Site :- Regional Res. Stn., Varanasi.

Type :- 'M'.

Object :- To study the response of Paddy to N, P and Calcium.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Peas and gram. (c) N.A. (ii) (a) Clay loam. (b) Refer soil analysis, Varanasi. (iii) 19.5.1950/29 and 30.6.1950. (iv) (a) 4 ploughings on 13.5.1950, 19.6.1950, 22.6.1950 and 23.6.1950. (b) Transplanted. (c) —. (d) N.A. (e) N.A. (v) Nil. (vi) T-136 (early). (vii) N.A. (viii) Nil. (ix) 39.30". (x) 26.9.1950 and 27.9.1950.



**2. TREATMENTS :**

All combinations of (1), (2) and (3)

(1) 3 levels of N :  $N_0=0$ ,  $N_1=30$  and  $N_2=60$  lb./ac.(2) 3 levels of  $P_2O_5$  :  $P_0=0$ ,  $P_1=20$  and  $P_2=40$  lb./ac.(3) 3 levels of Calcium :  $C_0=0$ ,  $C_1=30$  and  $C_2=60$  lb./ac. of Ca.N as A/S,  $P_2O_5$  as Super and Ca as Gypsum. Manuring on 24.6.1950.**3. DESIGN :**(i)  $3^3$  partially confounded. (ii) (a) 9 plots/block 3 block/replication. (b) N.A. (iii) 2. (iv) (a)  $18' \times 42'$ . (b)  $12' \times 36'$ . (v) 3' around. (vi) Yes.**4. GENERAL :**(i) N.A. (ii) Slightly affected by *gundhi* bug, yield reduced by 20%. (iii) Grain yield. (iv) (a) 1949—1953. (b) No. (c) No. (v) (a) Atarra (Banda), Tissuhi (Mirzapur), Bharari (Jhansi) Pachperwa (Gonda) Nawabganj (Barilly) and Nagina (Bijnor). (b) N.A. (vi) Nil. (vii) Conducted by C.P.**5. RESULTS :**

(i) 237.4 lb./ac.

(ii) 170.3 lb./ac.

(iii) Main effects of N, P, C and their interactions are not significant.

(iv) Av. yield of grain in lb./ac.

	$P_0$	$P_1$	$P_2$	Mean	$C_0$	$C_1$	$C_2$
$N_0$	246.3	220.4	198.8	221.8	177.2	276.6	211.7
$N_1$	207.4	330.6	341.4	293.1	309.0	287.4	283.0
$N_2$	181.4	168.5	242.0	197.3	237.7	194.5	159.9
Mean	211.7	239.8	260.7	237.4	241.3	252.8	218.2
$C_0$	203.1	231.2	289.5				
$C_1$	218.2	259.3	280.9				
$C_2$	213.9	229.0	211.7				

S.E. of any marginal mean

=28.3 lb./ac.

S.E. of body of any table

=49.1 lb./ac.

Crop :- Paddy.

Ref :- U.P. 52(214).

Site :- Regional Res. Stn., Varanasi.

Type :- 'M'.

Object :- To study the response of late Paddy to N, P and Calcium.

**1. BASAL CONDITIONS :**

(i) (a) Nil. (b) Barley. (c) N.A. (ii) (a) Clayey loam. (b) Refer soil analysis, Varanasi. (iii) N.A. 20.7.1952. (iv) N.A. (v) Nil. (vi) N-22 (early). (vii) N.A. (viii) N.A. (ix) N.A. (x) N.A.

**2. TREATMENTS :**

All combinations (1), (2) and (3)

(1) 3 levels of N :  $N_0=0$ ,  $N_1=30$  and  $N_2=60$  lb./ac.(2) 3 levels of  $P_2O_5$  :  $P_0=0$ ,  $P_1=20$  and  $P_2=40$  lb./ac.(3) 3 levels of Calcium :  $C_0=0$ ,  $C_1=30$  and  $C_2=60$  lb./ac.N as A/S,  $P_2O_5$  as Super and Ca as Gypsum. Date of manuring 12.7.1952.**3. DESIGN :**(i)  $3^3$  partially confounded. (ii) (a) 9 plots/block, 3 blocks/replication. (b) N.A. (iii) 2. (iv) (a)  $18' \times 42'$ . (b)  $12' \times 36'$ . (v) 3' around. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) N.A. (iii) Grain yield. (iv) (a) 1949—1953. (b) No. (c) No. (v) (a) Pachperwa (Gonda) Tissuhi (Mirzapur), Nagina (Bijnor), Nawabganj (Bareilly), Faizabad, Atarra (Banda), and Bharari (Jhansi). (b) N.A. (vi) Nil. (vii) Conducted by C.P.

## 5. RESULTS :

- (i) 709.4 lb./ac.  
(ii) 279.8 lb./ac.  
(iii) None of the effects and their interactions is significant.  
(iv) Av. yield of grain in lb./ac.

	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>	Mean	C <sub>0</sub>	C <sub>1</sub>	C <sub>2</sub>
N <sub>0</sub>	747.6	600.7	697.9	682.1	764.9	615.8	665.5
N <sub>1</sub>	764.9	676.3	795.1	745.4	730.3	803.8	702.2
N <sub>2</sub>	747.6	734.6	620.1	700.8	741.1	743.3	617.9
Mean	753.4	670.5	704.4	709.4	745.4	721.0	661.9
C <sub>0</sub>	907.5	605.0	723.8				
C <sub>1</sub>	665.5	855.6	641.7				
C <sub>2</sub>	687.1	551.0	747.6				

S.E. of any marginal mean  
S.E. of body of any table

= 65.9 lb./ac.  
=114.2 lb./ac.

Crop :- Paddy.

Site :- Regional Res. Stn. Varanasi.

Ref :- U.P. 53(39)

Type :- 'M'.

Object :- To study the response of Paddy to N, P and Calcium.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Pea. (c) Nil. (ii) (a) Clay Loam. (b) Refer soil analysis, Varanasi. (iii) 23,24.7.1953. (iv) (a) Ploughing on 21 and 23.7.1953. (b) Transplanting. (c) —. (d) Row spacing 12" and plan spacing 9". (e) Single seedling. (v) Nil. (vi) N-22 (late). (vii) Irrigated. (viii) Intercultural operation such as hoeing and weeding are common in practice. (ix) N.A. (x) 16.10.53.

## 2. TREATMENTS :

All combinations of (1), (2) and (3).

(1) 3 levels of N :- N<sub>0</sub>=0, N<sub>1</sub>=30 and N<sub>2</sub>=60 lb./ac.

(2) 3 levels of P<sub>2</sub>O<sub>5</sub> :- P<sub>0</sub>=0, P<sub>1</sub>=20 and P<sub>2</sub>=40 lb./ac.

(3) 3 levels of Calcium :- C<sub>0</sub>=0, C<sub>1</sub>=30 and C<sub>2</sub>=60 lb./ac.

N as A/S, P<sub>2</sub>O<sub>5</sub> as Super and Ca as Gypsum. Super placed 3"-4" deep in soil behind the plough 3 days before sowing. Gypsum applied as surface dressing a day before sowing. A/S applied as top dressing 2 weeks after germination.

## 3. DESIGN :

(i) 3<sup>3</sup> confounded factorial. (ii) (a) 9 plots/block, 3 blocks/replication. (b) N.A. (iii) 2. (iv) (a) 18'×42' (b) 12'×36'. (v) Plot bound 3'×1' (high) around. Irrigation channel 4' and field border 4' around. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Slight attack of *Gundhi* bug. (iii) Grain yield and straw yield. (iv) (a) 1949—1953. (b), (c) No. (v) (a) Attara, Bharari (Jhansi), Faizabad and Nawabganj (Bareilly). (b) N.A. (vi) Nil. (vii) Conducted by C.P.

## 5. RESULTS :

- (i) 2174 lb./ac.  
(ii) 233.8 lb./ac.  
(iii) Main effects of N, P, and C are highly significant. Interaction NXP is significant. Interactions N×C and P×C are not significant.

(iv) Av. yield of grain in lb./ac.

	N <sub>0</sub>	N <sub>1</sub>	N <sub>2</sub>	Mean	C <sub>0</sub>	C <sub>1</sub>	C <sub>2</sub>
P <sub>0</sub>	1478	1694	1932	1701	1357	1776	1971
P <sub>1</sub>	1990	2474	2331	2265	1843	2411	2541
P <sub>2</sub>	2286	2446	2934	2555	2124	2573	2969
Mean	1918	2205	2399	2174	1775	2253	2494
C <sub>0</sub>	1445	1763	2115				
C <sub>1</sub>	1988	2416	2357				
C <sub>2</sub>	2321	2435	2725				

S.E. of marginal mean of N, P or C  
S.E. of body of any table

=55.1 lb./ac.  
=95.4 lb./ac.

Crop :- Paddy.

Ref :- U.P. 52(173).

Site :- Regional Res. Stn., Varanasi.

Type :- 'M'.

Object :- To study the effect of varying doses of trace elements in presence of adequate quantities of N, P and K on growth, yield and quality of Paddy.

**1. BASAL CONDITIONS :**

(i) (a) Nil. (b) Wheat. (c) N.A. (ii) (a) Clay Loam. (b) Refer soil analysis, Varanasi. (iii) N.A. (iv) (a) N.A. (b) Transplanted. (c) —. (d), (e) N.A. (v) P<sub>2</sub>O<sub>5</sub> to be applied 6" deep, in furrows while preparing the field. A/S and Potassium Sulphate as top dressing one week before transplanting. (vi) N-22 (Early). (vii) N.A. (viii) N.A. (ix) N.A. (x) N.A.

**2. TREATMENTS :**

1. Control.
2. Molybdenum (Mo) as Molybdic acid at 6 lb./ac. of Mo.
3. Copper (Cu) as Copper Sulphate at 6 lb./ac. of Cu.
4. Boron (B) as commercial Borax at 1 lb./ac. of B.
5. Sulphur (S) as commercial Sulphur at 50 lb./ac. of S.
6. Zinc (Zn) as Zinc Sulphate at 4 lb./ac. of Zn.

A basal dose of A/S at 30 lb./ac. of N+Super at 15 lb./ac. of P<sub>2</sub>O<sub>5</sub>+Pot. Sul. at 15 lb./ac. of K<sub>2</sub>O. is applied to all treatments. Trace elements mixed with fine earth and applied as surface dressing 5—6 days before sowing.

**3. DESIGN :**

(i) L. Sq. (ii) (a) 6. (b) N.A. (iii) 6. (iv) (a) 35'×27'. (b) 31'×23'. (v) 2' around. (vi) Yes.

**4. GENERAL :**

(i) No lodging. Satisfactory. (ii) Nil. (iii) Grain yield. (iv) (a) 1952—1953. (b) & (c) No, (v) (a) Atarra, Faizabad, Bharari (Jhansi), Belatal, Bharach, Nawabganj (Bareilly) and Lucknow. (b) N.A. (vi) Nil. (vii) Conducted by C.P.

**5. RESULTS :**

- (i) 1696 lb./ac.
- (ii) 295.7 lb./ac.
- (iii) Treatment differences are significant.
- (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	1990
2.	1670
3.	1817
4.	1435
5.	1793
6.	1471

S.E./mean = 120.7 lb./ac.

Crop :- Paddy.

Ref :- U.P. 53(37).

Site :- Regional Res. Stn., Varanasi.

Type :- 'M'.

Object :- To study the effect of varying doses of trace elements in the presence of adequate N, P, Potassium and Calcium on growth yield and quality of Paddy.

## 1. BASAL CONDITIONS :

(i) (a) Leguminous crop. (b) Gram. (c) Nil. (ii) (a) Clay loam. (b) Refer soil analysis, Varanasi. (iii) 17.7.1953. (iv) Ploughing on 14, 15 and 17.7.1953. (b) Transplanting of single seedling. (c) 12 ars./ac. in nursery bed. (d) Plant spacing 9" and row spacing 12". (Improved method). (e) -. (v) (1) Green manuring, (2) A/S at 30 lb./ac of N. (3) Super at 30 lb./ac. of  $P_2O_5$ , (4) Sulphate of potash at 15 lb./ac. of  $K_2O$  and (5) Gypsum at 15 lb./ac. of CaO. (vi) N-22 (late). (vii) Irrigated. (viii) Interculturing between rows 3-4 times with hand hoes. Weeding is also performed. 1st weeding after 10-15 days of transplanting. (ix) Not recorded. (x) 14.10.1953.

## 2. TREATMENTS :

Main-plot treatments :

3 trace elements : Cu=Copper as Copper Sulphate, B=Boron as Borax and Zn=Zinc as Zinc Sulphate.

Sub-plot treatments :

Levels of trace elements :  $L_0$ ,  $L_1$ ,  $L_2$  and  $L_3$  :Levels of Cu :  $L_0=0$ ,  $L_1=3$ ,  $L_2=6$  and  $L_3=12$  lb./ac.Levels of B :  $L_0=0$ ,  $L_1=1$ ,  $L_2=2$  and  $L_3=4$  lb./ac.Levels of Zn :  $L_0=0$ ,  $L_1=1$ ,  $L_2=4$  and  $L_3=10$  lb./ac.

## 3. DESIGN :

(i) Split-plot. (ii) (a) 3 main-plots/replication and 4 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) 28' x 37', sub-plot size 56' x 77' main-plot size. (b) 25' x 34'. (v) Plot bund 1.5' x 1' (high) bund around, block partition and irrigation channel 3' and field border 2' around. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Attacked by rice *gundhi bug*. (iii) Grain and straw yield. (iv) (a) 1952-1953. (b) and (c) No. (v) (a) Faizabad, Nawabgunj, Baharaich, Banda, Bharari and Jhansi. (b) N.A. (vi) Nil. (vii) Conducted by C.P.

## 5. RESULTS :

(i) 1017 lb./ac.

(ii) (a) 189.5 lb./ac.

(b) 178.1 lb./ac.

(iii) Sub-plot treatments within main-plot are significant. Others are not significant.

(iv) Av. yield of grain in lb./ac.

	Cu	B	Zn
$L_0$	988	984	1129
$L_1$	1041	1274	1054
$L_2$	1028	984	808
$L_3$	1230	764	914
Mean	1072	1002	976

S.E. of difference of two

1. main-plot treatment means

=77.34 lb./ac.

2. means in the same column

=38.92 lb./ac.

Crop :- Paddy (*Kharif*).

Ref :- U.P. 51(239).

Site :- Nawabgunj (Bareilly).

Type :- 'M'.

Object :- To draw out a suitable fertilizer schedule for this agriculturally important soil type.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) N.A. (c) N.A. (ii) Bareilly type 3 E and 3F. (iii) N.A. (iv) Improved. (v) (a) As practiced locally. No details are available. After application of manure the field is levelled by drawing a *pata*. (b) Seeds sown in lines parallel to the fertilizer. (c) N.A. (d) At a distance of 1" to 2" away from the fertilizer line. (e) N.A. (vi) N.A. (vii) N.A. (viii) N.A. (ix) N.A. (x) N.A.

**2. TREATMENTS :**

1. Control.
2. 25 lb./ac. of N.
3. 25 lb./ac. of N+50 lb./ac. of  $P_2O_5$ .

Method of Application : N as A/S broadcast at the time of sowing and Phosphoric acid in the form of Super is applied to one of the plots over the N dose. Super is placed at a depth of 3"—4" deep at the sole of the furrow and in the sides of the furrow made by either an iron plough or two *desi* plough, one behind the other in the same furrow.

**3. DESIGN :**

- (i) and (ii) One village selected in the district and expt. with the above 3 treatments laid out in 10 replications.  
(iii) (a) and (b) N.A. (iv) N.A.

**4. GENERAL :**

- (i) Uniform growth ; satisfactory. (ii) N.A. (iii) Yield of paddy grain and straw. (iv) (a) No. (b) N.A. (c) N.A. (v) N.A. (vi) Nil. (vii) The expt. was conducted by A.C.

**5. RESULTS :**

- (i) 1080 lb./ac.  
(ii) 85.02 lb./ac.  
(iii) Treatment differences are highly significant.  
(iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	894
2.	1106
3.	1241
S.E./mean	= 26.89 lb./ac.

Crop :- Paddy (*Kharif*).

Ref :- U.P. 50(236).

Site :- Nawabganj (Bareilly).

Type :- 'M'.

Object :—To draw out a suitable fertilizer schedule for this agriculturally important soil type.

**1. BASAL CONDITIONS :**

- (i) (a) N.A. (b) N.A. (c) N.A. (ii) Bareilly type 3 E and 3 F. (iii) N.A. (iv) Improved. (v) (a) to (e) N.A. (vi) N.A. (vii) Generally irrigated. (viii) N.A. (ix) N.A. (x) N.A.

**2. TREATMENTS :**

1. Control.
2. 15 lb./ac. of N
3. 15 lb./ac. of N+30 lb./ac. of  $P_2O_5$ .  
N as A/S and  $P_2O_5$  as Super.

**3. DESIGN :**

- (i) and (ii) R.B.D. in which villages have been taken as replications (No. of villages=4) Fields selected randomly in randomly selected villages in the district. (iii) (a) N.A. (b) N.A. (but generally 1/40th of an ac.). (iv) N.A.

**4. GENERAL :**

- (i) N.A. (ii) N.A. (iii) Grain yield. (iv) (a) No. (b) N.A. (c) N.A. (v) N.A. (vi) Nil. (vii) The experiment was conducted by A.C.

**5. RESULTS :**

- (i) 1827 lb./ac.  
(ii) 85.30 lb./ac.  
(iii) Treatment differences are highly significant.  
(iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	1669
2.	1786
3.	2025
S.E./mean	=42.65 lb./ac.

Crop :- Paddy (*Kharif*).

Ref :- U.P. 51(225).

Site :- Robertsganj and Dubhi (Mirzapur).

Type :- 'M'.

Object :- To draw out a suitable fertilizer schedule for this agriculturally important soil type.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) N.A. (c) N.A. (ii) *Dhaunsar, Domat and Karail*. (iii) N.A. (iv) Improved. (v) (a) to (e) N.A. (vi) N.A. (vii) N.A. (viii) N.A. (ix) N.A. (x) N.A.

## 2. TREATMENTS :

1. Control.
2. 25 lb./ac. of N.
3. 25 lb./ac. of N+50 lb./ac. of  $P_2O_5$ .

## 3. DESIGN :

(i) and (ii) R.B.D. in which villages have been taken as replications (No of villages=21). Field selected randomly in a randomly selected village in the District. (iii) (a) N.A. (b) N.A. (iv) N.A.

## 4. GENERAL :

(i) N.A. (ii) N.A. (iii) Grain yield. (iv) No. (b) N.A. (c) N.A. (v) N.A. (vi) Nil. (vii) The experiment was conducted by A.C.

## 5. RESULTS :

- (i) 1797 lb./ac.
- (ii) 175.9 lb./ac.
- (iii) Treatment differences are highly significant.
- (iv) Av. yield of grain of in lb./ac.

Treatment	Av. yield
1.	1431
2.	1856
3.	2104
S.E./mean	=38.4 lb./ac.

Crop :- Paddy (*Kharif*).

Ref :- U.P. 51(235).

Site :- Kichha (Nanital).

Type :- 'M'.

Object :- To draw out a suitable fertilizer schedule for this agriculturally important soil type.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) N.A. (c) N.A. (ii) (1) *Domat*. (2) Clayey loam. (3) Light loam. (4) *Matiyar*. (iii) N.A. (iv) Improved. (v) (a) As practised locally No details are available. After application of manures the field is levelled by drawing a *pata*. (b) Seeds sown in lines parallel to the fertilizer band. (c) N.A. (d) At a distance of 1" to 2" away from the fertilizer line. (e) N.A. (vi) N.A. (vii) N.A. (viii) N.A. (ix) N.A. (x) N.A.

## 2. TREATMENTS :

1. Control.
2. 25 lb./ac. of N.
3. 25 lb./ac. of N+50 lb./ac. of  $P_2O_5$ .

N as A/S broadcast at the time of sowing  $P_2O_5$  as Super applied to one of the plots over the N dose, Super is placed at a depth of 3"-4" at the sole of the furrow and the sides of the furrow made by either an iron plough or two *desi* ploughs, one behind the other in the same furrow.

## 3. DESIGN :

(i) and (ii) Villages selected in the district and experiments with the above three treatments laid out with 8 replications. (iii) (a) N.A. (b) N.A. (iv) N.A.

## 4. GENERAL :

(i) One trial has excellent stand and four trials have good stand. One trial was infested with kans. One trial damaged by animals. (ii) One trial damaged by borer. (iii) Grain and straw yield. (iv) (a) No. (b) N.A. (c) N.A. (v) N.A. (vi) Nil. (vii) The experiment was conducted by A.C.

## 5. RESULTS :

- (i) 1318 lb./ac.  
 (ii) 119.9 lb./ac.  
 (iii) Treatment difference are highly significant.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	1155
2.	1360
3.	1440
S.E./mean	=42.4 b./ac.

Crop :- Paddy (*Kharif*).

Ref :- U.P. 52(283).

Site :- Bilaspur and Kichha (Nanital.)

Type :- 'M'.

Object :- To draw out a suitable fertilizer schedule for this agriculturally important soil type.

## 1. BASAL CONDITIONS :

- (i) (a) N.A. (b) N.A. (c) N.A. (ii) *Teral* soil. (iii) Clayey loam to loam. (iv) Improved. (v) (a) After application of  $P_2O_5$  the field was levelled by drawing a *pata* and seeds sown. (b) Sown by broadcast. (c) N.A. (d) N.A. (e) N.A. (vi) N.A. (vii) N.A. (viii) N.A. (ix) N.A. (x) N.A.

## 2. TREATMENTS :

1. Control.  
 2. 25 lb./ac. of N.  
 3. 25 lb./ac. of N+50 lb./ac. of  $P_2O_5$ .

N applied as A/S and  $P_2O_5$  as Super. Nitrogen applied to surface at sowing time. Super is placed at a depth of about 3"-4" deep at the sole of the furrow and in the side of the seed row made by either an iron plough or two *desi* ploughs one behind the other in the same furrow.

## 3. DESIGN :

- (i) and (ii) Villages selected in the district and the experiment laid out with 8 replications. (iii) (a) N.A. (b) N.A. (iv) N.A.

## 4. GENERAL :

- (i) Poor growth for 4 trials, good for two trials and normal for 2 trials. (ii) N.A. (iii) Grain and straw yield. (iv) (a) No. (b) N.A. (c) N.A. (v) N.A. (vi) Nil. (vii) The experiment was conducted by A.C.

## 5. RESULTS :

- (i) 1828 lb./ac.  
 (ii) 307.1 lb./ac.  
 (iii) Treatment differences are not significant.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	1608
2.	1887
3.	1989
S.E./mean	=108.6 lb./ac.

Crop :- Paddy (*Kharif*).

Ref :- U.P. 51(300).

Site :- State Usar Reclamation Farm, Dhakauni.

Type :- 'C'.

Object :- To study whether leaching with water alone helps in reclaiming saline alkali soils.

## 1. BASAL CONDITIONS :

- (i) (a) No. (b) No. (c) Nil. (ii) (a) Saline alkali. (b) N.A. (iii) 20.7.1951/1.8.1951. (iv) (a) One ploughing and one harrowing by tractor. (b) Transplanted and broadcast. (c) 5 md./ac. (d) Irregular (e) One seedling per hole. (v) Nil. (vi) No. 22 (early). (vii) Irrigated. (viii) Nil. (ix) 21.07". (x) 18.10.1951.

## 2. TREATMENTS :

Two cultural operations :  $L_0$ =No leaching and  $L_1$ =leaching with water.

## 3. DESIGN :

(i) Paired-plot. (ii) (a) 2. (b) N.A. (iii) 2. (iv) (a) and (b)  $L_0=0.48$  ac.,  $L_1=0.59$  ac. ;  $L_0=0.37$  ac.,  $L_1=0.59$  ac. (v) Nil. (vi) Yes.

## 4. GENERAL :

(i) Nil. (ii) Nil. (iii) Grain yield. (iv) (a) 1951—1955. (b) Yes. (c) Nil. (v) Nil. (vi) Nil. (vii) The expt. was conducted by J.D.A.S.(D).

## 5. RESULTS :

- (i) 291.8 lb./ac.  
 (ii) 72.64 lb./ac.  
 (iii) Treatments do not differ significantly.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
$L_0$	59.0
$L_1$	524.5
S.E./mean	=51.36 lb./ac.

Crop :- Paddy (*Kharif*).

Ref :- U.P. 52(344)/51(300).

Site :- State Usar Reclamation Farm, Dhakauni. Type :- 'C'.

Object :- To study whether leaching with water alone helps in reclaiming saline alkali soils.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) Nil. (ii) (a) Saline alkali. (b) pH value varies from 7.9 to 9.6 at different depths. (iii) N.A. (iv) (a) One ploughing with *gujar* plough. (b) Transplanted. (c) —. (d) Irregular. (e) One seedling/hole. (v) No. (vi) Type 100 (late). (vii) Irrigated. (viii) No. (ix) N.A. (x) 22.11.1952.

## 2. TREATMENTS :

Two Cultural operations :  $L_0$ =No leaching and  $L_1$ =leaching with water.

## 3. DESIGN :

(i) Paired-plot. (ii) (a) 2. (b) N.A. (iii) 2. (iv) (a) and (b)  $L_0=0.48$  ac.,  $L_1=0.59$  ac. ;  $L_0=0.37$  ac.,  $L_1=0.59$  ac. (v) Nil. (vi) Yes.

## 4. GENERAL :

(i) No lodging. (ii) Nil. (iii) Grain yield. (iv) (a) 1951—1955. (b) Yes. (c) Nil. (v) Nil. (vi) Nil. (vii) The expt. was conducted by J.D.A.S. (D).

## 5. RESULTS :

- (i) 739.4 lb./ac.  
 (ii) 302.2 lb./ac.  
 (iii) Treatments do not differ significantly.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
$L_0$	246.9 lb./ac.
$L_1$	1231.9 lb./ac.
S.E./mean	=213.7 lb./ac.

Crop :- Paddy. (*Kharif*).

Ref :- U.P. 52(401)/52(344)/51(300)

Site :- State Usar Reclamation Farm, Dhakauni. Type :- 'C'.

Object :- To study whether leaching with water alone helps in reclaiming saline alkali soils.

## 1. BASAL CONDITIONS :

(i) (a) No. (b) Paddy. (c) Nil. (ii) (a) Saline alkali. (b) pH value varies from 7.8 to 9.5 at different depths. (iii) 7 and 8.8.1953. (iv) (a) One ploughing by *gujar* plough. (b) Transplanting. (c) —. (d) Irregular. (e) One seedling per hole. (v) Nil. (vi) Type 100 (late). (vii) Irrigated. (viii) Nil. (ix) 15.19. (x) 15 and 29.11.1953.



## 2. TREATMENTS :

Two cultural operations :  $L_0$  = No leaching and  $L_1$  = leaching with water.

## 3. DESIGN :

(i) Paired-plot. (ii) (a) 2. (b) N.A. (iii) 2. (iv) (a) and (b)  $L_0=0.48$  ac.,  $L_1=0.59$  ac., [ $L_0=0.37$  ac.,  $L_1=0.59$  ac (v) Nil. (vi) Yes.

## 4. GENERAL :

(i) Normal. (ii) Nil. (iii) Grain yield. (iv) (a) 1951-1955. (b) Yes. (c) Nil. (v) Nil. (vi) Nil. (vii) The expt. was conducted by J.D.A.S. (D).

## 5. RESULTS :

- (i) 469.0 lb./ac.  
 (ii) 134.4 lb./ac.  
 (iii) Treatments do not differ significantly.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
$L_0$	253.0
$L_1$	685.1
S.E./mean	=95.0 lb./ac.

Crop :- Paddy. (*Kharif*).

Ref :- U.P. 52(343).

Site :- State Usar Reclamation Farm, Dhakauni

Type :- 'C'.

Object :- To study whether leaching by water alone helps in reclaiming saline at alkali soils.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) No. (c) Nil. (ii) (a) Saline alkali. (b) pH value varies from 10.60 to 11.90 at different depths. (iii) 23 to 31.7.52. (iv) (a) One ploughing by *gajar* plough. (b) Transplanted. (c) — (d) Irregular (e) 1 seedling per hole. (v) Nil. (vi) Type 100 (late). (vii) Irrigated. (viii) Nil. (ix) 21.56°. (x) 22 to 24.11.52.

## 2. TREATMENTS :

Two cultural operations :  $L_0$  = No leaching and  $L_1$  = Leaching with water.

## 3. DESIGN :

(i) Paired-plot. (ii) (a) 2. (b) N.A. (iii) 8. (iv) (a) 0.50 acre. (b) 0.50 acre. (v) Nil. (vi) Yes.

## 4. GENERAL :

(i) No lodging. (ii) Nil. (iii) Grain yield. (iv) (a) 1952-1956. (b) Yes. (c) Nil. (v) Nil. (vi) Nil. (vii) The expt. was conducted by J.D.A.S. (D).

## 5. RESULTS :

- (i) 299.5 lb./ac.  
 (ii) 123.3 lb./ac.  
 (iii) Treatments do not differ significantly.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
$L_0$	253.7
$L_1$	345.3
S.E./mean	=43.6 lb./ac.

Crop :- Paddy (*Kharif*).

Ref :- U.P. 53(400)/52(343).

Site :- State Usar Reclamation Farm, Dhakauni.

Type :- 'C'.

Object :- To study whether leaching by water alone helps in reclaiming saline alkali soils.

## 1. BASAL CONDITIONS :

(i) (a) No. (b) No. (c) Nil. (ii) (a) Saline alkali. (b) pH value varies from 10.0 to 11.20 at different depths. (iii) 5 to 28 8.1953. (iv) (a) One ploughing by *gajar* plough. (b) Transplanted. (c) — (d) Irregular. (e) 1 seedling/hole. (v) Nil. (vi) Type 100 (late). (vii) Irrigated. (viii) One weeding. (ix) 15.19°. (x) 13 to 17.11.1953.

## 2. TREATMENTS :

Two cultural operations :  $L_0$ =No leaching and  $L_1$ =Leaching with water.

## 3. DESIGN :

(i) Paired-plot. (ii) (a) 2. (b) N.A. (iii) 8. (iv) (a) 0.50 ac. (b) 0.50 ac. (v) Nil. (vi) Yes.

## 4. GENERAL :

(i) No lodging. (ii) Nil. (iii) Grain yield. (iv) (a) 1952-1956. (b) Yes. (c) Nil. (v) Nil. (vi) Nil. (vii) The expt. was conducted by J.D.A.S. (D).

## 5. RESULTS :

- (i) 232.4 lb./ac.  
 (ii) 82.78 lb./ac.  
 (iii) Treatments differ significantly.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
$L_0$	182.6
$L_1$	282.1
S.E./mean	= 29.87 lb./ac.

Crop :- Paddy.

Ref :- U.P. 51(268).

Site :- Rice Res. Sub-Stn., Kunraghat.

Type :- 'C'.

Object :- Rotational trial for early Paddy. (For final rotation).

## 1. BASAL CONDITIONS :

(i) (a) As per treatments. (b) As per treatments. (c) N.A. (ii) (a) Medium loam. (b) N.A. (iii) 1.7.1952. (iv) (a) One ploughing by Punjab and two by *desi* plough. (b) Broadcast. (c) 37 srs./ac. (d) —. (e) —. (v) Nil. (vi) N-22 (early paddy). (vii) Unirrigated. (viii) Weeding on 30.8.1951. (ix) 20.20". (x) 7 and 8.10 1951.

## 2. TREATMENTS :

- A. Paddy—Pea—Paddy—Pea—Paddy.  
 B. Paddy—Pea—Maize—Berseem—Paddy.  
 C. Paddy—Pea—Sugarcane—Paddy.  
 D. Paddy—Berseem—*Sawan*—Pea—Paddy.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) 172'×173'. (iii) 6. (iv) (a) 42'×20'. (b) 40'×18'. (v) 1' around the net plot left as non experimental area. (vi) Yes.

## 4. GENERAL :

(i) Good growth. No lodging. (ii) Nil. (iii) Height, tillering and yield of paddy grain: (iv) (a) 1949-1951. (b) As per rotations. (c) Nil. (v) (a) and (b) N.A. (vi) Nil. (vii) Experiment conducted by Assistant Economic Botanist (Paddy) to Govt., of U.P., Nagina Analysis is done only for the final year rotation. For the first two years of rotation only mean yields of different crops are given.

## 5. RESULTS :

- (i) 736.1 lb./ac.  
 (ii) 96.68 lb./ac.  
 (iii) Treatment differences are not significant.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
A	764.8
B	642.8
C	754.2
D	782.6
S.E./mean	= 39.47 lb./ac.

[Note :- The results given above are for the yield of paddy grain in the year 1951].

Crop :- Paddy.

Site :- Rice Res. Sub-Stn., Kunraghat.

Ref :- U.P. 53(317)

Type :- 'C'.

Object :- To find out the most suitable and economical long rotation of early Paddy under broadcast condition.

## 1. BASAL CONDITIONS :

(i) (a) Paddy-Pea and then the rotation as given under treatments. (b) As per treatments. (c) T.C.—giving about 40 lb./ac. of N. (ii) (a) Medium loam. (b) N.A. (iii) 1.7.1953. (iv) (a) Three *dest* ploughings and one victory ploughing. (b) Broadcast. (c) 37½ seers/ac. (d) —. (e) —. (v) Village compost 10 lb./ac. of C.L. giving about 40 lb./ac. of N and A/S @ 20 sr./ac. as top dressing. (vi) N-22 (early). (vii) Unirrigated. (viii) Weedings on 16.7.1953 and 8.8.1953. (ix) 37.38%. (x) 11 and 13.10.1953.

## 2. TREATMENTS :

- A. Paddy-Pea - Paddy-Pea—Paddy.  
 B. Paddy-Pea—Paddy-Berseem—Paddy.  
 C. Paddy-Pea—Sugarcane—Paddy.  
 D. Paddy-Berseem—*Sawan*-Pea—Paddy.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 6. (iv) (a) 42'—6" × 39'. (b) 40'—6" × 37'. (v) 1' left on all sides of the net plot as non-experimental area. (vi) Yes.

## 4. GENERAL :

(i) Growth is very good and uniform in all the plots. Full lodging in all the plots on 26.9.1950. (ii) Only slight attack of leaf-spot disease was observed in the last stage of the crop. Attack of grass hoppers and *gundhi* bug. Control measure :- One dusting with gammaxene was done. (iii) Height, tillering, yield of paddy grain. (iv) (a) 1951—1953. (b) As per rotation. (c) —. (v) (a) and (b) N.A. (vi) Nil. (vii) Experiment conducted by Assistant Economic Botanist (Paddy) to Govt. of U.P., Nagina. As this is a rotational expt., all the information and yield etc. are given in the two enclosed proformas. Analysis was done for the final year rotation crop. For the first two years only mean yields given. Analysis : was not done for 2 years.

## 5. RESULTS :

- (i) 1293 lb./ac.  
 (ii) 210.2 lb./ac.  
 (iii) Treatment differences are not significant.  
 (iv) Av. yield of paddy in lb./ac.

Treatment	Av. yield
A.	1382
B.	1235
C.	1299
D.	1257
S.E./mean	=85.8

Note :- The results given are for the Paddy of 1953 only.

Crop :- Paddy (*Kharif*).

Site :- Rice Res. Sub-Stn., Kunraghat.

Ref :- U.P. 48(117).

Type :- 'C'.

Object :- To find out the best time of broadcasting early Paddy.

## 1. BASAL CONDITIONS :

(i) (a) Paddy—Pea. (b) Pea. (c) Nil. (ii) (a) Medium loam. (b) N.A. (iii) As per treatments. (iv) (a) One victory plough and 3 *dest* ploughs. (b) Broadcast. (c) 35 srs./ac. (d) —. (e) —. (v) Village compost at 10 C.L./ac. giving about 40 lb./ac. of N. (vi) N-22 (early). (vii) Irrigated. (viii) 3 weedings. (ix) 43.59%. (x) 4 to 30.9.1948 and 10.10.1948.

## 2. TREATMENTS :

5 dates of broadcasting : D<sub>1</sub>=1.6.1948, D<sub>2</sub>=10.6.1948, D<sub>3</sub>=20.6.1948, D<sub>4</sub>=30.6.1948 and D<sub>5</sub>=10.7.1948.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 6. (iv) (a) 33'—6" × 18'. (b) 31'—6" × 16'. (v) 1' allround. (vi) Yes.

## 4. GENERAL:

(i) Good and vigorous growth in D<sub>1</sub>, D<sub>2</sub> and D<sub>3</sub> plots and stunted in D<sub>4</sub> and D<sub>5</sub> plots. (ii) Nil. (iii) Height, tillers and grain yield. (iv) (a) 1947—1950. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) Nil. (vii) Experiment conducted by Assistant Economic Botanist (Paddy) to Govt. of U.P., Nagina.

## 5. RESULTS:

- (i) 1594 lb./ac.  
 (ii) 240.4 lb./ac.  
 (iii) Treatment differences are highly significant.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
D <sub>1</sub>	2240
D <sub>2</sub>	1844
D <sub>3</sub>	1616
D <sub>4</sub>	1151
D <sub>5</sub>	1118
S.E./mean	= 98.1 lb./ac.

Crop :- Paddy (*Kharif*).

Ref :- U.P. 49(229).

Site :- Rice Res. Sub-Stn., Kunraghat.

Type :- 'M'.

Object:—To find out the best time of broadcasting early Paddy.

## 1. BASAL CONDITIONS:

(i) (a) Paddy-Pea. (b) Pea. (c) Nil. (ii) (a) Medium loam. (b) N.A. (iii) As per treatments. (iv) (a) One victory plough and 3 *desi* ploughs. (b) Broadcast. (c) 35 seers/ac. (d) —. (e) —. (v) Village compost at 10 C.L./ac. giving about 40 lb./ac. of N. (vi) N-22 (early). (vii) Irrigated. (viii) 3 weedings. (ix) 47.37°. (x) 30.8.1949, 10 and 21.9.1949; 3 and 13.10.1949.

## 2. TREATMENTS:

5 dates of broadcasting: D<sub>1</sub>=1.6.1949, D<sub>2</sub>=10.6.1949, D<sub>3</sub>=20.6.1949, D<sub>4</sub>=30.6.1949 and D<sub>5</sub>=10.7.1949.

## 3. DESIGN:

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 6. (iv) (a) 33'-6"×18'. (b) 31'-6"×16'. (v) 1' around the net plot. (vi) Yes.

## 4. GENERAL:

(i) Good growth. (ii) Nil. (iii) Grain yield. (iv) (a) 1947—1950. (b) No. (c) Nil. (v) (a) N.A. (b) N.A. (vi) Nil. (vii) Experiment conducted by Assistant Economic Botanist (Paddy) to Govt. of U.P., Nagina.

## 5. RESULTS:

- (i) 496.7 lb./ac.  
 (ii) 269.2 lb./ac.  
 (iii) Treatment differences are highly significant.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
D <sub>1</sub>	681.0
D <sub>2</sub>	512.7
D <sub>3</sub>	631.2
D <sub>4</sub>	569.8
D <sub>5</sub>	88.6
S.E./mean	=109.9 lb./ac.

Crop :- Paddy (*Kharif*).

Ref :- U.P. 50(279).

Site :- Rice Res. Sub-Stn., Kunraghat.

Type :- 'M'.

Object:—To find out the best time of broadcasting early Paddy.

## 1. BASAL CONDITIONS :

(i) (a) Paddy-Pea. (b) Pea. (c) Nil. (ii) (a) medium loam. (b) N.A. (iii) As per treatments. (iv) (a) One punjab plough and 3 *desi* ploughs. (b) Broadcast. (c) 35 seers/ac. (d) —. (e) —. (v) Village compost at 10 C.L./ac. giving about 40 lb./ac. of N. (vi) N-22 (early). (vii) Unirrigated. (viii) 3 weedings. (ix) 39.97%. (x) 12, 22.9.1950 ; 6 and 8.10.1950.

## 2. TREATMENTS :

5 dates of broadcasting : D<sub>1</sub>=1.6.1950, D<sub>2</sub>=10.6.1950, D<sub>3</sub>=20.6.1950, D<sub>4</sub>=30.6.1950 and D<sub>5</sub>=10.7.1950.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 6. (iv) (a) 33'-6" × 18". (b) 31'-6" × 16". (v) 1' around the net plot. (vi) Yes.

## 4. GENERAL :

(i) Germination and growth good in D<sub>1</sub>, D<sub>2</sub> and D<sub>3</sub> plots and not good in D<sub>4</sub> and D<sub>5</sub> plots. (ii) Attack of grass hoppers Dusted of Hexiclean. (iii) Grain yield. (iv) (a) 1947—1950. (b) No. (c) Nil. (v) (a) N.A. (b) N.A. (vi) Nil. (vii) The experiment was conducted by Assistant Economic Botanist (Paddy) to Govt. of U.P., Nagina.

## 5. RESULTS :

(i) 711.5 lb./ac.

(ii) 127.4 lb./ac.

(iii) Treatment differences are highly significant.

(iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
D <sub>1</sub>	988.6
D <sub>2</sub>	883.1
D <sub>3</sub>	851.7
D <sub>4</sub>	477.4
D <sub>5</sub>	357.7
S.E./mean	=52.0 lb./ac.

Crop :-Paddy (*Kharif*).

Ref :-U.P. 48(118).

Site :-Rice Res. Sub-Stn., Kunraghat.

Type :-'C'.

Object:—To find out the best time of transplanting early Paddy.

## 1. BASAL CONDITIONS :

(i) (a) Paddy-Pea. (b) Pea. (c) Nil. (ii) (a) Medium loam. (b) N.A. (ii) As per treatments. (iv) (a) One victory plough and 3 *desi* plough. (b) Transplanting. (c)—(d) N.A. (e) N.A. (v) 10 C.L./ac of village compost giving about 40 lb./ac. of N. (vi) T-136 (early). (vii) Irrigated. (viii) One weeding. (ix) 43.59%. (x) 1, 14 and 25.9.1948 and 1, 6.10.1948.

## 2. TREATMENTS :

5 dates of transplanting : D<sub>1</sub>=10.6.1948, D<sub>2</sub>=20.6.1948, D<sub>3</sub>=30.6.1948, D<sub>4</sub>=10.7.1948 and D<sub>5</sub>=20.7.1948.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) 37'-6" × 86'-6". (iii) 6. (iv) (a) 37'-6" × 16'-6" (b) 36' × 15'. (v) 9' around the net plot. (vi) Yes.

## 4. GENERAL :

(i) Good growth. (ii) Slight attack of *gundhi* bug in August. (iii) Height, tillers and grain yield. (iv) (a) 1948-1950. (b) No. (c) Nil. (v) (a), (b) N.A. (vi) Nil. (vii) Experiment conducted by Assistant Economic Botanist (Paddy) to Govt. of U.P., Nagina.

## 5. RESULTS :

- (i) 941 lb./ac.  
 (ii) 151.6 lb./ac.  
 (iii) Treatment differences are highly significant.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
D <sub>1</sub>	1448
D <sub>2</sub>	791
D <sub>3</sub>	1070
D <sub>4</sub>	1099
D <sub>5</sub>	299
S.E./mean	=61.9 lb./ac.

Crop :- Paddy. (*Kharif*).

Ref :- U.P. 49(226).

Site :- Rice Res. Sub-Stn., Kunraghat.

Type :- 'C'.

Object :- To find out the best time of transplanting early Paddy.

## 1. BASAL CONDITIONS :

- (i) (a) Paddy-Pea. (b) Pea. (c) Nil. (ii) (a) Medium loam. (b) N.A. (iii) As per treatments. (iv) (a) One victory plough and 3 *desi* ploughs. (b) Transplanting. (c) —. (d) N.A. (e) N.A. (v) 10 C.L. of village compost giving about 40 lb./ac. of N. (vi) T-136 (early). (vii) Unirrigated. (viii) 2 weedings. (ix) 47.37% (x) 30.8.1949, 9, 23 and 29.9.1949 and 13.10.1949.

## 2. TREATMENTS :

5 dates of transplanting : D<sub>1</sub>=10.6.1949, D<sub>2</sub>=20.6.1949, D<sub>3</sub>=30.6.1949, D<sub>4</sub>=10.7.1949 and D<sub>5</sub>=20.7.1949.

## 3. DESIGN :

- (i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 6. (iv) (a) 37'-6" × 16'-6". (b) 36" × 15'. (v) 9' around the net plot. (vi) Yes.

## 4. GENERAL :

- (i) Vigorous growth. (ii) Nil. (iii) Height, tiller and grain yield. (iv) (a) 1948-1950. (b) No. (c) Nil. (v) (a) N.A. (vi) Nil. (vii) Experiment conducted by Assistant Economic Botanist (Paddy) to Govt., of U.P. Nagina.

## 5. RESULTS :

- (i) 694.5 lb./ac.  
 (ii) 158.0 lb./ac.  
 (iii) Treatment differences are highly significant.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
D <sub>1</sub>	770.6
D <sub>2</sub>	869.6
D <sub>3</sub>	943.7
D <sub>4</sub>	675.7
D <sub>5</sub>	212.7
S.E./mean	=64.5 lb./ac.

Crop :- Paddy (*Kharif*).

Ref :- U.P. 50(283).

Site :- Rice Res. Sub-Stn., Kunraghat.

Type :- 'C'.

Object :- To find out the best time of transplanting early Paddy.

## 1. BASAL CONDITIONS :

- (i) (a) Nil. (b) Fallow. (c) Nil. (ii) (a) Medium Loam. (b) N.A. (iii) As per treatments. (iv) (a) One victory plough and 3 *desi* ploughs. (b) Transplanting. (c) —. (d) N.A. (e) N.A. (v) Nil. (vi) T-136 (early). (vii) N.A. (viii) 2 weedings. (ix) 39.97%. (x) 29.8.1950, 10.29.9.1950 and 6.10.1950.

**2. TREATMENTS :**

5 dates of transplanting :  $D_1=10.6.1950$ ,  $D_2=20.6.1950$ ,  $D_3=30.6.1950$ ,  $D_4=10.7.1950$  and  $D_5=20.7.1950$ .

**3. DESIGN :**

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 6. (iv) (a)  $37'-5'' \times 16'-6''$ . (b)  $36' \times 15'$ . (v) 9' around the net plot. (vi) Yes.

**4. GENERAL :**

(i) Satisfactory. (ii) Nil. (iii) Height, tillering and grain yield. (iv) (a) 1948—1950. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) Nil. (vii) Expt. conducted by Assistant Economic Botanist (Paddy) to Govt. of U.P., Nagina.

**5. RESULTS :**

- (i) 1070 lb./ac.  
 (ii) 203.5 lb./ac.  
 (iii) Treatment differences are highly significant.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
$D_1$	1731
$D_2$	1583
$D_3$	644
$D_4$	803
$D_5$	587
S.E./mean	=83.1 lb./ac.

Crop :- Paddy (*Kharif*).

Ref :- U.P. 48(120).

Site :- Rice Res. Sub-Stn., Kunraghat.

Type :- 'C'.

Object :- To find out the best method of sowing early Paddy.

**1. BASAL CONDITIONS :**

(i) (a) Paddy—gram. (b) Gram. (c) Nil. (ii) (a) Sandy Loam. (b) N.A. (iii) 21.6.1948, 3.7.1948. (iv) (a) One victory plough and 3 *desi* ploughs. (b) Broadcast. (c) 37 seers/ac. (d)—. (e)—. (v) 10 C.L./ac. of village compost giving about 40 lb./ac. of N. A/S at 50 lb./ac. of N as top dressing. (vi) N. 22 (early). (vii) Irrigated. (viii) 2 weedings. (ix) 43.59%. (x) 20, 21.10.1948.

**2. TREATMENTS :**

4 methods of sowing :

1. Dry Sowing.
2. Sowing in moisture.
3. Sowing in puddled field with germinated seed.
4. Sowing in puddled field with ungerminated seed.

**3. DESIGN :**

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 6. (iv) (a)  $37' \times 21'-3''$  (b)  $35' \times 19'-3''$ . (v) 1' around the net plot. (vi) Yes.

**4. GENERAL :**

(i) Good growth. (ii) Nil. (iii) Height, tillering and grain yield. (iv) (a) 1948—1951. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) Nil. (vii) Experiment conducted by Assistant Economic Botanist (Paddy) to U.P. Nagina.

**5. RESULTS :**

- (i) 1172 lb./ac.  
 (ii) 122.1 lb./ac.  
 (iii) Treatment differences are highly significant.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	1085
2.	1413
3.	1167
4.	1023
S.E./mean (except treatment 4)	=49.9 lb./ac.

Crop :- Paddy (*Kharif*).  
Site :- Rice Res. Sub-Stn., Kunraghat.

Ref :- U.P. 49(225).  
Type :- 'C'.

Object :—To find out the best method of sowing early Paddy.

1. BASAL CONDITIONS :

(i) (a) Paddy—Gram. (b) Gram. (c) Nil. (ii) (a) Sandy loam. (b) N.A. (iii) 7.6.1949. (iv) (a) One victory plough and 3 *desi* ploughs. (b) Broadcast. (c) 37 srs./ac. (d)—. (e)—. (v) Village compost at 10 C.L./ac. giving 40 lb./ac. of N. (vi) N-22 (early). (vii) Irrigated. (viii) 2 weedings. (ix) 47.37%. (x) 12.10.1949.

2. TREATMENTS :

4 methods of sowing :

1. Dry sowing.
2. Sowing in moisture.
3. Sowing in puddled field with germinated seed.
4. Sowing in puddled field with ungerminated seed.

3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 6. (iv) (a) 37'×21'-5". (b) 35'×19'-6". (v) 1' around the net plot. (vi) Yes.

4. GENERAL :

(i) Good growth. (ii) Slight attack of white ants. (iii) Height, tillers and grain yield. (iv) (a) 1948—1951. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) The experiment has been spoiled due to the excessive mud in the field. (vii) Experiment conducted by Assistant Economic Botanist (Paddy) to Govt., of U.P., Nagina.

5. RESULTS :

- (i) 217.7 lb./ac.
- (ii) 103.6 lb./ac.
- (iii) Treatment differences are not significant.
- (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	180.3
2.	285.8
3.	217.5
4.	187.3
S.E./mean	= 42.3 lb./ac.

Crop :- Paddy (*Kharif*).  
Site :- Rice Res. Sub-Stn., Kunraghat.

Ref :- U.P. 50(284).  
Type :- 'C'.

Object :—To find out the best method of sowing early Paddy.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) (a) Medium loam. (b) N.A. (iii) 8.6.1950. (iv) (a) One victory plough and 3 *desi* ploughs. (b) Broadcast. (c) 37 srs./ac. (d)—. (e)—. (v) Nil. (vi) N-22 (early). (vii) Unirrigated. (viii) 2 weedings. (ix) 39.92%. (x) 18.9.1950.

2. TREATMENTS :

4 methods of sowing :

1. Dry sowing.
2. Sowing in moisture.
3. Sowing in puddled field with germinated seed.
4. Sowing in puddled field with ungerminated seed.

3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 6. (iv) (a) 29'×28'. (b) 27'×26'. (v) 1' around the net plot. (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) A disease similar to root rot was observed. (iii) Height, tillers and grain yield. (iv) (a) 1948—1951. (b) No. (c) —. (v) (a) and (b) N.A. (vi) Nil. (vii) Experiment conducted by Assistant Economic Botanist (Paddy) to Govt., of U.P., Nagina.



**5. RESULTS:**

- (i) 458.2 lb./ac.  
 (ii) 54.31 lb./ac.  
 (iii) Treatment differences are highly significant.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	380.2
2.	474.6
3.	527.6
4.	450.6
S.E./mean	= 22.17 lb./ac.

Crop :- Paddy (*Kharif*).  
 Site :- Rice Res. Sub-Stn., Kunraghat.

Ref :- U.P. 51(263).

Type :- 'C'.

Object :- To find out the best method of sowing early Paddy.

**1. BASAL CONDITIONS .**

- (i) (a) Paddy-gram. (b) Gram and then *Sanai* for G.M. (c) No. (ii) (a) Sandy. (b) N.A. (iii) 18.6.1951.  
 (iv) (a) One Punjab plough and 2 *desi* ploughs. (b) Broadcast. (c) 37 seers/ac. (d) —. (e) —. (v) *Sanai* as G.M. (vi) N-22 (early). (vii) Unirrigated. (viii) 2 weedings. (ix) 26.27". (x) 1.10.1951.

**2. TREATMENTS :**

4 methods of sowing :

1. Dry sowing.
2. Sowing in moisture.
3. Sowing in puddled field with germinated seed.
4. Sowing in puddled field with ungerminated seed.

**3. DESIGN :**

- (i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 6. (iv) (a) 32'-6" × 24'. (b) 30'-6" × 22. (v) 1' around the net plot.  
 (vi) Yes.

**4. GENERAL :**

- (i) Good. No lodging. (ii) Nil. (iii) Height, tillers and grain yield. (iv) (a) 1948—1951. (b) No. (c) Nil.  
 (v) (a) and (b) N.A. (vi) Lower yield due to the shortage of water and less rains during the crop period.  
 (vii) Expt. conducted by Asst. Economic Botanist (Paddy) to Govt. of U.P., Nagina.

**5. RESULTS :**

- (i) 459.6 lb./ac.  
 (ii) 159.0 lb./ac.  
 (iii) Treatment differences are not significant.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	355.9
2.	506.2
3.	514.6
4.	461.9
S.E./mean	= 64.9 lb./ac.

Crop :- Paddy (*Kharif*).  
 Site :- Rice Res. Sub-Stn., Kunraghat.

Ref :- U.P. 48(119).

Type :- 'C'.

Object :- To find out the best seed rate for broadcasting Paddy.

**1. BASAL CONDITIONS :**

- (iv) (a) Paddy-gram, (b) Gram. (c) Nil. (ii) (a) Sandy loam. (b) N.A. (iii) 21.6.1948. (iv) (a) One victory plough and three *Desi* ploughs. (b) Broadcast. (c) As per treatments. (d) —. (e) —. (v) Village compost as 10 C.L./ac. giving about 40 lb./ac of N. and A/S at the rate of 50 lb./ac. (vi) N-22 (early). (vii) Irrigated. (viii) One weeding. (ix) 43.59". (x) 19.10.1948.

## 2. TREATMENTS :

4 seed rates :  $R_1=20$ ,  $R_2=30$ ,  $R_3=40$  and  $R_4=50$  seer/ac.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 6. (iv) (a)  $37' \times 21'-3''$ . (b)  $35' \times 19'-3''$ . (v) 1' around the net plot. (vi) Yes.

## 4. GENERAL :

(i) Satisfactory. (ii) Attack of white ants. (iii) Height, tillers and grain yield. (iv) (a) 1947—1948. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) Nil. (vii) Experiment conducted by Assistant Economic Botanist (Paddy) to Govt. of U.P., Nagina.

## 5. RESULTS :

- (i) 1052 lb./ac.  
 (ii) 243.0 lb./ac.  
 (iii) Treatment differences are not significant.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
$R_1$	875
$R_2$	989
$R_3$	1296
$R_4$	1048
S.E./mean	=99.2 lb./ac.

Crop :- Paddy (*Kharif*).

Site :- Rice Res. Sub-Stn., Kunraghat.

Ref :- U.P. 49(227).

Type :- 'C'.

Object :- To study the benefits of double cropping of Paddy.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fallow (c) Nil. (ii) (a) Light loam. (b) N.A. (iii) As under treatments. (iv) (a) One victory plough and 3 *desi* ploughs. (b) As per treatments. (c) N.A. (d) N.A. (e) N.A. (v) Nil. (vi) N-22 (early), T-88 (late). (vii) N.A. (viii) 2 weedings. (ix) 49.63%. (x) 26.7.1949, 14.10.1949 and 5.12.1949.

## 2. TREATMENTS :

- Early variety N-22 broadcast in April (12.4.1949) and manured. Late variety T-88 transplanted in August (28.8.1949) and manured. Berseem sown in standing late crop.
- Early variety N-22 broadcast in normal time (13.6.1949) and manured. Berseem in *Rabi*.
- Late variety T-88 transplanted in normal time (22.7.1949) and manured and Berseem in standing in late crop.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 3. (b) N.A. (iii) 6. (iv) (a)  $42'-9'' \times 13'-6''$ . (b)  $41' \times 11'-6''$ . (v)  $1'-9''$  along the length and 2' along the breadth. (vi) Yes.

## 4. GENERAL :

(i) Good. Late sown plots poor in growth. (ii) Nil. (iii) Height, tillers, grain yield of paddy and yield of Berseem green fodder. (iv) (a) 1949—1951. (b) No. (c) Nil. (v) (a) N.A. (b) N.A. (vi) Nil. (vii) Experiment conducted by Assistant Economic Botanist (Paddy) to Govt. of U.P. Nagina.

## 5. RESULTS :

- (i) 646.5 lb./ac.  
 (ii) 121.3 lb./ac.  
 (iii) Treatment differences are highly significant.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	918.2
2.	124.5
3.	896.7
S.E./mean	=49.5 lb./ac.

Crop :- Paddy (*Kharif*).

Ref :- U.P. 50(281).

Site :- Rice Res. Sub-Stn., Kunraghat.

Type :- 'C'.

Object :- To study the benefits of double cropping of Paddy.

1. BASAL CONDITIONS :

- (i) (a) Nil. (b) *Dhanicha* for G.M. (c) Nil. (ii) (a) Light loam. (b) N.A. (iii) As under treatments. (iv) (a) One victory plough and 3 *desi* ploughs. (b) As per treatments. (c) N.A. (d) N.A. (e) N.A. (v) Green manuring *dhanicha*. (vi) N-22 (early), T-88 (late). (vii) Irrigated. (viii) 4 weedings. (ix) 42.53%. (x) 9.8.1950 and 22.9.1950.

2. TREATMENTS :

1. Early variety (N-22) broadcast in April (12.4.1950) and manured. Late variety transplanted in August (12.8.1950) and manured. Berseem sown in standing late crop.
2. Early variety broadcast in normal time (17.4.1950) and manured. Berseem in *Rabi*.
3. Late variety transplanted in normal time (18.7.1950) and manured and Berseem in standing late crop.

3. DESIGN :

- (i) R.B.D. (ii) (a) 3. (b) N.A. (iii) 8. (iv) (a) 42'-9" × 16'-6". (b) 41'-3" × 15'. (v) 9' left around the net plot. (vi) Yes.

4. GENERAL :

- (i) Satisfactory. (ii) Attack of root rot and stem borer was observed. (iii) Height, tillering and grain yield. (iv) (a) 1949-1951. (b) No. (c) Nil. (v) (a) N.A. (b) N.A. (vi) Nil. (vii) The yield of Berseem is not available in the records and hence it is not possible to find out the economics of this experiment. In treatment the yield of early and late Paddy has been added up and the data of Paddy grain only has been analysed. Experiment conducted by Assistant Economic Botanist (Paddy) to Govt., U.P. Nagina.

5. RESULTS:

- (i) 1178 lb./ac.  
 (ii) 276.6 lb./ac.  
 (iii) Treatment differences are highly significant.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	2170
2.	371
3.	993
S.E./mean	=97.8 lb./ac.

Crop :- Paddy. (*Kharif*).

Ref :- U.P. 51(266)

Site :- Rice Res. Sub-Stn., Kunraghat.

Type :- 'C'.

Object :- To study the benefits of double cropping.

1. BASAL CONDITIONS :

- (i) (a) Nil. (b) Berseem. (c) N.A. (ii) (a) Light Loam. N.A. (iii) As under treatments. (iv) (a) One hoeing with *kudali* and two ploughings by *desi* plough. (b) As per treatments. (c) to (e) N.A. (v) Nil. (vi) N-22 (early), T-88 (late). (vii) Irrigated. (viii) 7 weedings. (ix) 26.69%. (x) 21.8.1951, 21.11.1951, 2.10.1951 and 19.11.1951.

2. TREATMENTS :

1. Early variety N-22 broadcast in April (14.4.1951) and manured. Late variety transplanted in August (27.8.1951) and manured. Berseem sown in standing late crop.
2. Early variety broadcast in normal time (16.6.1951) and manured. Berseem sown in *Rabi*.
3. Late variety transplanted in normal time (17.7.1951) and manured and Berseem in standing late crop.

3. DESIGN :

- (i) R.B.D. (ii) (a) 3. (b) N.A. (iii) 8. (iv) 42'-9" × 16'-6". (b) 41'-3" × 15'. (v) 9' around the net plot. (vi) Yes.

4. GENERAL :

- (i) Good growth. (ii) Nil. (iii) Height, tillers and grain yield. (iv) (a) 1949-1951. (b) No. (c) Nil. (v) N.A. (vi) Lower yields due to less rains. (vii) The yield of Berseem is not available in the records and hence it is not possible to find out the economics of this experiment. In treatment 1, the yields of early and late Paddy has been added up and the data of Paddy grain only has been analysed. Experiment conducted by Assistant Economic Botanist (Paddy) to Govt. of U.P., Nagina.

## 5. RESULTS :

- (i) 638 lb./ac.  
 (ii) 128.8 lb./ac.  
 (iii) Treatment differences are highly significant.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	1186
2.	403
3.	324
S.E./mean	=45.5 lb./ac.

Crop :- Paddy (*Kharif*).

Ref :- U.P. 50(285).

Site :- Rice Res. Sub-Stn., Kunraghat.

Type :- 'C'.

Object :- To determine the effect of summer ploughing on the yield of Paddy.

## 1. BASAL CONDITIONS :

- (i) (a) Paddy-Pea. (b) Pea. (c) Nil. (ii) (a) Sandy Loam. (b) N.A. (iii) 17.6.1953. (iv) (a) As per treatments. (b) Broadcast. (c) 37 seers/ac. (d) —. (e) —. (v) N.A. (vi) N-22 (early). (vii) Unirrigated. (viii) 2 weedings. (ix) 38.92". (x) 28.9.1950.

## 2. TREATMENTS :

- Two *desi* ploughings in summer, puddling and *ganning* (control).
- Thorough ploughing in summer (one deep ploughing and 5 *desi*); puddling and *ganning*.
- No ploughing in summer, puddling and *ganning*.
- Ploughing just before puddling and *ganning*.

## 3. DESIGN :

- (i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 6. (iv) (a) 42' × 18'. (b) 40' × 16'. (v) 1' all round the net plot. (vi) Yes.

## 4. GENERAL :

- (i) Good. (ii) Nil. (iii) Height, tillers and grain yield. (iv) (a) 1950-1952. (b) No. (c) —. (v) (a), (b) N.A. (vi) Nil. (vii) Experiment conducted by Assistant Economic Botanist (Paddy) to Govt. of U.P., Nagina.

## 5. RESULTS :

- (i) 1041 lb./ac.  
 (ii) 161.7 lb./ac.  
 (iii) Treatment differences are not significant.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	1053
2.	1190
3.	907
4.	1015
S.E./mean	=66.0 lb./ac.

Crop :- Paddy (*Kharif*).

Ref :- U.P. 51(262).

Site :- Rice Res. Sub-Stn., Kunraghat.

Type :- 'C'.

Object :- To determine the effect of summer ploughing on the yield of Paddy.

## 1. BASAL CONDITIONS :

- (i) (a) Paddy—Gram. (b) Gram. (c) Nil. (ii) (a) Light loam. (b) N.A. (iii) 24.6.1951. (iv) (a) As per treatments. (b) Broadcast. (c) 37 srs./ac. (d) —. (e) —. (v) Nil. (vi) N-22 (early). (vii) Unirrigated. (viii) 2 weedings. (ix) 26.27". (x) 2.10.1951.

## 2. TREATMENTS :

1. 2 *dest* ploughings in summer, puddling and *ganning* (control).
2. Thorough ploughing in summer (one deep ploughing and 5 *dest*) puddling and *ganning*.
3. No ploughing in summer, puddling and *ganning*.
4. Ploughing just before puddling and *ganning*.

## 3. DESIGN :

- (i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 6. (iv) (a) 50'-6" × 33'. (b) 48'-6" × 31'. (v) 1' around the net plot. (vi) Yes.

## 4. GENERAL :

- (i) Good growth except in treat. no. 3 where the growth is poor and weeds are too many. (ii) Nil. (iii) Tillering and grain yield. (iv) (a) 1950—1952. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) Lower yields due to the shortage of water and rains. (vii) Experiment was conducted by Assistant Economic Botanist (Paddy) to Govt., U.P., Nagina.

## 5. RESULTS :

- (i) 209.4 lb./ac.  
 (ii) 93.21 lb./ac.  
 (iii) Treatment differences are not significant.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	208.5
2.	270.0
3.	191.8
4.	167.5
S.E./mean	= 38.05 lb./ac.

Crop :- Paddy (*Kharif*).

Ref :- U.P. 52(309).

Site :- Rice Res. Sub-Stn., Kunraghat.

Type :- 'C'.

Object :- To determine the effect of summer ploughing on the yield of Paddy.

## 1. BASAL CONDITIONS :

- (i) (a) Nil. (b) Pea. (c) Nil. (ii) (a) Medium black. (b) N.A. (iii) 24.6.1952. (iv) (a) As per treatments. (b) Broadcast. (c) 39 srs./ac. (d) —. (e) —. (v) T.C. at 160 mds./ac. giving about 40 lb./ac. of N. (vi) N-22 (early). (vii) Unirrigated. (viii) 3 weedings. (ix) 28.36". (x) 29, 30.9.1952 and 1.10.1952.

## 2. TREATMENTS :

1. 2 *dest* ploughings in summer, puddling and *ganning* (control).
2. Thorough ploughing in summer (one deep ploughing and 5 *dest*), puddling and *ganning*.
3. No ploughing in summer, puddling and *ganning*.
4. Ploughing just before puddling and *ganning*.

## 3. DESIGN :

- (i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 6. (iv) (a) 42'-6" × 39'. (b) 40'-6" × 37'. (v) 1' around the net plot. (vi) Yes.

## 4. GENERAL ;

- (i) Good growth. Lodging on 20.9.1952. (ii) Grass hoppers and *gundhi* bug were observed. Dusting by gammaxene. (iii) Height, tillers and grain yield. (iv) (a) 1950—1952. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) Nil. (vii) The expt. was conducted by Assistant Economic Botanist (Paddy) to Govt., U.P., Nagina.

## 5. RESULTS :

- (i) 830.7 lb./ac.  
 (ii) 124.3 lb./ac.  
 (iii) Treatment differences are not significant.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	882.2
2.	958.0
3.	757.3
4.	785.4
S.E./mean	= 50.8 lb./ac.

Crop :- Paddy (*Kharif*).

Ref :- U.P. 51(264).

Site :- Rice Res. Sub-Stn., Kunraghat.

Type :- 'C'.

Object :- To find out the best time of sowing germinated seed for early Paddy.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Gram and *Arhar*. (c) Nil. (ii) (a) Light loam. (b) N.A. (iii) 22.6.1951. (iv) (a) One victory plough and 2 *desi* ploughs. (b) Broadcast. (c) 38 seers/ac. (d) —. (e) —. (v) Nil. (vi) N-22 (early). (vii) Unirrigated. (viii) 3 weedings. (ix) 26.27°. (x) 28 and 29.9.1951.

## 2. TREATMENTS :

1. Ungerminated seed.
2. Germinated seed sown immediately.
3. Germinated seed dried for two days and stored for 15 days before sowing.
4. Germinated seed dried for two days and stored for 30 days before sowing.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 6. (iv) (a) 32'-6" × 24'. (b) 30'-6" × 22'. (v) 1' around the net plot. (vi) Yes.

## 4. GENERAL :

(i) Good growth. Half lodging. (ii) Nil. (iii) Height tillers and grain yield. (iv) (a) 1951—1952. (b) No. (c) Nil. (v) (a) N.A. (b) N.A. (vi) All sowings were to be done on 15.6.1951 but due to scarcity of water it was done on 22.6.1951 The seed for germination was soaked for 24 hours in water. (vii) Experiment conducted by Assistant Economic Botanist (Paddy) to Govt., U.P. Nagina.

## 5. RESULTS :

- (i) 668.3 lb./ac.
- (ii) 183.4 lb./ac.
- (iii) Treatment differences are not significant.
- (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	645.5
2.	696.9
3.	552.0
4.	778.8

S.E./mean = 74.9 lb./ac.

Crop :- Paddy (*Kharif*).

Ref :- U.P. 52(312).

Site :- Rice Res. Sub-Stn., Kunraghat.

Type :- 'C'.

Object :- To find out the best time of sowing germinated seed for early Paddy.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Pea. (c) No. (ii) (a) medium loam. (b) N.A. (iii) 23.6.1952. (iv) (a) One victory and two *desi* ploughings. (b) Broadcast. (c) 38 seers/ac. (d) —. (e) —. (v) N.A. (vi) N-22 (early). (vii) N.A. (viii) 3 weedings. (ix) 28.36°. (x) 15 and 16.9.1952.

## 2. TREATMENTS :

1. Ungerminated seed.
2. Germinated seed sown immediately.
3. Germinated seed dried for two days and stored for 15 days before sowing.
4. Germinated seed dried for two days and stored for 30 days before sowing.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 6. (iv) (a) 29' × 28'-2". (b) 27' × 26'-2". (v) 1' around the net plot. (vi) Yes.

## 4. GENERAL :

(i) Good and uniform growth. (ii) Grass hoppers and *gundhi* bug controlled by dusting gammaxene. (iii) Height, tillering and grain yield. (iv) (a) 1951—1952. (b) No. (c) Nil. (v) (a) N.A. (b) N.A. (vi) Nil. (vii) The experiment conducted by Assistant Economic Botanist (Paddy) to Govt. U. P. Nagina.

**5. RESULTS :**

- (i) 1215 lb./ac.  
 (ii) 194.4 lb./ac.  
 (iii) Treatment differences are not significant.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	1212
2.	1229
3.	1234
4.	1186
S.E./mean	=79.4 lb./ac.

Crop :- Paddy.

Ref. :- U.P. 53(212).

Site :- Crop Physiological Res. Stn., Lucknow.

Type :- 'C'.

Object :- To study the effect of cutting roots and shoots of Paddy seedling on its growth and yield.

**1. BASAL CONDITIONS :**

- (i) (a) Nil. (b) N.A. (c) N.A. (ii) (a) Sandy loam. (b) N.A. (iii) 1.6.1953/15.7.1953. (iv) (a) N.A. (b) Transplanting. (c) —. (d) Line to line 9" apart; plant to plant 8" apart. (e) Nil. (v) C/N at 2 srs. applied on 18.8.1953. (vi) N.A. (vii) N.A. (viii) N.A. (ix) N.A. (x) 5.10.53.

**2. TREATMENTS :**

1. Control.
2. Roots— $\frac{1}{4}$  cut.
3. Roots— $\frac{1}{2}$  cut.
4. Roots—full cut. (leaving a very small portion).
5. Shoots - full cut.

**3. DESIGN**

- (i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 4. (iv) (a) 11'×6' (b) 10'×5' (v) 1' plot bund and 1 $\frac{1}{4}$ ' irrigation channel. (vi) Yes.

**4. GENERAL :**

- (i) N.A. (ii) N.A. (iii) Grain yield. (iv) (a) No. (b) and (c) No. (v) (a) and (b) No. (vi) Nil. (vii) Conducted by Crop Physiologist.

**5. RESULTS :**

- (i) 1075 lb./ac.  
 (ii) 378 lb./ac.  
 (iii) Treatment differences are not significant.  
 (iv) Av yield of grain in lb./ac.

Treatment	Av. yield
1.	896
2.	1484
3.	1092
4.	896
5.	1008
S.E./mean	= 189.0 lb/ac.

Crop :- Paddy.

Ref :-U.P. 49(41).

Site :- Rice Res. Stn., Nagina.

Type :- 'C'.

Object :- To determine the effect of summer ploughings on the yield of Paddy.

**1. BASAL CONDITIONS.**

- (i) (a) Nil. (b) Paddy. (c) Nil. (ii) (a) Silt (loam). (b) N.A. (iii) 1.6.1949/16.7.1949. (iv) (a) to (e) N.A. (v) Nil. (vi) Ajana, Pilibhit. (vii) N.A. (viii) 2 hand weedings. (ix) N.A. (x) 19.10.1949.

## 2. TREATMENTS :

1. Two or three *desi* ploughings in summer, puddling and ganning (control).
2. Thorough ploughings in summer (one deep ploughing and 6 or 7 *desi* ploughings puddling and ganning).
3. No ploughing in summer.
4. Ploughing just before puddling and ganning.

## 3. DESIGN :

- (i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 6. (iv) (a) 1/59 ac. (b) 1/72.23 ac. (v) N.A. (vi) Yes.

## 4. GENERAL :

- (i) Satisfactory. (ii) Nil. (iii) Grain yield. (iv) (a) 1949-1952. (b) No. (c) N.A. (v) (a) No. (b) N.A. (vi) Nil. (vii) Conducted by Asstt. Economic Botanist (Paddy) to Govt., U.P., Nagina.

## 5. RESULTS :

- (i) 1028 lb./ac.  
 (ii) 181.44 lb./ac.  
 (iii) Treatment differences are not significant.

## (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	1030
2.	1104
3.	848
4.	1130
S.E./mean	= 74.07 lb./ac.

Crop :- Paddy.

Ref. :- U.P. 50(42)

Site :- Rice Res. Stn., Nagina. (Bijnor.)

Type 'C'.

Object :- To determine the effect of summer ploughing on the yield of Paddy.

## 1. BASAL CONDITIONS :

- (i) (a) Nil. (b) Paddy. (c) N.A. (ii) (a) Silt Loam. (b) N.A. (iii) 29.6.1950. (iv) (a) to (e) N.A. (v) Nil. (vi) N-22 (early). (vii) N.A. (viii) 2 hand weedings. (ix) N.A. (x) 22.9.1950.

## 2. TREATMENTS :

1. Three *desi* ploughings in summer and ganning.
2. Thorough ploughings in summer (one deep ploughing and 6-7 *desi* ploughings).
3. No ploughings in summer and ganning.
4. Ploughing in water and no ganning.

## 3. DESIGN :

- (i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 6. (iv) (a) 61' x 28'. (b) 1/28.40 ac. (v) N.A. (vi) Yes.

## 4. GENERAL :

- (i) Satisfactory. (ii) Nil. (iii) Grain yield. (iv) (a) 1949 to 1952. (b) No. (c) No. (v) (a), (b) No. (vi) Nil. (vii) Conducted by Asstt. Economic Botanist (Paddy) to Govt. of U.P. Nagina.

## 5. RESULTS :

- (i) 1220 lb./ac.  
 (ii) 75.04 lb./ac.  
 (iii) Treatments differences are highly significant.

## (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	1187
2.	1306
3.	1103
4.	1285
S.E./mean	= 30.63 lb./ac.



Crop :- Paddy.

Ref :- U.P. 51(46).

Site :- Rice. Res. Stn., Nagnia.

Type :- 'C'.

Object :- To determine the effect of summer ploughings on the yield of Paddy.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Oats. (c) Nil. (ii) (a) Silt (loam). (b) N.A. (iii) 11.7.1951. (iv) (a) to (c) N.A. (v) Nil. (vi) N.22. (early). (vii) N.A. (viii) 2 hand weedings. (ix) N.A. (x) 29.9.1951 and 5.10.1951.

## 2. TREATMENTS :

1. Two *desi* ploughings in summer.
2. Thorough ploughing in summer (1 deep ploughing and 4 or 5 *desi* ploughings) and *ganning*.
3. One ploughing immediately before puddling and *ganning*.
4. Ploughing in water and no *ganning*.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 6. (iv) (a)  $17\frac{1}{2}' \times 85\frac{1}{2}'$ . (b)  $16' \times 84'$ . (v) One row at each end of the plot. (vi) Yes.

## 4. GENERAL :

(i) Satisfactory. (ii) Nil. (iii) Grain yield. (iv) (a) No. (b) and (c) No. (v) (a) and (b) No. (vi) Nil. (vii) Conducted by Asst. Economic Botanist (Paddy) to Govt. of U.P., Nagina.

## 5. RESULTS :

- (i) 409.4 lb./ac.
- (ii) 94.08 lb./ac.
- (iii) Treatment differences are highly significant.
- (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	489.4
2.	769.4
3.	190.4
4.	188.2
S.E./mean	-38.41 lb./ac.

Crop :- Paddy.

Ref :- U.P. 52(140).

Site :- Rice. Res. Stn., Nagina.

Type :- 'C'.

Object :- To determine the effects of summer ploughings on the yield of paddy.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) N.A. (c) N.A. (ii) (a) Silt (loam). (b) N.A. (iii) 22.6.1952. (iv) (a) to (c) N.A. (v) Nil. (vi) N.22. (early). (vii) N.A. (viii) 2 hand weedings. (ix) N.A. (x) 22.9.1952.

## 2. TREATMENTS :

1. Two *desi* ploughings in summer and *ganning* (control).
2. Thorough ploughing in summer (deep ploughing and 4 to 5 *desi* ploughings) and *ganning*.
3. One ploughing immediately before puddling and *ganning*.
4. Ploughing in water and no *ganning*.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 6. (iv) (a)  $85.5' \times 17.5'$ . (b)  $84' \times 16'$ . (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) Satisfactory. (ii) Nil. (iii) Grain yield. (iv) (a) 1949-1952. (b) and (c) No. (v) (a) and (b) No. (vi) Nil. (vii) Conducted by Economic Botanist (Paddy) to Govt. of U.P., Nagina.

## 5. RESULTS :

- (i) 927.1 lb./ac.
- (ii) 190.40 lb./ac.
- (iii) Treatment differences are not significant.

(iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	873.6
2.	965.4
3.	984.8
4.	884.8
S.E./mean	=77.73 lb./ac.

Crop :- Paddy.

Ref :- U.P. 52(144).

Site :- Rice. Res. Stn., Nagina.

Type :- 'C'.

Object:—To determine the three year rotation for early Paddy.

## 1. BASAL CONDITIONS :

(i) (a) As per Treatment. (b) As per treatment. (c) N.A. (ii) (a) Silt (loam). (b) N.A. (iii) 2.7.1952. (iv) (a) One deep ploughing and 2 shallow ploughings. (b) to (e) N.A. (v) Nil. (vi) Early variety (vii) N.A. (viii) 2 weedings by hand. (ix) N.A. (x) 23.9.1952.

## 2. TREATMENTS :

1st year	2nd year	3rd year.
A. Paddy—Gram	Paddy—Gram	Paddy.
B. Paddy—Gram	Jowar—Berseem	Paddy.
C. Paddy—Pea	Sugarcane	Paddy.
D. Paddy—Berseem	Cotton—Pea	Paddy.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 6. (iv) (a) 59'×28'. (b) 1/32.65 ac. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Nil. (iii) Grain yield. (iv) (a) 1952—1953. (b) and (c) No. (v) (a) and (b) No. (vi) Nil. (vii) Conducted by A.E.B. (P).

## 5. RESULTS :

- (i) 1980 lb./ac.  
(ii) 327.0 lb./ac.  
(iii) Treatments are not significant.

(iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
A.	1869
B.	2025
C.	1948
D.	2078
S.E./ mean	=133.51 lb /ac

Crop :- Paddy (*Kharif*).

Ref :- U.P. 49(233).

Site :- Late Paddy Res. Sub-Stn., Pachperwa.

Type :- 'C'.

Object :—To determine the proper age of seedling for late Paddy.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) N.A. (c) N.A. (ii) (a) Heavy loam. (b) N.A. (iii) N.A. (iv) (a) N.A. (b) Transplanted. (c)—. (d) N.A. (e) N.A. (v) N.A. (vi) N.A. (vii) N.A. (viii) N.A. (ix) N.A. (x) N.A.

## 2. TREATMENTS :

4 different ages of seedling :  $A_1=20$ ,  $A_2=30$ ,  $A_3=40$  and  $A_4=50$  days.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 6. (iv) (a) N.A. (b) 1/59.0 ac. (v) N.A. (vi) N.A.

## 4. GENERAL :

(i) N.A. (ii) N.A. (iii) Yield of grain. (iv) (a) No. (b) N.A. (c) Nil. (v) (a) and (b) N.A. (vi) Nil. (vii) The expt. was conducted by Assistant Economic Botanist (Paddy) to Govt., U.P., Nagina. Only the annual report "Rice Research work in U.P." for the year 1949 was consulted. No original record or plot-wise yield data, available.

## 5. RESULTS :

- (i) 1835 lb/ac.  
 (ii) N.A.  
 (iii) Treatment differences are not significant.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
A <sub>1</sub>	1873
A <sub>2</sub>	1883
A <sub>3</sub>	1891
A <sub>4</sub>	1695
S.E./mean	=N.A.

Crop :- Paddy (*Kharif*).

Ref :- U.P. 50(187).

Site :- Late Paddy Res. Sub-Stn., Pachperwa.

Type :- 'C'.

Object :- To find out the best age of seedlings for late Paddy.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) N.A. (c) N.A. (ii) (a) Heavy loam. (b) N.A. (iii) N.A. (iv) (a) N.A. (b) Transplanted. (c) —. (d) and (e) N.A. (v) N.A. (vi) N.A. (vii) N.A. (viii) N.A. (ix) 41.43°. (x) N.A.

## 2. TREATMENTS :

5 different ages of seedlings : A<sub>1</sub>=20, A<sub>2</sub>=30, A<sub>3</sub>=40, A<sub>4</sub>=50 and A<sub>5</sub>=60 days.

## 3. DESIGN :

(i) R B.D. (ii) (a) 5. (b) N.A. (iii) 6. (iv) (a) N.A. (b) 1/130.15 ac. (v) N.A. (vi) N.A.

## 4. GENERAL :

(i) N.A. (ii) N.A. (iii) Yield of grain. (iv) (a) No. (b) —. (c) Nil. (v) (a) and (b) N.A. (vi) Nil. (vii) The expt. was conducted by Assistant Economic Botanist (Paddy) to Govt., U.P., Nagina. Only the annual report "Rice Research work in U.P." for the year 1950 was consulted. No original records or plotwise yield data were available.

## 5. RESULTS :

- (i) 1213 lb./ac.  
 (ii) N.A.  
 (i i) Treatment differences are not significant.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
A <sub>1</sub>	1077
A <sub>2</sub>	1254
A <sub>3</sub>	1318
A <sub>4</sub>	1190
A <sub>5</sub>	1224
S.E./mean	=N.A.

Crop :- Paddy (*Kharif*).

Ref :- U.P. 49(234).

Site :- Late Paddy Res. Sub-Stn., Pachperwa.

Type :- 'C'.

Object :- To determine the best time of transplanting.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) N.A. (c) N.A. (ii) (a) Heavy loam. (b) N.A. (iii) N.A. (iv) (a) N.A. (b) Transplanting. (c) —. (d) N.A. (e) N.A. (v) N.A. (vi) N.A. (vii) N.A. (viii) N.A. (ix) N.A. (x) N.A.

## 2. TREATMENTS :

6 dates of transplanting :  $D_1=10.7.1949$ ,  $D_2=20.7.1949$ ,  $D_3=30.7.1949$ ,  $D_4=10.8.1949$ ,  $D_5=20.8.1949$  and  $D_6=30.8.1949$ .

## 3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) N.A. (b) N.A. (v) N.A. (vi) N.A.

## 4. GENERAL :

(i) N.A. (ii) N.A. (iii) Grain yield. (iv) (a) No. (b) N.A. (c) Nil. (v) (a) N.A. (b) N.A. (vi) Nil. (vii) The experiment was conducted by Assistant Economic Botanist (Paddy) to Govt., of U.P. Nagina. Only the annual report "Rice Research work in U.P. for the year 1949" was consulted. No original record or plotwise yield data were available.

## 5. RESULTS :

- (i) 1064 lb./ac.  
 (ii) N.A.  
 (iii) The treatment differences are not significant.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
$D_1$	1643
$D_2$	1384
$D_3$	999
$D_4$	745
$D_5$	801
$D_6$	810
S.E./mean	=N.A.

Crop :- Paddy (*Kharif*).

Ref :- U.P. 50(289).

Site :- Late Paddy Res. Sub-Stn., Pachperwa.

Type :- 'C'.

Object :- To determine the best time of transplanting.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) N.A. (c) N.A. (ii) (a) Heavy loam. (b) N.A. (iii) N.A. (iv) (a) N.A. (b) Transplanted. (c) —. (d) N.A. (e) N.A. (v) N.A. (vi) N.A. (vii) N.A. (viii) N.A. (ix) 41.43". (x) N.A.

## 2. TREATMENTS :

8 dates of transplanting :  $D_1=20.6.1950$ ,  $D_2=30.6.1950$ ,  $D_3=10.7.1950$ ,  $D_4=20.7.1950$ ,  $D_5=30.7.1950$ ,  $D_6=10.8.1950$ ,  $D_7=20.8.1950$ , and  $D_8=30.8.1950$ .

## 3. DESIGN :

(i) R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 1/73.54 ac. (v) N.A. (vi) N.A.

## 4. GENERAL :

(i) N.A. (ii) N.A. (iii) Grain yield. (iv) (a) No. (b) —. (c) Nil. (v) (a) N.A. (b) N.A. (vi) Nil. (vii) The experiment was conducted by Assistant Economic Botanist (Paddy) to Govt. of U.P., Nagina. Only the annual report "Rice Research work in U.P." for the year 1950 was consulted. No original record or plotwise yield data were available.

## 5. RESULTS :

- (i) 506.4 lb./ac.  
 (ii) 188.12 lb./ac.  
 (iii) Treatment differences are significant.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
$D_1$	452.3
$D_2$	529.1
$D_3$	655.7
$D_4$	627.3
$D_5$	722.6
$D_6$	570.4
$D_7$	412.5
$D_8$	81.1
S.E./mean	=94.06 lb./ac.

Crop :- Paddy (*Kharif*).

Ref :- U.P. 49(237).

Site :- Late Paddy Res. Sub-Stn., Pachperwa.

Type :- 'C'.

Object :- To find out the best spacing for transplanting late Paddy.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) N.A. (c) N.A. (ii) (a) Heavy loam. (b) N.A. (iii) N.A. (iv) (a) N.A. (b) Transplanting. (c) —. (d) As per treatments. (e) N.A. (v) N.A. (vi) N.A. (vii) N.A. (viii) N.A. (ix) N.A. (x) N.A.

## 2. TREATMENTS :

3 spacings :  $S_1=6'$ ,  $S_2=9'$  and  $S_3=12'$ .

## 3. DESIGN :

(i) R.B.D. (ii) (a) 3. (b) N.A. (iii) 8. (iv) (a) and (b) N.A. (v) N.A. (vi) N.A.

## 4. GENERAL :

(i) N.A. (ii) N.A. (iii) Grain yield. (iv) (a) 1949—1950. (b) N.A. (c) Nil. (v) (a) and (b) N.A. (vi) Nil. (vii) The expt. was conducted by Assistant Economic Botanist (Paddy) to Govt. U.P., Nagina. Only the annual report "Rice Research Work in U.P." for the year 1949 was consulted. No original record or plotwise yield data were available.

## 5. RESULTS :

- (i) 1047 lb./ac.  
(ii) 201.4 lb./ac.  
(iii) Treatment differences are significant.  
(iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
$S_1$	1228
$S_2$	1074
$S_3$	838
S.E./mean	= 71.22 lb./ac.

Crop :- Paddy (*Kharif*).

Ref :- U.P. 50(290).

Site :- Late Paddy Res. Sub-Stn., Pachperwa.

Type :- 'C'.

Object :- To find out the best spacing for transplanting late Paddy.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) N.A. (c) N.A. (ii) (a) Heavy loam. (b) N.A. (iii) N.A. (iv) (a) N.A. (b) Transplanted. (c) —. (d) As per treatments. (e) N.A. (v) N.A. (vi) N.A. (vii) N.A. (viii) N.A. (ix) 41.43%. (x) N.A.

## 2. TREATMENTS :

3 spacings :  $S_1=6'$ ,  $S_2=9'$  and  $S_3=12'$  apart.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 3. (b) N.A. (iii) 8. (iv) (a) N.A. (b) 1/104.5 ac. (v) and (vi) N.A.

## 4. GENERAL :

(i) N.A. (ii) N.A. (iii) Grain yield. (iv) (a) 1949—1950. (b) N.A. (c) Nil. (v) (a) and (b) N.A. (vi) Nil. (vii) The experiment was conducted by Assistant Economic Botanist (Paddy) to Govt. U.P., Nagina. Only the annual report "Rice Research Work in U.P." for the year 1950 was consulted. No original plotwise yield data or original records were available.

## 5. RESULTS :

- (i) 896.1 lb./ac.  
(ii) 167.74 lb./ac.  
(iii) Treatment differences are significant.  
(iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
$S_1$	1175.3
$S_2$	904.1
$S_3$	708.9
S.E./mean	= 59.31 lb./ac.

Crop :- Paddy. (*Kharif*).

Ref :- U.P. 49(236).

Site :- Late Paddy Res. Sub-Stn., Pachperwa.

Type :- 'C'.

Object :- To find out the optimum number of seedlings for transplanting late Paddy.

## 1. BASAL CONDITIONS :

(i) (a), (b), and (c) N.A. (ii) (a) Heavy loam. (b) N.A. (iii) N.A. (iv) (a) N.A. (b) Transplanting (c) — (d) N.A. (e) As per treatments. (v) N.A. (vi) N.A. (vii) N.A. (viii) N.A. (ix) N.A. (x) N.A.

## 2. TREATMENTS :

No. of seedlings/hole :  $S_1=1$ ,  $S_2=3$  to 4 and  $S_3=8$  to 12 seedlings.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 3. (b) N.A. (iii) 8. (iv) (a) N.A. (b) 1/105.6 ac. (v) N.A. (vi) N.A.

## 4. GENERAL :

(i) N.A. (ii) N.A. (iii) Grain yield. (iv) (a) 1949—1950. (b) N.A. (c) Nil. (v) (a), (b) N.A. (vi) Nil. (vii) The expt. was conducted by Asstt. Economic Botanist (Paddy) to Govt. U.P., Nagina. Only the Annual report "Rice Research Work in U.P." for the year 1949 was consulted. No original records or plotwise yield data were available.

## 5. RESULTS :

- (i) 1161 lb./ac.  
(ii) 215.16 lb/ac.  
(iii) Treatment differences are significant.  
(iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
$S_1$	1042.40
$S_2$	1127.28
$S_3$	1312.21
S.E./mean	= 76.03 lb./ac.

Crop :- Paddy. (*Kharif*).

Ref :- U.P. 50(291)

Site :- Late Paddy Res. Sub-Stn., Pachperwa.

Type :- 'C'.

Object :- To find out the optimum number of seedlings for transplanting late Paddy.

## 1. BASAL CONDITIONS :

(i) (a), (b) and (c) N.A. (ii) (a) Heavy loam. (b) N.A. (iii) N.A. (iv) (a) N.A. (b) Transplanted. (c) — (d) N.A. (e) As per treatments. (v) N.A. (vi) N.A. (vii) N.A. (viii) N.A. (ix) 41.43" (x) N.A.

## 2. TREATMENTS :

No. of seedlings/hole :  $S_1=1$ ,  $S_2=3$  to 4 and  $S_3=8$  to 12 seedlings.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 3. (b) N.A. (iii) 8. (iv) (a) N.A. (b) 1/150.95 ac. (v) N.A. (vi) N.A.

## 4. GENERAL :

(i) N.A. (ii) N.A. (iii) Grain yield. (iv) (a) 1949—1950. (b) N.A. (c) Nil. (v) (a), (b) N.A. (vi) Nil. (vii) The expt. was conducted by Asstt. Economic Botanist (Paddy) to Govt. U.P., Nagina. Only the annual report "Rice Research Work in U.P." for the year 1950 was consulted. No original plotwise yield data or original records were available.

## 5. RESULTS :

- (i) 1570 lb./ac.  
(ii) 236.17 lb./ac.  
(iii) Treatment differences are significant.  
(iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
$S_1$	1354
$S_2$	1667
$S_3$	1690
S.E./mean	= 83.51 lb./ac.

Crop :- Paddy :- (*Kharif*).

Ref :- U.P. 51(270).

Site :- Late Paddy Res. Sub-Stn., Pachperwa.

Type :- 'C'.

Object :- To study the effect of mixed sowing of early and late Paddy on its yield, and hence to avoid total crop failure.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) N.A. (c) N.A. (ii) (a) Heavy loam. (b) N.A. (iii) N.A. (iv) (a) N.A. (b) As per treatments. (c) —. (d) N.A. (e) N.A. (v) N.A. (vi) N-22 (early) and T-88 (late). (vii) N.A. (viii) N.A. (ix) 31.33". (x) N.A.

2. TREATMENTS :

1. Pure late broadcast
2. Pure late transplant
3. Pure early broadcast
4. Pure early transplant
5. Early and late broadcast
6. Early and late transplant

3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 1/87.72 ac. (v) N.A. (vi) Yes.

4. GENERAL :

(i) N.A. (ii) N.A. (iii) Grain yield. (iv) (a) 1951—1952. (b) N.A. (c) Nil. (v) (a) N.A. (b) N.A. (vi) Nil. (vii) The experiment was conducted by Assistant Economic Botanist (Paddy) to Govt. U.P., Nagina. Only the annual report "Rice Research Work in U.P." for the year 1951 was consulted. No original record or plot wise yield data are available.

5. RESULTS :

(i) 108.4 lb./ac.

(ii) N.A.

(iii) Treatment differences are not significant.

(iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	110.3
2.	183.9
3.	67.9
4.	96.2
5.	62.2
6.	130.1
S.E./mean	= N.A.

Crop :- Paddy (*Kharif*).

Ref :- U.P. 52(316).

Site :- Late Paddy Res. Sub-Stn., Pachperwa.

Type :- 'C'.

Object :- To study the effect of mixed sowing of early and late Paddy on its yield, and hence to avoid total crop failure.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) N.A. (c) N.A. (ii) (a) Heavy loam. (b) N.A. (iii) Date of transplanting 19.7.1950, Broadcast 26.6.1952; Nursery sowing 24.6.1952. (iv) (a) N.A. (b) As per treatments. (c) N.A. (d) N.A. (e) N.A. (v) N.A. (vi) T-88 (late) and N-22 (early). (vii) N.A. (viii) N.A. (ix) N.A. (x) Early 26.9.1952; Late 1.12.1952.

2. TREATMENTS :

All combinations of (1) and (2)

(1) 3 varieties :  $V_1 = T-88$ ,  $V_2 = N-22$  and  $N_3 = T-88 + N-22$ .

(2) 2 methods of sowing :  $M_1 = \text{Broadcast}$  and  $M_2 = \text{Transplant}$ .

3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 1/57.03 ac. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) N.A. (iii) Grain yield. (iv) (a) 1951—1952. (b) N.A. (c) Nil. (v) (a) N.A. (b) N.A. (vi) Nil. (vii) The experiment was conducted by Assistant Economic Botanist (Paddy) to Govt. U.P., Nagina.

## 5. RESULTS :

- (i) 1220 lb./ac.  
(ii) 494.0 lb./ac.  
(iii) Main effect of V alone differ highly significantly.  
(iv) Av. yield of grain in lb./ac.

	M <sub>1</sub>	M <sub>2</sub>	Mean
V <sub>1</sub>	1896	1843	1870
V <sub>2</sub>	544	248	396
V <sub>3</sub>	1299	1491	1395
Mean	1246	1194	1220

S.E. of M marginal means = 142.6 lb./ac.  
S.E. of V marginal means = 174.7 lb./ac.  
S.E. of body of table = 247.0 lb./ac.

Crop :- Paddy (*Kharif*).

Ref U.P. :- 51(272).

Site :- Late Paddy Res. Sub-Stn., Pachperwa.

Type :- 'C'.

Object :- To compare different cultural practices.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) N.A. (c) N.A. (ii) (a) Heavy loam. (b) N.A. (iii) N.A. (iv) (a) N.A. (b) Broadcast. (c) to (e) N.A. (v) N.A. (vi) N.A. (vii) N.A. (viii) As per treatments. (ix) N.A. (x) N.A.

## 2. TREATMENTS :

1. Control
2. Ploughing 3 weeks after sowing
3. Ploughing 5 weeks after sowing
4. Harrowing 3 weeks after sowing
5. Harrowing 5 weeks after sowing
6. Transplanting

## 3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 6. (iv) (a) N.A. (b) 1/93.33 ac. (v) N.A. (vi) N.A.

## 4. GENERAL :

(i) N.A. (ii) N.A. (iii) Grain yield (iv) (a) 1951—N.A. (b) N.A. (c) N.A. (v) (a) and (b) N.A. (vi) Nil. (vii) The experiment was conducted by Assistant Economic Botanist (Paddy) to Govt. U.P., Nagina. Only the annual report "Rice Research Work in U.P." for the year 1951 was consulted. Original records and the plotwise yield data are not available.

## 5. RESULTS :

- (i) 116.27 lb./ac.  
(ii) N.A.  
(iii) Treatment differences are not significant.  
(iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	94.63
2.	77.79
3.	94.63
4.	109.67
5.	113.66
6.	207.26
S.E./mean	= N.A.



Crop :- Paddy (*Kharif*).

Ref :- U.P. 52(317).

Site :- Late Paddy Res. Sub-Stn., Pachperwa.

Type :- 'C'.

Object :- To compare different cultural practices.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) N.A. (c) N.A. (ii) (a) Heavy loam. (b) N.A. (iii) Nursery-24.6.1952, broadcast-26.6.1952 and transplant-6.8.1952. (iv) (a) N.A. (b) Broadcast and transplant. (c) N.A. (d) N.A. (e) N.A. (v) N.A. (vi) T-88 (late). (vii) N.A. (viii) N.A. (ix) N.A. (x) 1.12.1952.

2. TREATMENTS :

1. Control
2. Ploughing 3 weeks after sowing
3. Ploughing 5 weeks after sowing
4. Harrowing 3 weeks after sowing
5. Harrowing 5 weeks after sowing
6. Transplanting

3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 6. (iv) (a) N.A. (b) 1/73.03. ac. (v) N.A. (vi) Yes.

4. GENERAL :

(i) N.A. (ii) N.A. (iii) Grain yield. (iv) (a) 1951—N.A. (b) N.A. (c) Nil. (v) (a) and (b) N.A. (vi) Nil. (vii) The experiment was conducted by Assistant Economic Botanist (Paddy) to Govt. U.P., Nagina.

5. RESULTS :

- (i) 1645 lb./ac.
- (ii) 338.9 lb./ac.
- (iii) Treatment differences are not significant.
- (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	1534
2.	1715
3.	1803
4.	1809
5.	1519
6.	1488
S.E./mean	= 138.3 lb./ac.

Crop :- Paddy. (*Kharif*).

Ref :- U.P. 53(318).

Site :- Late Paddy. Res. Sub-Stn., Pachperwa.

Type :- 'C'.

Object :- To compare different cultural practices.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) N.A. (c) N.A. (ii) (a) Heavy Loam. (b) N.A. (iii) Broadcast—29.6.1953 ; Transplant 19.7.1953. (iv) (a) N.A. (b) Broadcast and transplant. (c) N.A. (d) N.A. (e) N.A. (v) N.A. (vi) N.A. (vii) N.A. (viii) N.A. (ix) N.A. (x) 1.12.1953.

2. TREATMENTS :

1. Control
2. Ploughing 3 weeks after sowing
3. Ploughing 5 weeks after sowing
4. Harrowing 3 weeks after sowing
5. Harrowing 5 weeks after sowing
6. Transplanting

3. DESIGN :

(i) R B.D. (ii) (a) 6. (b) N.A. (iii) 6. (iv) (a) N.A. (b) 20'x29'. (v) N.A. (vi) Yes.

4. GENERAL :

(i) N.A. (ii) N.A. (iii) Grain yield. (iv) 1951—N.A. (b) N.A. (c) Nil. (v) (a) and (b) N.A. (vi) Nil. (vii) The experiment was conducted by Assistant Economic Botanist (Paddy) to Govt. U.P., Nagina.

## 5. RESULTS :

- (i) 2466 lb./ac.  
 (ii) 220.9 lb./ac.  
 (iii) Treatment differences are highly significant.  
 (iv) Av. yield of grain in lb./ac.

Treatments	Av. yield
1.	1956
2.	2598
3.	2723
4.	2351
5.	2338
6.	2828
S.E./mean	=82.83 lb./ac.

Crop :- Paddy (*Kharif*).

Site :- Late Paddy Res. Sub-Stn., Tissuhi.

Ref :- U.P. 53(322).

Type :- 'C'.

Object :—To select out which rotation suits best after late Paddy with crops sown after harvesting late Paddy.

## 1. BASAL CONDITIONS :

- (i) (a) N.A. (b) N.A. (c) N.A. (ii) (a) Light clay and hard clay with greyish black colour. (b) N.A.  
 (iii) 1.8.1953. (iv) (a) to (c) N.A. (v) N.A. (vi) Late Paddy T-9. (vii) N.A. (viii) N.A. (ix) N.A.  
 (x) 9.12.1953.

## 2. TREATMENTS :

1. Late Paddy followed by Phillipine Pea.
2. Late Paddy followed by Local Pea.
3. Late Paddy followed by Gram T.87.
4. Late Paddy followed by Tangier Pea.
5. Late Paddy followed by *Lathyrus Salivas*.
6. Late Paddy followed by Fallow.

## 3. DESIGN :

- (i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 27'—6" × 26'—6". (v) (a) N.A. (vi) Yes.

## 4. GENERAL :

- (i) N.A. (ii) N.A. (iii) Grain yield. (iv) (a) 1953—N.A. (b) N.A. (c) Nil. (v) (a) N.A. (b) N.A.  
 (vi) Nil. (vii) The experiment was conducted by A.E.B(P).

## 5. RESULTS :

- (i) 1695 lb./ac.  
 (ii) 252.24 lb./ac.  
 (iii) Treatment differences are not significant.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	1591
2.	1756
3.	1522
4.	1556
5.	1994
6.	1750
S.E./mean	=196.12 lb./ac.

Crop :- Paddy (*Kharif*).

Ref :- U.P. 53(323).

Site :- Late Paddy Res. Sub-Stn, Tissuhi.

Type :- 'C'.

Object :- To find out the best rotation for late Paddy (with crop that can be broadcast on standing late Paddy fields).

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) N.A. (c) N.A. (ii) (a) Light clay to hard clay with greyish black colour. (b) N.A. (iii) 30.7.1953. (iv) (a) to (e) N.A. (v) N.A. (vi) T-9 (late). (vii) N.A. (viii) N.A. (ix) N.A. (x) 9.12.1953.

## 2. TREATMENTS :

1. Late paddy followed by fallow.
2. Late paddy followed by gram T-87 at 1 md./ac.
3. Late paddy followed by *Aksa* at 25 seers/ac.
4. Late paddy followed by *Masoor* at 15 seers/ac.
5. Late paddy followed by Pea local at 1 md./ac.
6. Late paddy followed by Hubam clover at 10 seers/ac.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 34'-6" x 19'-6". (v) N.A. (vi) N.A.

## 4. GENERAL :

(i) N.A. (ii) N.A. (iii) Grain yield. (iv) (a) 1953-N.A. (b) N.A. (c) Nil. (v) (a) & (b) N.A. (vi) Nil. (vii) The experiment was conducted by A.E.B. (P) Nagina

## 5. RESULTS :

- (i) 1258 lb./ac.
- (ii) 377.8 lb./ac.
- (iii) Treatment differences are not significant.
- (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	1199
2.	1336
3.	1122
4.	1566
5.	1211
6.	1113
S.E./mean	=188.9 lb./ac.

Crop :- Paddy (*Kharif*).

Ref :- U.P. 51(274).

Site :- Late Paddy Res. Sub-Stn., Tissuhi.

Type :- 'C'.

Object :- To find out the best rotation for late Paddy.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) As per treatments. (c) N.A. (ii) (a) Light clay to hard clay with greyish black colour. (b) N.A. (iii) N.A. (iv) (a) to (e) N.A. (v) N.A. (vi) N.A. (vii) N.A. (viii) N.A. (ix) 48.12". (x) N.A.

## 2. TREATMENTS :

1. Gram-Paddy.
2. *Aksa*-Paddy.
3. Pea-Paddy.
4. Fallow-Paddy.
5. Linseed-Paddy.
6. *Masoor*-Paddy.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 6. (iv) (a) N.A. (b) 1/100.57 ac. (v) N.A. (vi) N.A.

## 4. GENERAL:

(i) N.A. (ii) N.A. (iii) Grain yield. (iv) (a) 1951. (b) N.A. (c) Nil. (v) (a) N.A. (b) N.A. (vi) Nil. (vii) The experiment was conducted by A.E.B. (P) Nagina. Only the annual report "Rice Research Work in Uttar Pradesh" for the year 1951 was consulted. No original record or plotwise yield data were available.

## 5. RESULTS:

(i) 512.5 lb./ac.  
 (ii) N.A.  
 (iii) Treatment differences are not significant.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	617.1
2.	579.3
3.	485.5
4.	477.3
5.	466.6
6.	449.3
S.E./mean	-N.A.

Crop :- Paddy.

Site :- Rice Res. Stn., Nagina.

Ref :- U.P. 49(42).

Type :- 'CV'.

Object :- To find out the residual effects of previous crop.

## 1. BASAL CONDITIONS:

(i) (a) Paddy-Berseem. (b) Paddy followed by Berseem. (c) Nil. (ii) (a) Silt loam. (b) N.A. (iii) 1.6.1949/17.7.1949. (iv) (a) One deep ploughing and two shallow ploughings. (b), (c), (d), and (e) N.A. (v) Nil (vi) *Anjana* Pilibhit. (vii) N.A. (viii) Two hand weedings. (ix) N.A. (x) 10.10.1949.

## 2. TREATMENTS:

Paddy *Anjana* Pilibhit is sown in all the fields having 3 treatments in the previous year as follows:

1. Very early broadcast and harvested in early August, late variety transplanted in August.
2. Early variety broadcast at normal time.
3. Late variety transplanted at normal time.

## 3. DESIGN:

(i) R.B.D. (ii) (a) 3. (b) N.A. (iii) 8. (iv) (a) 1/54.7 ac. (b) 1/55.9 ac. (v) N.A. (vi) Yes.

## 4. GENERAL:

(i) Satisfactory. (ii) Nil. (iii) Grain yield. (iv) (a) 1948—1950. (b) Yes. (c) N.A. (v) (a) No. (b) N.A. (vi) Nil. (vii) Conducted by Asstt. Economic Botanist (Paddy) to Govt. U.P., Nagina.

## 5. RESULTS:

(i) 1500 lb./ac.  
 (ii) 258.7 lb./ac.  
 (iii) Treatments do not differ significantly.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	1548
2.	1527
3.	1425
S.E./mean	= 91.5 lb./ac.

Crop :- Paddy .  
Site :- Rice Res. Stn., Nagina.

Ref :- U.P. 50(40).  
Type :- 'CV'.

Object :- To find out the residual effects of previous crop.

1. BASAL CONDITIONS :

(i) (a) Paddy-Berseem. (b) Berseem. (c) Nil. (ii) (a) Silt loam. (b) N.A. (iii) 1.6.1950/1.7.1950. (iv) (a) One deep ploughing and two shallow ploughings. (b), (c), (d), and (e) N.A. (v) Nil. (vi) Anjana Pilibhit. (vii) N.A. (viii) Two hand weedings. (ix) N.A. (x) 7.10.1950.

2. TREATMENTS :

Paddy Anjana Pilibhit is sown in all the fields having 3 treatments in the previous year as follows :

1. Very early broadcast and harvested in early August, late variety transplanted in August.
2. Early variety broadcast at normal time.
3. Late variety transplanted at normal time.

3. DESIGN :

(i) R.B.D. (ii) (a) 3. (b) N.A. (iii) 8. (iv) (a) 1/51.8 ac. (b) 1/67.87 ac. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Grain yield. (iv) (a) 1948—1950. (b) and (c) Yes. (v) (a) and (b) No. (vi) Nil. (vii) Conducted by Asst. Economic Botanist (Paddy) to Govt. U.P., Nagina.

5. RESULTS :

- (i) 2108 lb./ac.
- (ii) 274.4 lb./ac.
- (iii) Treatments differ significantly.
- (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	2307
2.	1905
3.	2111
S.E./mean	= 97.0 lb./ac.

Crop :- Paddy.  
Site :- Late Paddy Res. Sub-Stn., Tisuihi.

Ref :- U.P. 52(160).  
Type :- 'CV'.

Object :- To find out the effect of spacing along with time of transplanting on the growth and yield of different varieties of Paddy.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) N.A. (c) N.A. (ii) (a) Heavy clay. (b) N.A. (iii) 20.6.1952/3.8.1952 and 18.8.1952. (iv) (a) N.A. (b) Transplanted. (c) —. (d) and (e) N.A. (v) No. (vi) As per treatments. (vii) Irrigated. (viii) 2 weedings. (ix) 30.02%. (x) 4.12.1952.

2. TREATMENTS :

Main-plot treatments :

2 times of transplanting :  $T_1$  = Last week of July and  $T_2$  = 15 days after 1st transplanting.

Sub-plot treatments :

All combinations of (1) and (2)

- (1) 3 varieties :  $V_1$  = T-36,  $V_2$  = T-88 and  $V_3$  = T-100.
- (2) 4 spacings :  $S_1$  = 3",  $S_2$  = 6",  $S_3$  = 9" and  $S_4$  = 12".

3. DESIGN :

(i) Split-plot. (ii) (a) 2 main-plots/block; 12 sub-plots/main-plots. (iv) (a) 28' x 29'. (b) 22' x 23'. (v) 6' around the plot. (vi) Yes.

4. GENERAL :

(i) Good. (ii) No. (iii) Grain yield. (iv) (a) No. (b) and (c) No. (v) (a) and (b) No. (vi) Nil. (vii) Conducted by C.P. to Govt. U.P., Lucknow.

## 5. RESULTS:

- (i) 1271 lb./ac.  
 (ii) (a) 173.6 lb./ac.  
 (b) 501.8 lb./ac.  
 (iii) S and V effects are highly significant. None of the interactions is significant.  
 (iv) Av. yield of grain in lb./ac.

	S <sub>1</sub>	S <sub>2</sub>	S <sub>3</sub>	S <sub>4</sub>	Mean	V <sub>1</sub>	V <sub>2</sub>	V <sub>3</sub>
T <sub>1</sub>	1988	1698	1152	977	1454	1034	1896	1430
T <sub>2</sub>	1953	1025	759	617	1089	920	1360	986
Mean	1970	1362	955	797	1271	977	1628	1208
V <sub>1</sub>	1525	1142	553	687				
V <sub>2</sub>	2454	1618	1394	1046				
V <sub>3</sub>	1932	1325	918	659				

## S.E. of difference of two

1. T marginal means = 40.9 lb./ac.
  2. S marginal means = 167.3 lb./ac.
  3. V marginal means = 144.9 lb./ac.
  4. S means at a level of T = 236.5 lb./ac.
  5. T means at a level of S = 208.9 lb./ac.
  6. V means at a level of T = 204.8 lb./ac.
  7. T means at a level of V = 172.2 lb./ac.
- S.E. of body of S × V table = 204.8 lb./ac.

Crop :- Paddy (*Kharif*).

Ref :- U.P. 51(278).

Site :- Late Paddy Res. Sub-Stn., Tisuihi.

Type :- 'CV'.

Object :- To study the effect of growing together early and late Paddy on its yield.

## 1. BASAL CONDITIONS:

(i) (a) N.A. (b) N.A. (c) N.A. (ii) (a) Light clay to hard clay with greyish black colour. (b) N.A. (iii) N.A. (iv) (a) N.A. (b) Transplant and broadcast. (c) to (e) N.A. (v) N.A. (vi) N-22 (early), T-88 (late). (vii) N.A. (viii) N.A. (ix) 48.12°. (x) N.A.

## 2. TREATMENTS:

1. Late variety broadcast
2. Late variety transplanted
3. Late and early variety broadcast
4. Late and early varieties transplanted
5. Early variety broadcast
6. Early variety transplanted

## 3. DESIGN:

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 1/61.16 ac. (v) N.A. (vi) N.A.

## 4. GENERAL:

(i) N.A. (ii) N.A. (iii) Grain yield. (iv) (a) 1951—1952. (b) N.A. (c) Nil. (v) (a) and (b) N.A. (vi) Nil. (vii) The expt. was conducted by Assistant Economic Botanist (Paddy, to Govt. U.P., Nagina. Only the annual report "Rice Research Work in Uttar Pradesh" for the year 1951 was consulted. No original record or plotwise yield data were available.

## 5. RESULTS:

- (i) 521.8 lb./ac.  
 (ii) N.A.  
 (iii) Treatment differences are not significant.

(iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	626.2
2.	516.8
3.	566.1
4.	544.6
5.	474.0
6.	393.3
S.E./mean	= N.A.

Crop :- Paddy (*Kharif*).

Ref :- U.P. 52(320).

Site :- Late Paddy Res. Sub-Stn., Tissuhi.

Type :- 'CV'.

Object :- To study the effect of growing together early and late Paddy on its yield.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Light clay to hard clay with greyish black colour. (b) N.A. (iii) N.A. (iv) (a) N.A. (b) Transplant and Broadcast. (c) N.A. (d) N.A. (e) N.A. (v) N.A. (vi) N-22 (early), T-88 (late) (vii) N.A. (viii) N.A. (ix) N.A. (x) N.A.

2. TREATMENTS :

1. Late variety broadcast
2. Late variety transplanted
3. Late and early varieties broadcast
4. Late and early varieties transplanted
5. Early variety broadcast
6. Early variety transplanted

3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 1/61.16 ac. (v) N.A. (vi) N.A.

4. GENERAL :

(i) N.A. (ii) N.A. (iii) Grain yield. (iv) (a) 1951-1952. (b) N.A. (c) Nil. (v) (a) N.A. (b) N.A. (vi) Nil. (vii) The experiment was conducted by Assistant Economic Botanist (Paddy) to Govt. U.P., Nagina. Report was consulted. No original record or plotwise yield data were available.

5. RESULTS :

(i) 766.8 lb./ac.

(ii) N.A.

(iii) Treatment differences are significant.

(iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	1163.5
2.	1166.8
3.	714.2
4.	1091.1
5.	195.8
6.	269.1
S.E./mean	= N.A.

Crop :- Paddy (*Kharif*).

Ref :- U.P. 50(297).

Site :- Late Paddy Res. Sub-Stn., Tissuhi.

Type :- 'C'.

Object :- To determine the best age for transplanting late Paddy.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Light clay to hard clay with greyish black colour. (b) N.A. (iii) N.A. (iv) (a) N.A. (b) Transplanting. (c) —. (d) N.A. (e) N.A. (v) N.A. (vi) N.A. (vii) N.A. (viii) N.A. (ix) 45.43. (x) N.A.

## 2. TREATMENTS :

5 different ages of seedlings :  $A_1=20$ ,  $A_2=30$ ,  $A_3=40$ ,  $A_4=50$  and  $A_5=60$  days.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 6. (iv) (a) N.A. (b) 1/72.2 ac. (v) N.A. (vi) N.A.

## 4. GENERAL :

(i) N.A. (ii) N.A. (iii) Grain yield. (iv) (a) No. (b) N.A. (c) Nil. (v) (a) N.A. (b) N.A. (vi) Nil. (vii) The experiment was conducted by Assistant Economic Botanist (Paddy) to Govt. U.P., Nagina. Only the annual report "Rice Research Work in Uttar Pradesh" for the year 1950 was consulted. No original record or plot wise yield data were available.

## 5. RESULTS :

(i) 403.9 lb./ac.

(ii) N.A.

(iii) Treatment differences are significant.

(iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
$A_1$	250.3
$A_2$	304.9
$A_3$	555.2
$A_4$	618.0
$A_5$	291.3
S.E./mean	=N.A.

Crop :- Paddy (*Kharif*).

Site :- Late Paddy Res. Sub-Stn., Tissuhi.

Ref :- U.P. 50(296).

Type :- 'C'.

Object :- To find an optimum date for transplanting Paddy.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) N.A. (c) N.A. (ii) (a) Light clay to hard clay with greyish black colour. (b) N.A. (iii) As per treatment. (iv) (a) N.A. (b) Transplanting. (c) —. (d) N.A. (e) N.A. (v) N.A. (vi) N.A. (vii) N.A. (viii) N.A. (ix) 45.43" (x) N.A.

## 2. TREATMENTS :

8 dates of transplanting :  $D_1=20.6.1950$ ,  $D_2=30.6.1950$ ,  $D_3=10.7.1950$ ,  $D_4=20.7.1950$ ,  $D_5=30.7.1950$ ,  $D_6=10.8.1950$ ,  $D_7=20.8.1950$  and  $D_8=30.8.1950$ .

## 3. DESIGN :

(i) R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 1/102.46 ac. (v) N.A. (vi) N.A.

## 4. GENERAL :

(i) N.A. (ii) N.A. (iii) Grain yield. (iv) (a) No. (b) N.A. (c) Nil. (v) (a) N.A. (b) N.A. (vi) Nil. (vii) The experiment was conducted by Assistant Economic Botanist (Paddy) to Govt. U.P., Nagina. Only the annual report "Rice Research Work in Uttar Pradesh" the year 1950 was consulted. No original record or plotwise yield data were available.

## 5. RESULTS :

(i) 488.1 lb./ac.

(ii) N.A.

(iii) Treatment differences are not significant.

(iv) Av. yield of grain in lb./ac.

Treatments	Av. yield
$D_1$	653.8
$D_2$	787.6
$D_3$	711.2
$D_4$	690.2
$D_5$	341.5
$D_6$	323.0
$D_7$	260.8
$D_8$	137.0
S.E./mean	=N.A.



Crop :- Paddy (*Kharif*).

Ref :- U.P. 49(238).

Site :- Late Paddy Res. Sub-Stn., Tissuhi.

Type :- 'C'.

Object :- To find out the best spacing for transplanting late Paddy.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) N.A. (c) N.A. (ii) (a) Clayey to hard clay, with greyish black colour. (b) N.A. (iii) N.A. (iv) (a) N.A. (b) Transplanted. (c) —. (d) As per treatments. (e) N.A. (v) N.A. (vi) N.A. (vii) N.A. (viii) N.A. (ix) 39.18". (x) N.A.

2. TREATMENTS :

3 spacings :-  $S_1=6''$ ,  $S_2=9''$  and  $S_3=12''$  apart.

3. DESIGN :

(i) R.B.D. (ii) (a) 3. (b) N.A. (iii) 8. (iv) (a) N.A. (b) 1/72.2 ac. (v) N.A. (vi) N.A.

4. GENERAL :

(i) N.A. (ii) N.A. (iii) Grain yield. (iv) (a) 1949-1950. (b) N.A. (c) Nil. (v) (a) and (b) N.A. (vi) Nil. (vii) The experiment was conducted by Assistant Economic Botanist (Paddy) to Govt. U.P., Nagina. Only the annual report "Rice Research Work in U.P." for the year 1949 was consulted. No original record or plotwise yield data were available.

5. RESULTS :

(i) 366.12 lb./ac.

(ii) N.A.

(iii) Treatments differ significantly.

(iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
$S_1$	506.64
$S_2$	346.48
$S_3$	245.25
S.E./mean	N.A.

Crop :- Paddy (*Kharif*).

Ref :- U.P. 50(294).

Site :- Late Paddy Res. Sub-Stn., Tissuhi.

Type :- 'C'.

Object :- To find out the best spacing for transplanting late Paddy.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) N.A. (c) N.A. (ii) (a) Light clay to hard clay with greyish black colour. (b) N.A. (iii) N.A. (iv) (a) N.A. (b) Transplanting (c) —. (d) As per treatments. (e) N.A. (v) N.A. (vi) N.A. (vii) N.A. (viii) N.A. (ix) 45.43" (x) N.A.

2. TREATMENTS :

3 spacings :  $S_1=6''$ ,  $S_2=9''$  and  $S_3=12''$  apart.

3. DESIGN :

(i) R.B.D. (ii) (a) 3. (b) N.A. (iii) 8. (iv) (a) N.A. (b) 1/72.2 ac. (v) N.A. (vi) N.A.

4. GENERAL :

(i) N.A. (ii) N.A. (iii) Grain yield. (iv) (a) 1949—1950. (b) and (c) Nil. (v) (a) and (b) N.A. (vi) Nil. (vii) The experiment was conducted by Asst. Economic Botanist (Paddy) to Govt. U.P., Nagina. Only the annual report "Rice Research Work in U.P." for the year 1950 was consulted. No original records or plotwise yield data were available.

5. RESULTS :

(i) 833.1 lb./ac.

(ii) N.A.

(iii) Treatments differ significantly.

(iv) Av. yield of grain in lb./ac.	
Treatment	Av. yield
S <sub>1</sub>	1083.3
S <sub>2</sub>	764.0
S <sub>3</sub>	652.1
S.E./mean	=N.A.

Crop :- Paddy (*Kharif*).

Ref :- U.P. 49(239).

Site :- Late Paddy Res. Sub-Stn., Tissuhi.

Type :- 'C'.

Object :- To find out the optimum number of seedlings required for transplanted Paddy.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) N.A. (c) N.A. (ii) (a) Clay to hard clay with greyish black colour. (b) N.A. (iii) N.A. (iv) (a) N.A. (b) Transplanting. (c) —. (d) N.A. (e) As per treatments. (v) N.A. (vi) N.A. (vii) N.A. (viii) N.A. (ix) 39.18%. (x) N.A.

2. TREATMENTS :

No. of seedlings/hole : S<sub>1</sub>=1, S<sub>2</sub>=3 to 4 and S<sub>3</sub>=8 to 12 seedlings.

3. DESIGN :

(i) R.B.D. (ii) (a) 3. (b) N.A. (iii) 8. (iv) (a) N.A. (b) 1/72.2 ac. (v) N.A. (vi) N.A.

4. GENERAL :

(i) N.A. (ii) N.A. (iii) Grain yield. (iv) (a) 1949—1950. (b) N.A. (c) Nil. (v) (a) N.A. (b) N.A. (vi) Nil. (vii) The experiment was conducted by Asst. Economic Botanist (Paddy) to Govt. U.P., Nagina. Only the annual report "Rice Research Work in Uttar Pradesh" for the year 1949 was consulted. No original records or plotwise yield data were available.

5. RESULTS :

(i) 417.86 lb./ac.  
(ii) N.A.  
(iii) Treatment differences are not significant.  
(iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
S <sub>1</sub>	261.8
S <sub>2</sub>	388.9
S <sub>3</sub>	602.9
S.E./mean	=N.A.

Crop :- Paddy (*Kharif*).

Ref :- U.P. 50(295).

Site :- Late Paddy Res. Sub-Stn., Tissuhi.

Type :- 'C'.

Object :- To find out the optimum number of seedlings required for transplanted Paddy.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) N.A. (c) N.A. (ii) (a) Light clay to hard clay with greyish black colour. (b) N.A. (iii) N.A. (iv) (a) N.A. (b) Transplanting. (c) —. (d) N.A. (e) As per treatments. (v) N.A. (vi) N.A. (vii) N.A. (viii) N.A. (ix) 45.43%. (x) N.A.

2. TREATMENTS :

No. of seedlings/hole : S<sub>1</sub>=1, S<sub>2</sub>=3 to 4 and S<sub>3</sub>=8 to 12 seedlings.

3. DESIGN :

(i) R.B.D. (ii) (a) 3. (b) N.A. (iii) 8. (iv) (a) N.A. (b) 1/72.2 ac. (v) N.A. (vi) N.A.

## 4. GENERAL :

(i) N.A. (ii) N.A. (iii) Grain yield. (iv) (a) 1949—1950. (b) N.A. (c) Nil. (v) (a) N.A. (b) N.A. (vi) Nil. (vii) The experiment was conducted by Assistant Economic Botanist (Paddy) to Govt. U.P., Nagina. Only the annual report "Rice Research Work in Uttar Pradesh" for the year 1950 was consulted. No original plotwise yield data or records were available.

## 5. RESULTS :

- (i) 687.2 lb./ac.  
 (ii) N.A.  
 (iii) Treatment differences are significant.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
S <sub>1</sub>	409.2
S <sub>2</sub>	649.7
S <sub>3</sub>	1002.7
S.E./mean	= N.A.

Crop :- Paddy (*Kharif*).

Site :- Late Paddy Res. Sub-Stn., Tisuhii.

Ref :- U.P. 50(293).

Type :- 'C'.

Object :- To compare different cultural practices.

## 1. BASAL CONDITIONS:

(i) (a) to (c) N.A. (ii) (a) Light clay to hard clay with greyish black colour. (b) N.A. (iii) N.A. (iv) (a) N.A. (b) Broadcast. (c) N.A. (d) N.A. (e) N.A. (v) N.A. (vi) N.A. (vii) N.A. (viii) As per treatments. (ix) 45.43". (x) N.A.

## 2. TREATMENTS :

6 cultural operations :

- Control
- Ploughing 3 weeks after sowing
- Ploughing 5 weeks after sowing
- Harrowing 3 weeks after sowing
- Harrowing 5 weeks after sowing
- Transplanting

## 3. DESIGN :

(i) R.B.D. (ii) (a) N.A. (b) N.A. (iii) 6. (iv) (a) N.A. (b) 1/99.62 ac. (v) N.A. (vi) N.A.

## 4. GENERAL :

(i) N.A. (ii) N.A. (iii) Grain yield. (iv) (a) 1950—1952. (b) N.A. (c) Nil. (v) (a) N.A. (b) N.A. (vi) Nil. (vii) The experiment was conducted by Assistant Economic Botanist (Paddy) to Govt. U.P., Nagina. Only the annual report "Rice Research Work in Uttar Pradesh" for the year 1950 was consulted. No original record or plotwise yield data were available.

## 5. RESULTS :

- (i) 210.5 lb./ac.  
 (ii) N.A.  
 (iii) Treatment differences are significant.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	284.4
2.	254.1
3.	103.4
4.	299.8
5.	83.3
6.	237.7
S.E./mean	= N.A.

Crop :- Paddy (*Kharif*).

Ref :- U.P. 51 (275).

Site :- Late Paddy Res. Sub-Stn., Tissuhi.

Type :- 'C'.

Object :—To compare different cultural practices.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Light clay to hard clay with greyish black colour. (b) N.A. (iii) N.A. (iv) (a) N.A. (b) Broadcasting and transplanting. (c) to (e) N.A. (v) N.A. (vi) N.A. (vii) N.A. (viii) N.A. (ix) 48.12". (x) N.A.

2. TREATMENTS :

1. Control
2. Ploughing 3 weeks after sowing
3. Ploughing 5 weeks after sowing
4. Harrowing 3 weeks after sowing
5. Harrowing 5 weeks after sowing
6. Transplanting

3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 6. (iv) (a) N.A. (b) 1/99.72 ac. (v) and (vi) N.A.

4. GENERAL :

(i) N.A. (ii) N.A. (iii) Grain yield. (iv) (a) 1950—1952. (b) N.A. (c) Nil. (v) (a) and (b) N.A. (vi) Nil. (vii) The experiment was conducted by Assistant Economic Botanist (Paddy) to Govt. U.P., Nagina. Only the annual report "Rice Research Work in Uttar Pradesh" for the year 1951 was consulted. No original records or plotwise yield data were available.

5. RESULTS :

- (i) 661.2 lb./ac.
- (ii) N.A.
- (iii) Treatment differences are significant.
- (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	570.2
2.	907.6
3.	479.7
4.	801.5
5.	639.4
6.	568.6
S.E./mean	= N.A.

Crop :- Paddy (*Kharif*).

Ref :- 52(321).

Site :- Late Paddy Res. Sub-Stn., Tissuhi.

Type :- 'C'.

Object :—To compare different cultural practices.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Light clay to hard clay with greyish black colour. (iii) N.A. (iv) (a) N.A. (b) Broadcasting and transplanting. (c) to (e) N.A. (v) N.A. (vi) N.A. (vii) N.A. (viii) As per treatments. (ix) N.A. (x) N.A.

2. TREATMENTS :

1. Control
2. Ploughing 3 weeks after sowing
3. Ploughing 5 weeks after sowing
4. Harrowing 3 weeks after sowing
5. Harrowing 5 weeks after sowing
6. Transplanting

3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 6. (iv) (a) N.A. (b) 1/58.57 ac. (v) and (vi) N.A.

## 4. GENERAL :

(i) N.A. (ii) N.A. (iii) Grain yield. (iv) (a) 1950-1952. (b) N.A. (c) Nil. (v) (a) and (b) N.A. (vi) Nil. (vii) The experiment was conducted by Assistant Economic Botanist (Paddy) to Govt. U.P., Nagina. Only the Annual report "Rice Research Work in Uttar Pradesh" for the year 1952 was consulted. No plot-wise yield data or original records were available.

## 5. RESULTS :

- (i) 1141 lb./ac.  
 (ii) N.A.  
 (iii) Treatment differences are not significant.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	1270
2.	1054
3.	986
4.	1337
5.	1131
6.	1066
S.E./mean	=N.A.

Crop :- Paddy.

Ref :- U.P. 53(42).

Site :- Late Mechanised Farm, Bharari.

Type :- 'M'.

Object :- To study the effect of spacing and manuring on growth and yield of Paddy.

## 1. BASAL CONDITIONS :

(i) (a) *Sanai*-Paddy-Berseem. (b) Berseem. (c) Nil. (ii) (a) *Parwa*. (b) N.A. (iii) 3.8.1953. (iv) (a) Ploughing and harrowing and *Palewa* with cultivators, *desi* plough. (b) Transplanted. (c) —. (d) and (e) N.A. (v) *Sanai* ploughed in as G.M. and F.Y.M. applied at 50 md./ac. (vi) T-43. (vii) Irrigated. (viii) Inter-culturing between rows 3-4 times with hand hoes and weedings. (ix) N.A. (x) 29.10.1953.

## 2. TREATMENTS :

Main-plot treatments :

4 spacings :  $S_1=3''$ ,  $S_2=6''$ ,  $S_3=9''$  and  $S_4=12''$ .

Sub-plot treatments :

4 manurings :  $N_1=20$  lb./ac. of  $P_2O_5+10$  lb./ac. of CaO,  $N_2=30$  lb./ac. of N+40 lb./ac. of  $P_2O_5+15$  lb./ac. of  $P_2O_5+20$  lb./ac. of CaO.  $N_3=60$  lb./ac. of N+60 lb./ac. of  $P_2O_5+30$  lb./ac. of  $K_2O+30$  lb./ac. of CaO and  $N_4=90$  lb./ac. of N+80 lb./ac. of  $P_2O_5+45$  lb./ac. of  $K_2O+40$  lb./ac. of CaO.

$P_2O_5$  applied as Super, CaO as Gypsum, N as A/S, and  $K_2O$  as Pot. Sulphate.

## 3. DESIGN :

(i) Split-plot. (ii) (a) 4 main-plots/block ; 4 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) Main—72'×39' ; Sub—18'×39'. (b) Sub—15'×36'. (v) Plot bund 1.5'×1' (high) around. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Slight attack of *Gundhi* bug in milky stage, (iii) Grain and straw yield. (iv) (a) 1953—continued. (b) and (c) No. (v) (a) Kanpur, Nawabganj, Banaras and Lucknow. (b) N.A. (vi) Nil. (vii) Conducted by Crop Physiologist to Govt. of U.P., Lucknow.

## 5. RESULTS :

- (i) 1967 lb./ac.  
 (ii) (a) 342.8 lb./ac.  
 (b) 376.2 lb./ac.  
 (iii) None of the effects is significant.

(iv) Av. yield of grain in lb./ac.

	N <sub>1</sub>	N <sub>2</sub>	N <sub>3</sub>	N <sub>4</sub>	Mean
S <sub>1</sub>	1988	1902	1832	1936	1914
S <sub>2</sub>	1798	2102	1874	1839	1903
S <sub>3</sub>	1805	1898	2061	2396	2040
S <sub>4</sub>	1898	1725	2265	2147	2009
Mean	1872	1907	2008	2080	1967

S E. of difference of two

1. marginal means of S = 139.9 lb./ac.
2. marginal means of N = 153.5 lb./ac.
3. N means at a level of S = 307.2 lb./ac.
4. S means at a level of N = 300.6 lb./ac.

Crop :- Paddy (*Kharif*).

Ref :- U.P. 53(40).

Site :- Govt. Agri. Res. Farm, Kalyanpur.

Type :- 'CM'.

Object :- To study the effect of spacing and manuring on the growth and yield of Paddy.

## 1. BASAL CONDITIONS :

(i) : (a) Nil. (b) Pea. (c) Nil. (ii) (a) Heavy loam. (b) N.A. (iii) 30 and 31.7.1953. (iv) (a) One ploughing. (b) Transplanted. (c) —. (d) As per treatments. (e) One seedling/hole. (v) *Mung* and *Lobia* ploughed in as G.M. and F.Y.M. at 50 md./ac. at puddling. (vi) T-9 (late). (vii) Irrigated. (viii) Interculturing 3-4 times. (ix) N.A. (x) 9 and 10.12.1953.

## 2. TREATMENTS :

Main-plot treatments :

4 spacings : S<sub>1</sub>=3", S<sub>2</sub>=6", S<sub>3</sub>=9" and S<sub>4</sub>=12".

Sub-plot treatments :

4 manurings : N<sub>1</sub>=20 lb./ac. of P<sub>2</sub>O<sub>5</sub>+10 lb./ac. of CaO, N<sub>2</sub>=30 lb./ac. of N+40 lb./ac. of P<sub>2</sub>O<sub>5</sub>+15 lb./ac. of K<sub>2</sub>O+20 lb./ac. of CaO, N<sub>3</sub>=60 lb./ac. of N+60 lb./ac. of P<sub>2</sub>O<sub>5</sub>+30 lb./ac. of K<sub>2</sub>O+30 lb./ac. of CaO and N<sub>4</sub>=90 lb./ac. of N+80 lb./ac. of P<sub>2</sub>O<sub>5</sub>+45 lb./ac. of K<sub>2</sub>O+40 lb./ac. of CaO.

P<sub>2</sub>O<sub>5</sub> applied as Super, CaO as Gypsum. N as A/S, and K<sub>2</sub>O as Pot. Sulphate.Time of application : P<sub>2</sub>O<sub>5</sub> on 26.7.1953, Gypsum 29.7.1953. Potash and A/S 2 weeks after transplanting.Method of application : P<sub>2</sub>O<sub>5</sub> by placement (3"-4" deep) in soil behind the plough, Gypsum as surface dressing, and A/S and Potash as top dressing.

## 3. DESIGN :

(i) Split-plot. (ii) (a) 4 main-plots/block ; 4 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) main 72'×42'. Sub-18'×42'. (b) 15'×39'. (v) 1½' around the net plot. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Nil. (iii) Grain and straw yield. (iv) (a) 1953—continued. (b) No. (c) N.A. (v) (a) Nawabganj, Bharari, Varanasi and Lucknow. (vi) Nil. (vii) The expt. was conducted by Crop Physiologist to Govt. U.P., Lucknow.

## 5. RESULTS :

(i) 3513 lb./ac.

(ii) (a) 58.34 lb./ac.

(b) 81.45 lb./ac.

(iii) Main effect of S, N and interaction N×S are highly significant.

(iv) Av. yield of grain in lb./ac.

	N <sub>1</sub>	N <sub>2</sub>	N <sub>3</sub>	N <sub>4</sub>	Mean
S <sub>1</sub>	2945	3051	3284	3341	3155
S <sub>2</sub>	3309	3466	3647	3663	3521
S <sub>3</sub>	3600	3759	3839	3791	3747
S <sub>4</sub>	3242	3616	3928	3724	3628
Mean	3274	3473	3674	3630	3513

S.E. of difference between two

- |                            |                |
|----------------------------|----------------|
| 1. S marginal means        | =23.82 lb./ac. |
| 2. N marginal means        | =33.25 lb./ac. |
| 3. N means at a level of S | =66.50 lb./ac. |
| 4. S means at a level of N | =62.32 lb./ac. |

Crop :- Paddy (*Kharif*).

Ref :- U.P. 53(315).

Site :- Ricc Res. Sub-Stn., Kunraghat.

Type :- 'CM'.

Object :- To test the efficacy of Japanese method of Paddy cultivation.

**1. BASAL CONDITIONS :**

(i) (a) Paddy-Pea. (b) Pea. (c) Nil. (ii) (a) Medium loam. (b) N.A. (iii) 4.6.1953/12 and 13.7.1953 (Tr. 1) and 10.7.1953 (Tr. 2). (iv) (a) 5 ploughings by *dest* plough. (b) Transplanting. (c)—(d) 10" × 10" (in Trt. 1) : 9" in rows (Trt. 2). (e) 3 seedlings/hole (Trt. 1) and 4 seedlings/hole (Trt. 2). (v) Nil. (vi) N-22 (early). (vii) Nil. (viii) 4 weedings. (ix) 46.14". (x) 1 and 3.10.1953.

**2. TREATMENTS :**

1. Japanese method of cultivation.

2. Local method of cultivation.

Manuring of treatment 1 : One C.L./plot of village compost + 5 lb. A/S + 5 lb. Super at transplanting (15.7.1953 and the 2nd dos. on 21.8.1953).

Manuring of treatment 2 : No village compost, 6 lb. A/S on 10.7.1953 and again 6 lb. of A/S on 10.8.1953.

**3. DESIGN :**

(i) Paired-plot. (ii) 2. (b) N.A. (iii) 4. (iv) (a) 121' × 18', (b) 119'-6" × 16'-6". (v) 9" around the net plot. (vi) Yes.

**4. GENERAL :**

(i) Good and uniform growth, lodging on 26.9.1953. (ii) Slight attack of leaf spot disease and *gundhis*. Control measures—dusting with gammaxene. (iii) Height, tillering, and grain yield. (iv) (a) No. (b) No. (c) Nil. (v) (a) N.A. (b) N.A. (vi) Nil. (vii) Experiment conducted by Assistant Economic Botanist (Paddy) to Govt. U.P., Nagina.

**5. RESULTS :**

(i) 1524 lb./ac.

(ii) 46.07 lb./ac.

(iii) Treatment differences are highly significant.

(iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	1658
2.	1389
S.E./mean	=23.94 lb./ac.

Crop :- Paddy (*Kharif*).

Ref :- U.P. 48(121).

Site :- Rice Res. Sub-Stn., Kunraghat.

Type :- 'CM'.

Object :- To find out the effect of manuring nursery and the field along with different seed rates on yield of Paddy.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Pea. (c) Nil. (ii) (a) Medium loam. (b) N.A. (iii) 12.7.1943. (iv) (a) One victory plough and 3 *dest* plough. (b) Transplanted. (c) —. (d) N.A. (e) N.A. (v) Nil. (vi) T-136 (early). (vii) Irrigated. (viii) 2 weedings. (ix) 43.59%. (x) 1 to 3.10.1948.

## 2. TREATMENTS :

All combinations of (1), (2) and (3)

(1) 3 doses of N applied to the field :  $F_0=0$ ,  $F_1=25$  lb./ac. of N and  $F_2=50$  lb./ac. of N.(2) 3 doses of N applied to nursery :  $N_0=0$ ,  $N_1=100$  lb./ac. of N and  $N_2=200$  lb./ac. of N.(3) 2 seed rates :  $S_1=20$  and  $S_2=40$  lb./ac.

N as Castor cake.

Date of application :- In nursery beds on 25.5.1948 as basal by broadcast. In field on 30.7.1948 as top dressing by broadcast.

## 3. DESIGN :

(i)  $3 \times 3 \times 2$  Fact. in R.B.D. (ii) (a) 18. (b)  $175' \times 60'$ . (iii) 4. (iv) (a)  $28' \times 18'$ . (b)  $26' \times 16'$ . (v) 1' around the net plot. (vi) Yes.

## 4. GENERAL :

(i) Vigorous growth. (ii) Slight attack of *gundhi* bugs and stem borer. (iii) Height, tillers and grain yield. (iv) (a) 1946—1949. (b) No. (c) Nil. (v) (a) N.A. (b) N.A. (vi) Nil. (vii) Experiment conducted by Assistant Economic Botanist (Paddy) to Govt. of U.P., Nagina.

## 5. RESULTS :

(i) 1174 lb./ac.

(ii) 182.1 lb./ac.

(iii) Main effect of F and N are highly significant. No other effect is significant.

(iv) Av. yield of grain in lb./ac.

	$N_0$	$N_1$	$N_2$	Mean	$S_1$	$S_2$
$F_0$	905	631	759	765	755	775
$F_1$	1323	1151	1211	1228	1292	1164
$F_2$	1667	1382	1534	1528	1547	1509
Mean	1298	1055	1168	1174	1198	1149
$S_1$	1366	1083	1145			
$S_2$	1230	1026	1191			

S.E. of marginal means of N or F

=37.17 lb./ac.

S.E. of marginal means of S

=30.35 lb./ac.

S.E. of body of  $N \times F$  table

=64.38 lb./ac.

S.E. of body of  $F \times S$  or  $N \times S$  table

=52.51 lb./ac.

Crop :- Paddy (*Kharif*).

Ref :- U.P. 49(228).

Site :- Rice Res. Sub-Stn., Kunraghat.

Type :- 'CM'.

Object :- To find out the effect of manuring nursery and the field along with different seed rates on yield of Paddy.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) (a) Medium Loam. (b) N.A. (iii) 6 and 7.7.1949. (iv) (a) One victory plough and 3 *dest* plough. (b) Transplanted. (c) —. (d) N.A. (e) N.A. (v) Nil. (vi) T-136 (early). (viii) Unirrigated. (viii) 3 hoeings by *kassi* and 2 weedings. (ix) 43.58%. (x) 27.9.1949.



## 2. TREATMENTS :

All combinations of (1), (2) and (3)

- (1) 3 doses of N applied to the field :  $F_0=0$ ,  $F_1=25$  lb./ac. of N and  $F_2=50$  lb./ac. of N.  
 (2) 3 doses of N applied to nursery :  $N_0=0$ ,  $N_1=100$  lb./ac. of N and  $N_2=200$  lb./ac. of N.  
 (3) 2 seed rates :  $S_1=20$  and  $S_2=40$  lb./ac.

N as Castor cake.

Date of application : In nursery beds on 28.5.1949 as basal by broadcast. In field on 25.7.1949 as top dressing by broadcast.

## 3. DESIGN :

(i)  $3 \times 3 \times 2$  Fact in R.B.D. (ii) (a) 18. (b)  $175' \times 60'$ . (iii) 4. (iv) (a)  $28' \times 18'$ . (b)  $26' \times 16'$ . (v) One foot around the net plot. (vi) Yes.

## 4. GENERAL :

(i) Good growth. (ii) Slight attack of *gundhi* bugs. (iii) Height, tillers and grain yield. (iv) (a) 1946—1949 (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) Nil. (vii) Experiment conducted by Assistant Economic Botanist (Paddy) to Govt. of U.P., Nagina.

## 5. RESULTS :

- (i) 828 lb./ac.  
 (ii) 252.3 lb./ac.  
 (iii) Main effect of F is highly significant. Effect of S and interaction  $N \times S$  are significant. No other effects are significant.  
 (iv) Av. yield of grain in lb./ac.

	$N_0$	$N_1$	$N_2$	Mean	$S_1$	$S_2$
$F_0$	634	715	672	674	726	621
$F_1$	752	882	880	838	976	700
$F_2$	865	939	1110	971	997	946
Mean	750	845	887	828	899	756
$S_1$	859	995	845			
$S_2$	641	695	930			

S.E. of marginal mean of N or F

=57.37 lb./ac.

S.E. of marginal mean of S

=42.05 lb./ac.

S.E. of body of  $N \times F$  table

=89.20 lb./ac.

S.E. of body of  $F \times S$  and  $N \times S$  table

=72.75 lb./ac.

Crop :- Paddy (*Kharif*).

Ref :- U.P. 53(33).

Site :- Crop Physiological Res. Stn., Lucknow.

Type :- 'CM'.

Object :- To study the effect of spacing and manuring on growth and yield of Paddy.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Gram. (c) Nil. (ii) (a) Sandy loam. (b) N.A. (iii) 9.7.1953. (iv) (a) N.A. (b) Transplant d. (c) —. (d) N.A. (e) N.A. (v) Nil. (vi) T-136. (vii) Irrigated. (viii) Weeding and hoeing. (ix) N.A. (x) 2.10.1953.

## 2. TREATMENTS :

Main-plot treatments :

4 spacings :  $S_1=3'$ ,  $S_2=6'$ ,  $S_3=9'$  and  $S_4=12'$ .

Sub-plot treatments :

3 manures :  $N_1$ =No manure,  $N_2$ =A/S at 30 lb./ac. of N+Super at 40 lb./ac. of  $P_2O_5$ +Pot. Sulphate at 15 lb./ac. of  $K_2O$ +Gypsum at 20 lb./ac. of CaO,  $N_3$ =A/S at 60 lb./ac. of N+Super at 60 lb./ac. of  $P_2O_5$ +Pot. sulphate at 30 lb./ac. of  $K_2O$ +Gypsum at 30 lb./ac. of CaO.

Super by placement 3"-4" deep in soil before sowing and Gypsum as surface dressing. A/S and Pot. Sulphate applied two weeks after transplanting.

**3. DESIGN :**

(i) Split-plot. (ii) (a) 4 main-plots/block and 3 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) 20'×11.5'. (b) 16×9.5'. (v) 2'×1'. (vi) Yes.

**4. GENERAL :**

(i) Good. (ii) Nil. (iii) Grain and straw yield. (iv) (a) 1953—continued. (b) No. (c) No. (v) (a) Kanpur, Nawabgunj, Bharari and Varanasi. (b) N.A. (vi) Nil. (vii) Conducted by crop Physiologist to Govt. of U.P., Lucknow.

**5. RESULTS :**

(i) 1984 lb./ac.  
 (ii) (a) 552.9 lb./ac.  
 (b) 277.4 lb./ac.  
 (iii) None of the effects is significant.  
 (iv) Av. yield of grain in lb./ac.

	S <sub>1</sub>	S <sub>2</sub>	S <sub>3</sub>	S <sub>4</sub>	Mean
N <sub>1</sub>	1774	1945	2256	1898	1968
N <sub>2</sub>	1649	2022	2069	1836	1894
N <sub>3</sub>	1540	2147	2038	2629	2089
Mean	1654	2038	2121	2121	1984

**S.E. of difference between two**

1. S marginal means =260.6 lb./ac.
2. N marginal means =113.3 lb./ac.
3. S means at a level of N =319.6 lb./ac.
4. N means at a level of S =226.5 lb./ac.

**Crop :- Paddy.**

**Ref :- U.P. 48(31).**

**Site :- Rice Res. Stn., Nagina.**

**Type :- 'CM'.**

**Object :-**To find out the effect of manuring nursery and the field along with different seed rates on yield of Paddy.

**1. BASAL CONDITIONS :**

(i) (a) N.A. (b) Fallow. (c) No. (ii) (a) Light loam. (b) N.A. (iii) 7.6.1948/25.7.1948. (iv) (a) One deep ploughing and 2 shallow ploughings. (b) to (e) N.A. (v) Nil. (vi) T-22-A (late). (vii) N.A. (viii) 2 weedings. (ix) N.A. (x) 29.11.1948.

**2. TREATMENTS :**

All combinations of (1), (2) and (3)

- (1) 3 doses of N applied to the field : F<sub>0</sub>=0, F<sub>1</sub>=25 and F<sub>2</sub>=50 lb./ac. of N
- (2) 3 doses of N applied to nursery : N<sub>0</sub>=0, N<sub>1</sub>=100 and N<sub>2</sub>=200 lb./ac. of N
- (3) 2 seed rates : S<sub>1</sub>=20 and S<sub>2</sub>=40 lb./ac.

N applied as castor cake on 7.6.1948 to nursery and on 26.8.1948 to the field.

**3. DESIGN :**

(i) 3×3×2 Fact. in R B.D. (ii) (a) 18. (b) N.A. (iii) 4. (iv) (a) 41'×15'. (b) 1/93.88 ac. (v) N.A. (vi) Yes.

**4. GENERAL :**

(i) Normal. (ii) Nil. (iii) Grain yield. (iv) (a) 1946—1948. (b) and (c) No. (v) (a) and (b) No. (vi) Nil. (vii) Conducted by Assistant Economic Botanist (Paddy) to Govt. U.P., Nagina.

**5. RESULTS :**

(i) 1404 lb./ac.  
 (ii) 184.8 lb./ac.  
 (iii) Only main effect of F is highly significant.

(iv) Av. yield of grain in lb./ac.

	N <sub>0</sub>	N <sub>1</sub>	N <sub>2</sub>	Mean	S <sub>1</sub>	S <sub>2</sub>
F <sub>0</sub>	1183	1200	1102	1162	1145	1179
F <sub>1</sub>	1428	1427	1416	1424	1389	1458
F <sub>2</sub>	1717	1476	1687	1626	1682	1570
Mean	1443	1368	1402	1404	1405	1403
S <sub>1</sub>	1467	1343	1406			
S <sub>2</sub>	1418	1393	1397			

S.E. of marginal mean of N or F

=42.02 lb./ac.

S.E. of marginal mean of S

=30.80 lb./ac.

S.E. of body of N×F table

=65.34 lb./ac.

S.E. of body of F×S or N×S table

=53.29 lb./ac.

Crop :- Paddy (*Kharif*).  
Site :- Rice Res. Stn., Nagina.

Ref :- U.P. 53(136).

Type :- 'CM'.

Object :- To test the merits of Japanese method of Paddy cultivation.

**1. BASAL CONDITIONS :**

(i) (a) Paddy-Berseem. (b) Berseem. (c) Nil. (ii) (a) Silt loam. (b) N.A. (iii) 9,10.7.1953. (iv) (a) 1 deep ploughing, 2 shallow ploughings and 1 harrowing. (b) to (e) As per treatments. (v) F.Y.M. at 80 mds/ac. and compost at 80 mds./ac. applied on 21.6.1953 and 22.6.1953 respectively. (vi) CH-4 (medium). (vii) Irrigated. (viii) 2 hand weeding and 2 weeding by Japanese cultivator. (ix) 46.28". (x) 20,21.10.1953.

**2. TREATMENTS :**

All combinations of (A), (B), (C), (D), (E) and (F)

(A)=Seed rate, (B)=Preparation of beds, (C)=No. of seedlings/hole, (D)=Method of planting  
(E)=Manuring and (F)=Weeding.

Each of the above treatments tried under Local and Japanese method of Paddy cultivation.

**3. DESIGN :**

(i) 2<sup>6</sup> confounded. (ii) (a) 8 blocks/replication; 8 plots/block. (b) N.A. (iii) 1. (iv) (a) 59'×20'. (b) 57'×18'. (v) 1' around the net plot. (vi) Yes.

**4. GENERAL :**

(i) N.A. (ii) Attack of rice fly and *gundhi*, 3-4 dustings with gammaxene. (iii) Grain yield. (iv) (a) 1953—continued. (b) No. (c) No. (v) (a) and (b) No. (vi) Nil. (vii) The experiment was conducted by Assistant Economic Botanist (Paddy) to Govt. of U.P., Nagina.

**5. RESULTS :**

(i) 2463 lb./ac.

(ii) 350.3 lb./ac.

(iii) Only main effects of C and E are highly significant.

(iv) Mean and differential response of grain in lb./ac.

Factors	Mean response	A		B		C		D		E		F	
		-	+	-	+	-	+	-	+	-	+	-	+
A	-152.9	-	-	-110.4	-195.3	-12.8	-293.0	-169.8	-135.9	-106.1	-199.6	-51.0	-254.8
B	48.9	89.2	8.5	-	-	-12.7	110.4	135.9	-38.2	195.3	-97.6	110.4	-12.7
C	250.5	390.6	110.4	186.8	314.2	-	-	106.1	394.9	339.7	161.3	276.0	225.0
D	-80.7	-97.7	-63.7	8.5	-169.8	-225.0	63.6	-	-	-63.7	-97.6	-29.7	-131.6
E	643.3	687.8	598.7	794.0	492.5	730.3	556.2	662.4	624.2	-	-	811.0	475.5
F	-67.9	34.0	-169.8	-8.5	-127.4	-42.5	-93.4	-17.0	-118.9	97.6	-233.5	-	-

S.E./mean response=87.57 lb./ac.

S.E./differential response= 123.8 lb./ac.

Crop :- Paddy.

Ref :- U.P. 53(41).

Site :- Regional Res. Stn., Nawabganj.

Type :- 'CM'.

Object :- To study the effect of manuring along with spacing on yield of Paddy.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) Gram. (c) Nil. (ii) (a) Clay loam. (b) N.A. (iii) 31.7.1953 and 1.8.1953. (iv) (a) Ploughing and *pata*. (b) Transplanted. (c) —. (d) and (e) N.A. (v) Green manuring *dhaincha*. Compost at 5 mds./ac. at the time of puddling when the green manure crop has been buried. (vi) CH-4. (vii) Irrigated. (viii) Interculturing between rows 3-4 times and weeding. (ix) N.A. (x) 10.11.1953.

## 2. TREATMENTS :

Main-plot treatments :

4 spacings :  $S_1=3'$ ,  $S_2=6'$ ,  $S_3=9'$  and  $S_4=12'$ 

Sub-plot treatments :

4 manures :  $N_1=20$  lb./ac. of  $P_2O_5+10$  lb./ac. of Ca;  $N_2=30$  lb./ac. of N+40 lb./ac. of  $P_2O_5+15$  lb./ac. of  $K_2O+20$  lb./ac. of Ca;  $N_3=60$  lb./ac. of N+60 lb./ac. of  $P_2O_5+30$  lb./ac. of  $K_2O+30$  lb./ac. of Ca; and  $N_4=90$  lb./ac. of N+80 lb./ac. of  $P_2O_5+45$  lb./ac. of  $K_2O+40$  lb./ac. Ca.

 $P_2O_5$  applied as Super, Ca as Gypsum, N as A/S and  $K_2O$  as Pot. Sulphate.

## 3. DESIGN :

(i) Split-Plot (ii) (a) 4 main-plots/block; 4 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) main—72'×42'; sub 18'×42'. (b) 15'×39'. (v) Plot bund 1.5'×1' (high) around. (vi) Yes.

## 4. GENERAL

(i) Good. (ii) Nil (iii) Grain and straw yield. (iv) (a) 1953—continued (b) and (c) No. (v) (a) Bharari, Varanasi, Kanpur and Lucknow. (b) N.A. (vi) Nil. (vii) Conducted by Crop Physiologist.

## 5. RESULTS :

- (i) 2415 lb./ac.  
 (ii) (a) 404.2 lb./ac.  
 (b) 322.2 lb./ac.  
 (iii) None of the effects is significant.  
 (iv) Av. yield of grain in lb./ac.

	$N_1$	$N_2$	$N_3$	$N_4$	Mean
$S_1$	2068	2566	2604	2553	2448
$S_2$	2591	2591	2374	2566	2530
$S_3$	2400	2476	2374	2438	2422
$S_4$	2285	2272	2042	2438	2259
Mean	2336	2476	2348	2499	2415

S.E. of difference between two.

1. S marginal means =165.0 lb./ac.  
 2. N marginal means =131.5 lb./ac.  
 3. N means at a level of S =263.1 lb./ac.  
 4. S means at a level of N =281.3 lb./ac.

Crop :- Paddy.

Ref :- U.P. 52(161).

Site :- Late Paddy Res. Sub-Stn., Tissuhi.

Type :- 'CM'.

Object :- To study the effect of spacing and manuring on the yield of Paddy.

## 1. BASAL CONDITIONS :

(i) (a) No. (b) N.A. (c) N.A. (ii) (a) Heavy clay. (b) N.A. (iii) N.A. (iv) (a) N.A. (b) Transplanted. (c) —. (d) and (e) N.A. (v) Nil (vi) T-36 (late) (vii) N.A. (viii) N.A. (ix) 30.02 (x) N.A.

## 2. TREATMENTS :

## Main-plot treatments :-

- 3 manures :  $N_1 = A/S$  at 30 lb./ac. of N+Super at 15 lb./ac. of  $P_2O_5$ +Pot. Sulphate 15 lb./ac. of  $K_2O$  ;  
 $N_2 = A/S$  at 45 lb./ac. of N+Super at 22.5 lb./ac. of  $P_2O_5$ +Pot. Sulphate at 22.5 lb./ac. of  $K_2O$  ;  
 $N_3 = A/S$  at 60 lb./ac. of N+Super at 25 lb./ac. of  $P_2O_5$ +Pot. Sulphate at 30 lb./ac. of  $K_2O$ .

## Sub-plot treatments :-

- 4 spacings :  $S_1 = 3''$ ,  $S_2 = 6''$ ,  $S_3 = 9''$  and  $S_4 = 12''$ .

## 3. DESIGN :

- (i) Split-Plot. (ii) (a) 3 main-plots/block ; 4 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a)  $35' \times 27'$   
 (b)  $31' \times 23'$ . (v) 2' around. (vi) Yes.

## 4. GENERAL :

- (i) Normal. (ii) No. (iii) Grain yield. (iv) (a), (b) and (c) No. (v) (a) and (b) No. (vi) Nil. (vii) Conducted by Crop Physiologist.

## 5. RESULTS :

- (i) 784 lb./ac.  
 (ii) (a) 310.2 lb./ac.  
 (b) 359.8 lb./ac.  
 (iii) Only S effect is highly significant.  
 (iv) Av. yield of grain in lb./ac.

	$S_1$	$S_2$	$S_3$	$S_4$	Mean
$N_1$	1282	775	440	796	823
$N_2$	1665	765	440	370	810
$N_3$	1215	843	482	330	718
Mean	1387	794	454	499	784

## S.E. of difference between two

1. N marginal means = 126.7 lb./ac.  
 2. S marginal means = 188.5 lb./ac.  
 3. S means at a level of N = 326.5 lb./ac.  
 4. N means at a level of S = 309.8 lb./ac.

Crop :- Paddy.

Site :- Late Paddy Res. Sub-Stn., Tissuhi.

Ref :- U.P. 53(321).

Type :- 'CM'.

Object :- To judge the merits of Japanese method of Paddy cultivation.

## 1. BASAL CONDITIONS :

- (i) (a) N.A. (b) N.A. (c) N.A. (ii) (a) Light clay to hard clay with grayish black colour. (iii) 14.6.1953/23.7.1953. (iv) (a) As per treatments. (b) Transplanting. (c) —. (d) As per treatments. (e) As per treatments. (v) N.A. (vi) T-88 (late). (vii) Irrigated. (viii) One weeding. (ix) N.A. (x) 17.12.1953.

## 2. TREATMENTS :

- (1) Local method : One 1/16 acre plot of nursery bed, in which 25 mds. of compost and 25 lb. mixture of A/S in equal proportion was applied, was filled with water, ploughed with *desi* plough 4 times and was thoroughly puddled and sprouted seeds at the rate of 40 lb./bed. was sown, half an hour after puddling the fields (no raised beds were made in this case). No weeding in the nursery was required. Transplanted seedlings  $7' \times 8'$  apart, not in a row, with 3 to 4 seedlings/hole.  
 (2) Japanese method :—Made  $4 \times 25$  bed raised 3 inches above the level of the ground and with 1 foot space, between adjacent beds The raised beds were prepared after 6 ploughings of the fields with *desi* plough after *palewa*. Each raised seed bed was manured with 1 md. compost and levelled and then a thin layer of compost followed by a thin layer of ashes which in itself was followed by one lb. of mixture of super and A/S in equal parts. One lb. seed which was thoroughly winnowed was sown in each bed on 14.6.1953 and the seed was covered with 1/8 inches layer of fine earth and was highly pressed and the beds were irrigated. No weeding in nursery was required. Transplanted  $10''$  apart from row to row and plant to plant with 3 to 4 seedlings/hole.

## 3. DESIGN :

(i) Paired-plot. (ii) (a) 2. (b) N.A. (iii) 5. (iv) (a) N.A. (b) 88.5'×22.5'. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) N.A. (iii) Grain yield. (iv) (a) 1953—N.A. (b) N.A. (c) Nil. (v) (a) N.A. (b) N.A. (vi) Nil. (vii) The experiment was conducted by Asst. Economic Botanist (Paddy) to Govt. of U.P., Tisubhi.

## 5. RESULTS :

- (i) 1400 lb./ac.  
 (ii) 378.44 lb./ac.  
 (iii) Treatment differences are not significant.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	1609
2.	1191
S.E./mean	169.22 lb./ac.

Crop :- Paddy (*Kharif*).

Ref :- U.P. 53(398).

Site :- Agri. College Farm, B.H.U., Varanasi.

Type :- 'CM'.

Object :—To study the effect of multiple transplantation with increasing doses of N on growth and yield of Paddy.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Sugarcane *Ratoon*. (c) N.A. (ii) (a) Medium loam. (b) Refer soil analysis, Agri. College Farm, Varanasi. (iii) September 1953. (iv) (a) Two ploughings by *meston* plough and 5 by *desi* plough. (b) Transplanted. (c)—. (d) 9"×9". (e) 2 seedlings/hole. (v) F.Y.M. at 100 mds./ac and Super at 82 lb./ac. applied before transplanting. (vi) T-2 (mid-late). (vii) Irrigated. (viii) 3 weedings and one hand hoeing. (ix) Nil. (x) 20.11.1953.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 4 levels of N :  $N_0=0$ ,  $N_1=20$ ,  $N_2=40$  and  $N_3=60$  lb./ac.

(2) 3 types of seedlings :  $T_1$ =From nursery (1),  $T_2$ =From nursery (2) and  $T_3$ =From nursery (3).

N as A/S applied 12 days after transplanting of seedlings. Light irrigation after application of A/S.

[Nursery (1) : Bed size—1/50 ac. 3 ploughings were given and F.Y.M. applied at 100 md./ac. 10 lb. of seed dipped in 15% brine solution. Heavier seeds were taken from the bottom and soaked in water for 24 hours prior to sowing. Soaked seed dried for 1 hour and broadcast.

Nursery (2) : 2/3 of the seedlings from nursery (1) removed and the gap is immediately covered with hand implements. The removed seedlings were transplanted in nursery (2) in bunches of 15 to 20 seedlings with 3"×3" spacing.

Nursery (3) : 50% of the seedlings from nursery (2) uprooted after 15 days and again transplanted in bunches of 10 to 15. After 15 days, the seedlings were transplanted in the main field from these three nurseries as under (2)].

## 3. DESIGN :

(i) 4×3 Fact. in R.B.D. (ii) (a) 12. (b) N.A. (iii) 4. (iv) (a) 560 sq. ft. (b) 416 sq. ft. (v) 1' around the plot. (vi) Yes.

## 4. GENERAL :

(i) Satisfactory. (ii) N.A. (iii) Grain and straw yield along with growth measurements. (iv) (a) No. (b) No. (c) Nil. (v) (a) and (b) No. (vi) Nil. (vii) The experiment was conducted by B.H.U.

## 5. RESULTS :

- (i) 2157 lb./ac.  
 (ii) 146.1 lb./ac.  
 (iii) Only main effects of N and T differ highly significantly.

(iv) Av. yield of grain in lb./ac.

	T <sub>1</sub>	T <sub>2</sub>	T <sub>3</sub>	Mean
N <sub>0</sub>	1521	2073	1710	1768
N <sub>1</sub>	1831	2235	2073	2046
N <sub>2</sub>	2114	2396	2342	2284
N <sub>3</sub>	2450	2814	2329	2531
Mean	1979	2380	2114	2157

S.E. of N marginal means = 42.18 lb./ac.  
 S.E. of T marginal means = 36.53 lb./ac.  
 S.E. of body of table = 73.04 lb./ac.

Crop :- Paddy.

Ref :- U.P. 53(38).

Site :- Regional Res. Stn., Varanasi.

Type :- 'CM'.

Object :- To study the effect of manuring and spacing on yield and growth of Paddy.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Gram. (c) Nil. (ii) (a) Clay loam. (b) Refer soil analysis, Varanasi. (iii) 20.7.1953. (iv) (a) 4 ploughings. (b) Transplanted. (c) —. (d) N.A. (e) N.A. (v) F.Y.M. at 50 mds/ac and G.M. at the time of puddling when green manure crop has been turned in. (vi) N-22. (vii) Irrigated. (viii) 3 to 4 interculturings and weeding. (ix) N.A. (x) 15.10.1953.

## 2. TREATMENTS :

Main-plot treatments :

4 spacings : S<sub>1</sub>=3", S<sub>2</sub>=6", S<sub>3</sub>=9" and S<sub>4</sub>=12".

Sub-plot treatments :

4 manures : N<sub>1</sub>=20 lb./ac. of P<sub>2</sub>O<sub>5</sub>+10 lb./ac. of Ca, N<sub>2</sub>=30 lb./ac. of N+40 lb./ac. of P<sub>2</sub>O<sub>5</sub>+15 lb./ac. of K<sub>2</sub>O+20 lb./ac. of Ca, N<sub>3</sub>=60 lb./ac. of N+60 lb./ac. of P<sub>2</sub>O<sub>5</sub>+30 lb./ac. of K<sub>2</sub>O+30 lb./ac. of Ca, N<sub>4</sub>=90 lb./ac. of N+80 lb./ac. of P<sub>2</sub>O<sub>5</sub>+45 lb./ac. of K<sub>2</sub>O+40 lb./ac. of Ca.

N applied as A/S, Ca as Gypsum, P<sub>2</sub>O<sub>5</sub> as Super and K<sub>2</sub>O as Pot. Sulphate.

## 3. DESIGN :

(i) Split-plot. (ii) (a) 4 main-plots/block ; 4 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) main-72'×42'. sub-18'×42'. (b) 15'×39'. (v) 3' around the net plot. (iv) Yes.

## 4. GENERAL :

(i) Good. (ii) Attack by *gundhi* bug. (iii) Grain and straw yield. (iv) (a) 1953—contd. (b) No. (c) No. (v) (a) Kanpur, Nawabganj, Bharari and Lucknow. (b) N.A. (vi) Nil. (vii) Conducted by Crop Physiologist to Govt. U.P., Lucknow.

## 5. RESULTS :

(i) 1223 lb./ac.

(ii) (a) 361.8 lb./ac.

(b) 171.7 lb./ac.

(iii) Only S effect differs significantly.

(iv) Av. yield of grain in lb./ac.

	N <sub>1</sub>	N <sub>2</sub>	N <sub>3</sub>	N <sub>4</sub>	Mean
S <sub>1</sub>	1468	1564	1647	1545	1556
S <sub>2</sub>	1264	1213	1462	1066	1251
S <sub>3</sub>	970	1111	919	1098	1024
S <sub>4</sub>	996	1136	970	1136	1060
Mean	1174	1256	1250	1211	1223

S.E. of difference of two

1. S marginal means

= 147.7 lb./ac.

2. N marginal means

= 70.1 lb./ac.

3. N means at the same level of S

= 140.2 lb./ac.

4. S means at the same level of N

= 191.2 lb./ac.

Crop :-Paddy.

Ref :-U.P. 48(26).

Site :-Rice Res. Stn., Nagina.

Type :-'CMV'.

Object :—To determine the effect of double cropping on the total Paddy yield and its residual effect on the subsequent rice crop.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Gram. (c) Nil. (ii) (a) Light loam. (b) N.A. (iii) Tr. 1 : 15.4.1948, Tr. 1 (double) : 1.7.1948 and Tr. 2 and Tr. 3 : 15.6.1948, Berseem : 11.11.1948. (iv) (a) One deep ploughing and 2 shallow ploughings. (b) As per treatments. (c) N.A. (d) N.A. (e) N.A. (v) Nil. (vi) N-22 (early) and T-100 (late). (vii) N.A. (viii) 2 weedings. (ix) N.A. (x) Tr. 1 : 9.8.1948, Tr. 2 : 18.9.1948, Tr. 3 : 2.12.1948, Tr. 1 (double) 9.12.1948.

## 2. TREATMENTS :

1. Early variety broadcast in April and manured, late variety transplanted in August and manured, Berseem sown in standing late crop.  
2. Early variety broadcasted normal time and manured. Berseem in *Rabi*.  
3. Late variety transplanted in normal time, manured and Berseem in standing late crop.  
Date of manuring : Tr. 1 on 17.5.1948, Tr. 2 on 17.7.1948, Tr. 3 on 17.8.1948 and Tr. 1 double on 14.9.1948.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 3. (b) N.A. (iii) 8. (iv) (a) 27'×29.5'. (b) 1/54.7 ac. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) Normal. No lodging. (ii) Nil. (iii) Grain yield. (iv) (a) 1948—1950. (b) Yes. (c) N.A. (v) (a) No. (b) No. (vi) Nil. (vii) Conducted by Assistant Economic Botanist (Paddy) to Govt. of U.P., Nagina.

## 5. RESULTS :

(i) 1881 lb./ac.  
(ii) 356.2 lb /ac.  
(iii) Treatments differ highly significantly.  
(iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	2583
2.	1141
3.	1919
S.E./mean	=125.9 lb./ac.

Crop :- Paddy.

Ref :- U.P. 49(39).

Site :- Rice Res. Stn., Nagina.

Type :- 'CMV'.

Object :—To determine the effect of double cropping on the total Paddy yield and its residual effect on the subsequent rice crop.

## 1. BASAL CONDITIONS :

(i) (a) Paddy—Fallow. (b) Fallow (c) Nil. (ii) (a) Silt loam. (b) N.A. (iii) Tr. 1 : 11.4.1949, Tr. 1 (double) : 27.6.1949/11.8.1949. Tr. 2 : 24.6.1949 and Tr. 3 : 8.6.1949/18.7.1949. (iv) One deep ploughing and 2 shallow ploughings. (b) As per treatments. (c) to (e) N.A. (v) Nil. (vi) T-22 (early) and T-17 (late). (vii) N.A. (viii) 2 hand weedings. (ix) N.A. (x) Tr. 1 : 2 and 5.8.1949; Tr. 2 : 24.9.1949; Tr. 3 : 28.11.1949 and Tr. 1 (double) : 3.12.1949.

## 2. TREATMENTS :

1. Early variety broadcast in April and manured, late variety transplanted in August and manured, Berseem sown in standing late crop.  
2. Early variety broadcasted in normal time manured and Berseem in *Rabi*.  
3. Late variety transplanted in normal time manured and Berseem in standing late crop.  
Castor cake applied on 2.5.1949, 23.7.1949, 26.8.1949 and A/N applied on 18.5.1949, 25.7.1949 and 22.8.1949.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 3. (b) N.A. (iii) 8. (iv) (a) 29'×29.5'. (b) 1/58.34 ac. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Nil. (iii) Grain yield. (iv) (a) 1948—1950. (b) No. (c) N.A. (v) (a) and (b) No. (vi) Nil. (vii) Conducted by Assistant Economic Botanist (Paddy) to Govt. of U.P., Nagina.



## 5. RESULTS :

- (i) 1678 lb./ac.
- (ii) 190.4 lb./ac.
- (iii) Treatment differences are not significant.
- (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	1550
2.	1740
3.	1744
S.E./mean	= 67.32 lb./ac.

Crop :- Paddy.

Site :- Rice Res. Stn., Nagina.

Ref :- U.P. 50(38).

Type :- 'CMV'.

Object :—To determine the effect of double cropping on the total Paddy yield and its residual effect on the subsequent rice crop.

## 1. BASAL CONDITIONS :

- (i) (a) Paddy—Berseem. (b) Paddy. (c) Nil. (ii) (a) Silt loam. (b) N.A. (iii) Tr. 1 : 10.4.1950, Tr. 2 : 22.6.1950 and Tr. 3 : 8.6.1950. (iv) (a) One deep ploughing and two shallow ploughings. (b) to (e) N.A. (v) Nil. (vi) N-22 (early) and T-17 (late). (vii) N.A. (viii) Two weedings by hand. (ix) N.A. (x) N.A.

## 2. TREATMENTS :

- 1. Early variety broadcast in April and manured. Late variety transplanted in August and manured. Berseem sown in standing late crop.
- 2. Early variety broadcast in normal time manured and Berseem in *Rabi*.
- 3. Late variety transplanted in normal time, manured and Berseem in standing late crop. Castor cake applied on 10.5.1950 and 8.8.1950 and A/S on 23.5.1950 and 11.8.1950.

## 3. DESIGN :

- (i) R.B.D. (ii) (a) 3. (b) N.A. (iii) 8. (iv) (a) 29'×29'. (b) 1/61.25 ac. (v) N.A. (vi) Yes.

## 4. GENERAL :

- (i) Good. (ii) N.A. (iii) Grain yield. (iv) (a) 1948—1950. (b) and (c) No. (v) (a) and (b) No. (vi) Nil. (vii) Conducted by Assistant Economic Botanist (Paddy) to Govt. of U.P., Nagina.

## 5. RESULTS :

- (i) 2155 lb./ac.
- (ii) 323.7 lb./ac.
- (iii) Treatments differ highly significantly.
- (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	3074
2.	1680
3.	1710
S.E./mean	= 114.4 lb./ac.

Crop :- Paddy (*Kharif*).

Site :- Govt. Agri. Farm, Attara.

Ref :- U.P. 48(113).

Type :- 'I'.

Object :—To study the effect of varying intervals and depths of irrigation on yield of Paddy.

## 1. BASAL CONDITIONS :

- (i) (a) N.A. (b) N.A. (c) N.A. (ii) (a) *Parwa*. (b) N.A. (iii) 7.7.1948/23.8.1948 to 27.8.1948. (iv) (a) Ploughing according to the local practice. (b) to (c) N.A. (v) N.A. (vi) T-36. (vii) As per treatments. (viii) Weeding was done in nursery plots. (ix) 76.04". (x) 15.12.1948.

**2. TREATMENTS :**

All combinations of (1) and (2)

(1) 6 depths of irrigation :  $L_0=0$ ,  $L_1=3$ ,  $L_2=4\frac{1}{2}$ ,  $L_3=6$ ,  $L_4=7\frac{1}{2}$  and  $L_5=9$  inches.(2) 4 intervals of irrigations :  $I_1=2$ ,  $I_2=2\frac{1}{2}$ ,  $I_3=3$  and  $I_4=4$  weeks.**3. DESIGN :**(i)  $6 \times 4$  Fact. in R.B.D. (ii) (a) 24. (b) N.A. (iii) 4. (iv) (a)  $25' \times 11'$ . (b) N.A. (v) N.A. (vi) Yes.**4. GENERAL :**

(i) Crop matured well. (ii) No. (iii) Grain yield. (iv) (a) 1946—1950. (b) In the same plots from 1948 to 1950. (c) N.A. (v) (a) Bahadradad. (b) N.A. (vi) Nil. (vii) Conducted by I.R.I.

**5. RESULTS :**

(i) 1961 lb./ac.

(ii) 307.62 lb./ac.

(iii) None of the effects is significant.

(iv) Av. yield of grain in lb./ac.

Control = 1849 lb./ac.					
	$I_1$	$I_2$	$I_3$	$I_4$	Mean
$L_1$	1934	1919	2006	1746	1894
$L_2$	2077	1762	2037	1996	1968
$L_3$	2026	1863	2093	2006	1997
$L_4$	2057	2113	1940	1879	1997
$L_5$	2184	2057	2118	1879	2060
Mean	2050	1943	2039	1901	1983

S.E. of L marginal means

=76.91 lb./ac.

S.E. of I marginal means

=68.78 lb./ac.

S.E. of body of table

=153.81 lb./ac.

S.E. of the control mean

= 76.91 lb./ac.

Crop :- Paddy (*Kharif*).

Ref :- U.P. 49(221).

Site :- Govt. Agri. Farm, Attara.

Type :- 'I'.

Object :- To study the effect of varying intervals and depths of irrigation on yield of Paddy.

**BASAL CONDITIONS :**(i) (a) N.A.. (b) N.A. (c) N.A. (ii) (a) *Parwa*. (b) N.A. (iii) 24.6.1949/3.8.1949 to 6.8.1949. (iv)

(a) Ploughing according to the local practice. (b) to (e) N.A. (v) Nil. (vi) T-36. (vii) Irrigated. (viii)

Weeding was done in the nursery plots. (ix)  $39.58^\circ$ . (x) 4.12.1949.**2. TREATMENTS :**

All combinations of (1) and (2)

(1) 6 depths of irrigation :  $L_0=0$ ,  $L_1=3$ ,  $L_2=4\frac{1}{2}$ ,  $L_3=6$ ,  $L_4=7\frac{1}{2}$  and  $L_5=9$  inches.(2) 4 intervals of irrigations :  $I_1=2$ ,  $I_2=2\frac{1}{2}$ ,  $I_3=3$  and  $I_4=4$  weeks.**3. DESIGN :**(i)  $6 \times 4$  Fact. in R.B.D. (ii) (a) 24. (b) N.A. (iii) 4. (iv) (a)  $25' \times 11'$ . (b) N.A. (v) N.A. (vi) Yes.**4. GENERAL :**

(i) N.A. (ii) N.A. (iii) Grain yield. (iv) (a) 1946—1950. (b) In the same plots from 1948 to 1950. (c) Nil. (v) (a) Bahadradad. (b) N.A. (vi) Nil. (vii) Conducted by I.R.I.

**5. RESULTS :**

(i) 736.8 lb./ac.

(ii) 132.4 lb./ac.

(iii) L effect is significant, interaction  $L \times I$  and control vs others are highly significant. I effect is not significant.

(iv) Av. yield of grain in lb./ac.

Control = 75.1 lb./ac.

	I <sub>1</sub>	I <sub>2</sub>	I <sub>3</sub>	I <sub>4</sub>	Mean
L <sub>1</sub>	1150.7	1018.3	768.8	702.6	910.1
L <sub>2</sub>	875.7	651.7	829.9	809.5	791.7
L <sub>3</sub>	626.2	840.1	1150.7	1048.8	916.4
L <sub>4</sub>	814.6	677.2	906.3	957.2	838.8
L <sub>5</sub>	794.3	1165.9	855.4	738.3	888.5
Mean	852.3	870.6	902.2	851.3	869.1

S.E. of L marginal means

= 33.11 lb./ac.

S.E. of I marginal means

= 29.61 lb./ac.

S.E. of body of table

= 66.21 lb./ac.

S.E. of control mean

= 33.11 lb./ac.

Crop :- Paddy (*Kharif*).

Ref :- U.P. 50(277).

Site :- Govt. Agri. Farm, Attara.

Type :- 'I'.

Object :- To study the effect of varying intervals and depths of irrigation on yield of Paddy.

## 1. BASAL CONDITIONS :

(i) (a), (b) and (c) N.A. (ii) (a) *Parwa*. (b) N.A. (iii) 30.6.1950/10 to 12.8.1950. (iv) (a) Ploughing according to local practice. (b) to (e) N.A. (v) N.A. (vi) T-36. (vii) Irrigated. (viii) Weeding was done in the nursery plots. (ix) 56.28" (x) 8.12.1950.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 6 depths of irrigations : L<sub>0</sub>=0, L<sub>1</sub>=3, L<sub>2</sub>=4½, L<sub>3</sub>=6, L<sub>4</sub>=7½ and L<sub>5</sub>=9 inches.(2) 4 intervals of irrigations : I<sub>1</sub>=2, I<sub>2</sub>=2½, I<sub>3</sub>=3 and I<sub>4</sub>=4 weeks.

## 3. DESIGN :

(i) 6×4 Fact. in R.B.D. (ii) (a) 24. (b) N.A. (iii) 4. (iv) (a) 25'×11' inches. (b) N.A. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) Not good. The crop was badly damaged for want of rains. (ii) N.A. (iii) Grain yield. (iv) (a) 1946—1950. (b) In the same plots from 1948 to 1950. (c) Nil. (v) (a) Bahadarabad. (b) N.A. (vi) Nil. (vii) The experiment was conducted by I.R.I.

## 5. RESULTS :

(i) 1442 lb./ac.

(ii) 218.5 lb./ac.

(iii) Only I effect, interaction I×L and control vs others are highly significant.

(iv) Av. yield of grain in lb./ac.

Control = 336 lb./ac.

	I <sub>1</sub>	I <sub>2</sub>	I <sub>3</sub>	I <sub>4</sub>	Mean
L <sub>1</sub>	1782	1517	1477	1874	1662
L <sub>2</sub>	1431	2113	1716	1858	1780
L <sub>3</sub>	1314	1848	1690	1349	1550
L <sub>4</sub>	1701	1685	1609	1665	1665
L <sub>5</sub>	1599	1553	1354	2118	1656
Mean	1565	1743	1569	1773	1663

S.E. L marginal means

= 54.60 lb./ac.

S.E. I marginal means

= 48.86 lb./ac.

S.E. of body of table

= 109.26 lb./ac.

S.E. of control mean

= 54.60 lb./ac.

• Crop :- Paddy (*Kharif*).  
Site :- Field Res. Stn., Bahadrabad.

Ref :- U.P. 48(114)  
Type :- 'I'.

Object :- To study the effect of varying frequencies and depths of irrigation on yield of Paddy.

### 1. BASAL CONDITIONS:

(i) (a), (b) and (c) N.A. (ii) (a) Clayey. (b) N.A. (iii) 2.6.1948/11 to 18.7.1948. (iv) (a) *Palleva*, ploughing and *patala*. (b) to (c) N.A. (v) F.Y.M. at 120 md./ac. to nursery and castor cake at 10 md./ac. to the field. (vi) T-21 (medium). (vii) Irrigated. (viii) Weeding was done in nursery plots. (ix) 44.2%. (x) 15 to 23.10.1948.

### 2. TREATMENTS:

All combinations of (1) and (2)

(1) 6 depths of irrigations :  $L_0=0$ ,  $L_1=3$ ,  $L_2=4\frac{1}{2}$ ,  $L_3=6$ ,  $L_4=7\frac{1}{2}$  and  $L_5=9$  inches.

(2) 4 intervals of irrigation :  $I_1=2$ ,  $I_2=2\frac{1}{2}$ ,  $I_3=3$  and  $I_4=4$  weeks.

### 3. DESIGN:

(i)  $6 \times 4$  Fact. in R.B.D. (ii) (a) 24. (b) N.A. (iii) 4. (iv) (a)  $48' \times 30'$ . (b)  $43' \times 25'$ . (v)  $2\frac{1}{2}'$  all round the net plot. (vi) Yes.

### 4. GENERAL:

(i) Tillering and growth were very good. (ii) Nil. (iii) Grain yield. (iv) (a) 1947-1949. (b) No. (c) Nil. (v) (a) Attara. (b) N.A. (vi) Nil. (vii) The experiment was conducted by I.R.I.

### 5. RESULTS:

(i) 1655 lb./ac.

(ii) 325.8 lb./ac.

(iii) None of the effects is significant.

(iv) Av. yield of grain in lb./ac.

Control=1554 lb./ac.

	$I_1$	$I_2$	$I_3$	$I_4$	Mean
$L_1$	1862	1670	1803	1493	1707
$L_2$	1562	1631	1709	1734	1659
$L_3$	1704	1675	1572	1730	1670
$L_4$	1442	1909	1654	1530	1634
$L_5$	1667	1599	1714	1849	1707
Mean	1647	1697	1690	1667	1675

S.E. of L marginal means = 81.45 lb./ac.  
S.E. of I marginal means = 72.85 lb./ac.  
S.E. of body of table = 162.90 lb./ac.  
S.E. of control mean = 81.45 lb./ac.

Crop :- Paddy (*Kharif*).  
Site :- Field Res. Stn., Bahadrabad.

Ref :- U.P. 49(222).  
Type :- 'I'.

Object :- To study the effect of varying frequencies and depths of irrigation on yield of Paddy.

### 1. BASAL CONDITIONS:

(i) (a) to (c) N.A. (ii) (a) Loam and clayey. (b) N.A. (iii) 7.6.1949/1 to 7.8.1949. (iv) (a) Ploughing according to local practice. (b) to (c) N.A. (v) F.Y.M. at 120 md./ac. to the nursery and the field on 4.6.1949. (vi) T-21 (medium). (vii) Irrigated. (viii) Weeding was done after sowing of nursery. (ix) 37.5%. (x) 29.10.1949 to 4.11.1949.

### 2. TREATMENTS:

All combinations of (1) and (2)

(1) 6 levels of irrigation :  $L_0=0$ ,  $L_1=3$ ,  $L_2=4'$ ,  $L_3=6$ ,  $L_4=7\frac{1}{2}$  and  $L_5=9$  inches.

(2) 4 intervals of irrigation :  $I_1=2$ ,  $I_2=2\frac{1}{2}$ ,  $I_3=3$  and  $I_4=4$  weeks.

**3. DESIGN :**

(i) 6×4 Fact. in R.B.D. (ii) (a) 24. (b) N.A. (iii) 4. (iv) (a) 48'×30'. (b) 43'×25. (v) 2½' around the net plot. (vi) Yes.

**4. GENERAL :**

(i) Good. (ii) Nil. (iii) Grain yield. (iv) (a) 1947—1949. (b) Yes. (c) No. (v) (a) Attara. (b) No. (vi) Nil. (vii) Conducted by I.R.I.

**5. RESULTS :**

(i) 1275 lb./ac.  
 (ii) 257.9 lb./ac.  
 (iii) Only I effect is significant.  
 (iv) Av. yield of grain in lb./ac.

Control mean = 1326 lb./ac.

	I <sub>1</sub>	I <sub>2</sub>	I <sub>3</sub>	I <sub>4</sub>	Mean
L <sub>1</sub>	1275	1321	1391	992	1245
L <sub>2</sub>	1080	1310	1481	1073	1236
L <sub>3</sub>	1494	1116	1417	1141	1292
L <sub>4</sub>	1381	1232	1579	1271	1366
L <sub>5</sub>	1107	1308	1159	1167	1185
Mean	1267	1257	1406	1129	1265

S.E. of L marginal means = 64.48 lb./ac.  
 S.E. of I marginal means = 57.67 lb./ac.  
 S.E. of body of table = 128.95 lb./ac.  
 S.E. of control mean = 64.48 lb./ac.

Crop :-Paddy.

Site :-Rice Res. Stn., Nagina.

Ref :- U.P. 50(43).

Type :-'P.

Object :-To test the effect of varying intervals and depths of irrigation on Paddy yield.

**1. BASAL CONDITIONS :**

(i) (a) Paddy-fallow. (b) Paddy. (c) Nil. (ii) (a) Light loam. (b) N.A. (iii) 1.6.1950/2.7.1950. (iv) (a) One deep ploughing and 2 shallow ploughings. (b) to (e) N.A. (v) Castor cake at 50 lb./ac. of N. (vi) Anjana Pilibhit. (vii) Irrigated. (viii) 2 weedings. (ix) N.A. (x) 11.10.1950.

**2. TREATMENTS :**

All combinations of (1) and (2)

(1) 4 depths of irrigation : L<sub>0</sub>=0, L<sub>1</sub>=2, L<sub>2</sub>=4 and L<sub>3</sub>=6 inches.

(2) 3 intervals of irrigation : I<sub>1</sub>=4, I<sub>2</sub>=8 and I<sub>3</sub>=12 days.

**3. DESIGN :**

(i) 3×4 Fact. in R.B.D. (ii) (a) 12. (b) N.A. (iii) 4. (iv) (a) 25'×11'. (b) 1/233.77 ac. (v) N.A. (vi) Yes.

**4. GENERAL :**

(i) Normal. No lodging. (ii) Nil. (iii) Grain yield. (iv) (a) 1948—1951. (b) No. (c) No. (v) (a) No. (b) No. (vi) Nil. (vii) The experiment failed in 1948 and 1949. Conducted by Assistant Economic Botanist. (Paddy) to Govt. of U.P., Nagina.

**5. RESULTS :**

(i) 2458 lb./ac.  
 (ii) 381.7 lb./ac.  
 (iii) Only I effect is highly significant.

(iv) Av. yield of grain in lb./ac.

	Control = 2301 lb./ac.			Mean
	I <sub>1</sub>	I <sub>2</sub>	I <sub>3</sub>	
L <sub>1</sub>	2612	2291	2192	2365
L <sub>2</sub>	2817	2273	2484	2525
L <sub>3</sub>	3004	2741	2174	2640
Mean	2811	2435	2283	2510

S.E. any marginal mean = 110.19 lb./ac.  
 S.E. of body of table = 190.85 lb./ac.  
 S.E. of control mean = 110.19 lb./ac.

Crop :- Paddy (*Kharif*).  
 Site :- Govt. Agri. Farm, Tissuhi.

Ref :- U.P. 48(115).  
 Type :- 'I'.

Object :- To study the effect of varying frequencies and depths of irrigation on yield of Paddy.

### 1. BASAL CONDITIONS :

(i) (a) N.A. (b) N.A. (c) N.A. (ii) (a) Black cotton soil. (b) N.A. (iii) June 1948/25.7.1948. (iv) (a) Ploughing according to the local practice. (b) to (e) N.A. (v) N.A. (vi) T-36. (vii) Irrigated. (viii) Weeding was done in nursery plots. (ix) 66.5%. (x) 24.11.1948.

### 2. TREATMENTS :

All combinations of (1) and (2)

(1) 4 levels of irrigation : L<sub>0</sub>=0, L<sub>1</sub>=3, L<sub>2</sub>=6 and L<sub>3</sub>=9 inches.

(2) 3 intervals of irrigation : I<sub>1</sub>=2, I<sub>2</sub>=3 and I<sub>3</sub>=4 weeks.

### 3. DESIGN :

(i) 4×3 Fact. in R.B.D. (ii) (a) 12. (b) N.A. (iii) 4. (iv) (a) 25'×11'. (b) N.A. (v) N.A. (vi) Yes.

### GENERAL :

(i) Good. (ii) N.A. (iii) Grain yield. (iv) (a) 1946—1950. (b) No. (c) Nil. (v) (a) No (b) N.A. (vi) Nil. (vii) The experiment was conducted by the I.R.I. In the absence of net plot area which is not available the yields etc. given above are on gross plot size.

### 5. RESULTS :

- (i) 2104 lb./ac.  
 (ii) 488.7 lb./ac.  
 (iii) Only I effect is significant.  
 (iv) Av. yield of grain in lb./ac.

Control = 2199 lb./ac.

	Control = 2199 lb./ac.			Mean
	I <sub>1</sub>	I <sub>2</sub>	I <sub>3</sub>	
L <sub>1</sub>	2530	1650	1741	1974
L <sub>2</sub>	2205	1914	1675	1931
L <sub>3</sub>	2536	2184	2210	2310
Mean	2424	1916	1875	2072

S.E. of any marginal mean = 141.07 lb./ac.  
 S.E. of body of table = 244.34 lb./ac.  
 S.E. of control mean = 141.07 lb./ac.

Crop :- Paddy (*Kharif*).  
Site :- Govt. Agri. Farm, Tissuhi.

Ref :- U.P. 49(223).

Type :- 'I'.

Object :- To study the effect of varying frequencies and depths of irrigation on yield of Paddy.

**1. BASAL CONDITIONS :**

(i) (a) N.A. (b) N.A. (c) N.A. (ii) (a) Black cotton soil. (b) N.A. (iii) N.A. (iv) (a) Ploughing according to local practice. (b) to (e) N.A. (v) Nil. (vi) T-36. (vii) Irrigated. (viii) Weeding was done in the nursery plot. (ix) N.A. (x) N.A.

**2. TREATMENTS :**

All combinations of (1) and (2)

(1) 4 levels of irrigation :  $L_0=0$ ,  $L_1=3$ ,  $L_2=6$  and  $L_3=9$  inches.

(2) 3 intervals of irrigation :  $I_1=2$ ,  $I_2=3$  and  $I_3=4$  weeks.

**3. DESIGN :**

(i)  $4 \times 3$  Fact. in R.B.D. (ii) (a) 12. (b) N.A. (iii) 4. (iv) (a)  $25' \times 11'$ . (b) N.A. (v) N.A. (vi) Yes.

**4. GENERAL :**

(i) N.A. (ii) N.A. (iii) Grain yield. (iv) (a) 1946—1950. (b) No. (c) Nil. (v) (a) No. (b) N.A. (vi) Nil. (vii) Conducted by I.R.I.

**5. RESULTS :**

- (i) 1546 lb./ac.  
(ii) 272.2 lb./ac.  
(iii) Only control vs others effect is significant.  
(iv) Av. yield of grain in lb./ac.

Control=1390 lb./ac.				
	$I_1$	$I_2$	$I_3$	Mean
$L_1$	1701	1527	1487	1572
$L_2$	1660	1604	1558	1607
$L_3$	1634	1665	1548	1616
Mean	1665	1599	1531	1598

S.E. of any marginal mean = 78.57 lb./ac.  
S.E. of body of table = 136.08 lb./ac.  
S.E. of control mean = 78.57 lb./ac.

Crop :- Paddy (*Kharif*).  
Site :- Govt. Agri. Farm, Tissuhi.

Ref :- U.P. 50(278).

Type :- 'I'.

Object :- To study the effect of varying frequencies and depths of irrigation on yield of Paddy.

**1. BASAL CONDITIONS :**

(i) (a) to (c) N.A. (ii) (a) Black cotton soil. (b) N.A. (iii) June 1950/28.7.1950. (iv) (a) Ploughing etc. according to the local practice. (b) to (e) N.A. (v) N.A. (vi) T-36. (vii) Irrigated. (viii) Weeding was done in the nursery plots. (ix) 38.7°. (x) 20.11.1950.

**2. TREATMENTS :**

All combination of (1) and (2)

(1) 5 levels of irrigations :  $L_0=0''$ ,  $L_1=4\frac{1}{2}''$ ,  $L_2=6''$ ,  $L_3=7\frac{1}{2}''$ , and  $L_4=9''$ .

(2) 3 intervals of irrigation :  $I_1=2$ ,  $I_2=2\frac{1}{2}$  and  $I_3=3$  weeks.

**3. DESIGN :**

(i)  $5 \times 3$  Fact. in R.B.D. (ii) (a) 15. (b) N.A. (iii) 4. (iv) (a)  $25' \times 11'$ . (b) N.A. (v) N.A. (vi) Yes.

**4. GENERAL :**

(i) N.A. (ii) N.A. (iii) Grain yield. (iv) (a) 1946—1950. (b) No. (c) Nil. (v) (a) No. (b) N.A. (vi) Nil. (vii) Conducted by I.R.I.

## 5. RESULTS :

- (i) 1496 lb./ac.  
 (ii) 398.4 lb./ac.  
 (iii) Effect of I differs significantly. Control vs others differs highly significantly. Other effects do not differ significantly.  
 (iv) Av. yield of grain in lb./ac.

	Control=734 lb./ac.			Mean
	I <sub>1</sub>	I <sub>2</sub>	I <sub>3</sub>	
L <sub>1</sub>	1819	1483	1292	1531
L <sub>2</sub>	1919	1755	1188	1621
L <sub>3</sub>	1846	1904	1568	1773
L <sub>4</sub>	2040	1633	1789	1821
Mean	1906	1694	1459	1686

S.E. of L means = 115.0 lb./ac.  
 S.E. of I means = 99.6 lb./ac.  
 S.E. of body of table = 199.2 lb./ac.  
 S.E. of control mean = 115.0 lb./ac.

Crop :- Paddy (*Kharif*).

Ref :- U.P. 53(316).

Site :- Rice Res. Sub-Stn., Kunraghat.

Type :- 'D'.

Object :- To compare the effect of mercurial, cuperous and organic seed dressings on germination, disease and yield of Paddy.

## 1. BASAL CONDITIONS :

- (i) (a) Nil. (b) Barley. (c) N.A. (ii) (a) Sandy. (b) N.A. (iii) 22.6.1953. (iv) (a) 3 ploughings by *desi* plough. (b) Broadcast. (c) 37 srs./ac. (d) —. (e) —. (v) 10 C.L./ac. of village compost. A/S at 20 srs./ac. (vi) N-22 (early). (vii) N.A. (viii) 2 weedings. (ix) 46.14°. (x) 7 to 9.10.1953.

## 2. TREATMENTS :

1. Agrosan G.N.
  2. Special Agrosan (of low vitality)
  3. Fernosan A
  4. Copper seed dressing (Y.F. 2776)
  5. Control (no dressing)
- Rate of dressing 0.25% by weight.

## 3. DESIGN :

- (i) L. Sq. (ii) (a) 5. (b) N.A. (iii) 5. (iv) (a) 21'×51'. (b) 21'×51'. (v) Nil. (vi) Yes.

## 4. GENERAL :

- (i) Satisfactory growth. Half lodging in all the plots on 23.9.1953. (ii) Nil. (iii) Height, tillering and grain yield. (iv) (a) No. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) Nil. (vii) Experiment conducted by Assistant Economic Botanist (Paddy) to Govt. of U.P., Nagina.

## 5. RESULTS :

- (i) 875.5 lb./ac.  
 (ii) 80.98 lb./ac.  
 (iii) Treatment differences are not significant.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	888.9
2.	936.0
3.	886.8
4.	809.4
5.	856.5
S.E./mean	= 36.22 lb./ac.



Crop :- Paddy (*Khari*).  
Site :- Rice Res. Stn., Nagina.

Ref :- U.P. 53(164).  
Type :- 'D'.

Object :- To find out the effect of dressing seed with new fungicides on the leaf spot disease and yield of Paddy.

1. BASAL CONDITIONS :

(i) (a) Paddy-Berseem. (b) Berseem. (c) No. (ii) (a) Silt loam. (b) N.A. (iii) 29.6.1953. (iv) (a) One deep ploughing and 2 shallow ploughings. (b) to (e) N.A. (v) Nil. (vi) T-88 (late) (vii) Irrigated. (viii) 2 weedings. (ix) 46.28". (x) 23.10.1953.

2. TREATMENTS :

1. Control
2. Special Agrosan
3. Agrosan G.N.
4. Fernosan
5. Copper seed dressing (Y.F. 2776)

3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 5. (iv) (a) 21' x 31.5'. (b) 21' x 31.5'. (v) No. (vi) Yes.

4. GENERAL :

(i) Good. No lodging. (ii) N.A. (iii) Grain yield. (iv) (a) No. (b), (c) No. (v) (a), (b) No. (vi) Nil. (vii) Conducted by Asst. Economic Botanist (Paddy) to Govt. of U.P., Nagina.

5. RESULTS :

- (i) 3186 lb./ac.
- (ii) 260.8 lb./ac.
- (iii) Treatment differences are not significant.
- (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	3124
2.	3240
3.	3148.
4.	3260
5.	3158
S.E./mean	=116.6 lb./ac.

Crop :- Paddy (*Khari*).  
Site :- Rice Res. Stn., Nagina.

Ref :- U.P. 48(150).  
Type :- 'D'.

Object :- To test the efficacy of D.D.T. and Gammaxene against *Gundhi* bugs of Paddy.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) N.A. (c) N.A. (ii) (a) N.A. (b) N.A. (iii) N.A. (iv) (a) N.A. (b) N.A. (c) N.A. (d) N.A. (e) N.A. (v) N.A. (vi) Paddy (*Anghani* Pilibhit). (vii) N.A. (viii) N.A. (ix) N.A. (x) N.A.

2. TREATMENTS :

1. Spraying with 0.25% DDT emulsion at 300 gallon per acre.
2. Dusting with gammaxene D.025 (containing 5% benzenehexachloride) at 15 lb./ac.
3. Dusting with gammaxene D.025 at 30 lb./ac.
4. Control—no treatment.

3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 23' x 36'. (v) N.A. (vi) Yes.

4. GENERAL :

(i) N.A. (ii) Attack of *gundhi* bug. (iii) Counts of living bugs before and after application of treatments. (iv) (a) No. (b) No. (c) N.A. (v) (a) N.A. (b) N.A. (vi) Nil. (vii) The data has been converted into  $\sin^{-1}\sqrt{p}$  and then analysed. Transformed back mean percentages are given after correcting for bias. Expt conducted by Ento. (K).

## 5. RESULTS :

(i) to (iv) Reduction of *gundhi* bugs/100 sq. ft.

Treatment	2 hrs. after application of treatments.		15 days after the application of treatment.	
	Mean Angle	Transformed back - mean %	Mean Angle	Transformed back - mean %
1.	83.36	98.17	80.33	96.73
2.	51.42	60.99	64.88	81.68
3.	65.26	82.16	82.80	97.92
4.	36.53	35.26	62.38	78.22
G.M.	59.14		72.60	
S.E./mean	4.297		7.877	
Sig.	Highly significant		N.S.	

Crop :- Paddy (*Kharif*).

Ref :- U.P. 49(211).

Site :- Rice Res. Stn., Nagina.

Type :- 'D'.

Object :- To study the effects of B.H.C. and sodium fluosilicate against the *Kharif* Grass hoppers of Paddy.

## 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) and (b) N.A. (iii) N.A. (iv) (a) to (e) N.A. (v) N.A. (vi) Several varieties. (vii) N.A. (viii) N.A. (ix) N.A. (x) N.A.

## 2. TREATMENTS :

1. Gammaxene D.025 (5% B.H.C) at 15 lb./ac.
2. Poison baits (Sodium fluosilicate, bran, *gur* and water in the ratio 1 : 15 : 2 : 7.
3. Control (no treatments).

## 3. DESIGN :

(i) R.B.D. (ii) (a) 3. (b) N.A. (iii) 5. (iv) (a) N.A. (b) 28' x 28'. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) Grass hoppers—as per treatments. (iii) Population of grass hoppers before and after the application of treatments. (iv) (a) No. (b) No. (c) No. (v) (a) No. (b) Nil. (vi) Nil. (vii) The data has been converted into  $\sin^{-1} \sqrt{p}$  and then analysed. The experiment was conducted by Ento. (K).

## 5. RESULTS :

(i) to (iv) Reduction of grass hoppers at a distance of 28'.

Treatment	Mean angle	Transformed back—mean%
1.	61.28	76.63
2.	51.12	60.50
3.	9.68	3.27
G.M.	40.69	
S.E./mean	=4.812	
Sig.	Highly Significant	

Crop :- Paddy (*Kharif*).

Ref :- U.P. 49(212).

Site :- Rice Res. Stn., Nagina.

Type :- 'D'.

Object :- To test the efficacy of D.D.T. and B.H.C. insecticides against *gundhi* bugs of Paddy.

## 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) and (b) N.A. (iii) N.A. (iv) (a) to (e) N.A. (v) N.A. (vi) Paddy A-22 (late). (vii) N.A. (viii) N.A. (ix) N.A. (x) N.A.

## 2. TREATMENTS :

1. Spraying 0.25% D.D.T. suspension.
2. Spraying with 0.5% Benzene hexachloride suspension at 100 gallon/ac.
3. Dusting with 5% Benzene hexachloride dust at 33 lb./ac.
4. Dusting with 5% D.D.T. (Buggs 5% D.D.T. dust) at 50 lb./ac.
5. Control—No treatment.

3. DESIGN: (i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 4. (iv) (a) and (b) 63'×17.5'. (v) No. (vi) Yes.
4. GENERAL: (i) Milk stage on 28.10.1949. (ii) *Gundhi* bugs—as per treatments. (iii) Population of *gundhi* bugs before and after the application of treatments. (iv) (a) No. (b) N.A. (c) N.A. (v) (a) No. (b) Nil. (vi) Nil. (vii) The data has been converted into  $\sin^{-1}\sqrt{P}$  and then analysed. The experiment was conducted by Ento. (K).
5. RESULTS:

(i) to (iv) Reduction of *gundhi* bugs/100 sq. ft. 24 hrs. after the application of treatments

Treatment	Mean angle	Transformed back—mean%
1.	74.54	92.47
2.	83.07	98.07
3.	79.04	95.98
4.	65.72	82.77
5.	39.58	40.69
G.M.	68.39	
S.E./mean	=7.494 lb./ac.	
Significance	Significant	

Crop :- Paddy (*Kharif*).

Ref :- U.P. 53(310).

Site :- Late Paddy Res. Sub-Stn., Pachperwa.

Type :- 'D'.

Object :- To test the efficacy of different insecticides against stem borer of Paddy.

1. BASAL CONDITIONS:

(i) (a) to (c) N.A. (ii) (a) and (b) N.A. (iii) 2.7.1953/31.7.1953 and 1.8.1953. (iv) (a) to (e) N.A. (v) N.A. (vi) T-83 (late). (vii) Irrigated. (viii) N.A. (ix) N.A. (x) 3.12.1953.

2. TREATMENTS:

1. Spraying with 0.2% D.D.T.
2. Spraying with 0.2% B.H.C.
3. Dusting with 5% B.H.C.
4. Dusting with 5% D.D.T.
5. Spraying with 0.2% Parathione.
6. Control.

Rate of application of insecticides: Dusting at 20 lb./ac. in both applications. Spraying at 40 and 60 gallons in 1st and 2nd applications respectively.

3. DESIGN:

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 5. (iv) (a) N.A. (b) 23'×30'. (v) 5' on all sides of the plot. (vi) Yes.

4. GENERAL:

(i) Good. (ii) Stem borer—as per treatments. (iii) Count of total no. of plants effected, no. of adults larvae and eggs at 5 different places in each plot of size 2'×2' and yield of grain. (iv) (a) Nil. (b) No. (c) N.A. (v) (a) No. (b) N.A. (vi) Nil. (vii) The data has been converted into  $\sqrt{x+\frac{1}{2}}$  and then analysed where  $x$  is the larvae count per plot. The experiment was conducted by Ento. (K).

5. RESULTS:

(i) to (iv)

Treatment	Mean value of $\sqrt{x+\frac{1}{2}}$	Larvae counts (Transformed back)	Av. yield of grain in lb./ac.
1.	2.424	5.38	2980
2.	2.422	5.37	2137
3.	2.546	5.98	2066
4.	2.248	4.55	2425
5.	2.162	4.17	2731
6.	2.838	7.55	2075
G.M.	2.440	5.50	2402
S.E./mean	0.0994		121.61
Significance	Highly significant		Highly significant

Crop :- Paddy (*Kharif*).

Ref :- U.P. 53(311).

Site :- Govt. Res. Farm, Pura.

Type :- 'D'.

Object :- To test the efficacy of different insecticides against *gundhi* bugs of Paddy.

## 1. BASAL CONDITIONS:

(i) (a) to (c) N.A. (ii) (a) Loam. (b) Refer soil analysis, Pura. (iii) 2.7 1953/1.7.1953. (iv) (a) to (e) N.A. (v) N.A. (vi) T-21 (medium). (vii) N.A. (viii) N.A. (ix) N.A. (x) 14.10.1953.

## 2. TREATMENTS:

1. Dusting with 5% B.H.C. at 20 lb./ac.
2. Dusting with 10% Toxaphene at 20 lb./ac.
3. Dusting with 5% Chlorodain at 20 lb./ac.
4. Control.

Application on 8.9.1953.

## 3. DESIGN:

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 30' x 20'. (v) 4' all around the plot. (vi) Yes.

## 4. GENERAL:

(i) Good. (ii) *Gundhi* bugs—as per treatments. (iii) Counts of adults and nymphs taken at 5 different places in plot of size 2' x 2' and grain yield. (iv) (a) 1953—1954. (b) No. (c) N.A. (v) (a) No. (b) N.A. (vi) Nil. (vii) The data has been converted into  $\sin^{-1} \sqrt{p}$  and then analysed where p is % of survival of adults and nymphs. Transformed back means have been calculated after applying bias correction. The experiment was conducted by Ento. (K).

## 5. RESULTS:

(i) to (iv).

Treatment	Mean value in $\sin^{-1} \sqrt{p}$	% of survival of adults and nymphs (transformed back)	Av. yield of grain in lb./ac.
1.	35.36	33.67	998.8
2.	38.74	39.28	1082.8
3.	37.75	37.61	1087.4
4.	59.59	74.14	849.4
G.M.	42.86		1004.6
S.E./mean	1.5860		232.61
Significance	Highly significant		N.S.

Crop :- Paddy (*Kharif*).

Ref :- U.P. 50(270).

Site :- Govt. Seed Farm, Unnao.

Type :- 'D'.

Object :- To test the efficacy of D.D.T., B.H.C and allied insecticides against *Gundhi* bugs of Paddy.

## 1. BASAL CONDITIONS:

(i) (a) to (c) N.A. (ii) (a) and (b) N.A. (iii) N.A. (iv) (a) to (e) N.A. (v) N.A. (vi) No. 21. (vii) N.A. (viii) N.A. (ix) N.A. (x) N.A.

## 2. TREATMENTS:

1. 25% D.D.T. (Guesarol 550) suspension at 40 gallon/ac.
2. 25% B.H.C. suspension (Hexachloride) at 40 gallon/ac.
3. Pyro dust 4000 at 20 lb./ac.
4. 5% Hexyclan dust at 20 lb./ac.
5. Control (no treatment).

## 3. DESIGN:

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 40' x 54.5'. (v) No. (vi) Yes.

## 4. GENERAL:

(i) N.A. (ii) *Gundhi* bugs—as per treatments. (iii) Number of nymphs and adult bugs. (iv) (a) No. (b) No. (c) No. (v) (a) No. (b) Nil. (vi) Nil. (vii) Transformed back mean percentages are given after applying bias correction. The data was converted into  $\sin^{-1} \sqrt{p}$  and then analysed. The experiment was conducted by Ento. (K).

## 5. RESULTS :

(i) to (iv) Reduction of *Gundhi* bugs/100 sq. ft. 72 hrs. after the application of treatment

Treatment	Mean angle	Transformed back mean%
1.	86.45	99.11
2.	78.75	95.74
3.	90.00	99.50
4.	87.50	99.31
5.	87.97	99.37
G.M.	86.13	
S.E./mean	=5.321 lb./ac.	
Significance	N.S.	

Crop :- Paddy (*Kharif*).

Ref :- U.P. 53(309).

Site :- Govt. Seed Farm, Unnao.

Type :- 'D'.

Object :- To test the efficacy of different insecticides against *gundhi* bugs of Paddy.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) N.A. (c) N.A. (ii) (a) Loam. (b) N.A. (iii) 21.6.1953/24.7.1953. (iv) (a) to (e) N.A. (v) N.A. (vi) T-21 (medium). (vii) Irrigated. (viii) N.A. (ix) N.A. (x) N.A.

## 2. TREATMENTS :

1. Spraying with 0.2% B.H.C. @ 40 gallons/ac.
2. Dusting with 5.0% B.H.C. at 20 lb./ac.
3. Spraying with 0.02% Parathion emulsion at 40 gallons/ac.
4. Spraying with 4% Fish oil Rosin Soap at 40 gallons/ac.
5. Spraying with 10% Nicotine Sulphate at 40 gallons/ac.
6. Control (no treatment).

Application on 22.9.1953.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 42' x 31' (v) 8' around the plot. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) *Gundhi* bugs—as per treatment. (iii) Count of adult and nymphs in plots of size 2' x 2' and grain yield. (iv) (a) No. (b) No. (c) N.A. (v) (a) No. (b) N.A. (vi) Nil. (vii) Transformation back has been done after applying bias correction. The data has been converted into  $\sin^{-1}\sqrt{p}$  and then analysed, where  $p$  = % reduction of nymphs and adults. The experiment was conducted by Ento. (K).

## 5. RESULTS :

(i) to (iv) Treatment	Mean value in $\sin^{-1}\sqrt{p}$	% reduction (transformed back)	Av. yield of grain in lb./ac.
1.	79.70	96.33	1628
2.	79.27	96.06	1488
3.	76.94	94.44	1370
4.	76.62	94.20	1435
5.	78.07	95.27	1594
6.	42.68	45.99	1488
G.M.	72.21		1500
S.E./mean	2.6978		167.74
Significance	Highly significant		N.S.

Crop :- Paddy.

Ref :- U.P. 50(275).

Site :- Azamgarh. (Tehsil) Dist. Azamgarh.

Type :- 'D'.

Object :- To test the efficiency of Hexyclan and Toxaphene dusts and Sodium fluosilicate bait against *kharif* grass hoppers.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) N.A. (c) N.A. (ii) (a) and (b) N.A. (iii) N.A. (iv) Paddy (Local). (v) (a) to (e) N.A. (vi) N.A. (vii) N.A. (viii) N.A. (ix) N.A. (x) N.A.

## 2. TREATMENTS :

1. Dusting with 5% Hexyclan dust at 20 lb./ac.
2. Dusting with 5% Hexyclan dust at 10 lb./ac.
3. Dusting with 20% Toxaphene at 20 lb./ac.
4. Sodium fluosilicate, bran, mollasses bait in the ratio of 1 : 15 : 2 at 40 lb./ac.
5. No treatment (control).

Insecticides applied on 11.8.1950.

## 3. DESIGN :

(i) R.B.D. (ii) Number of replications—4. (iii) N.A. (iv) (a) N.A. (b) 40.5' × 27'. (v) N.A.

## 4. GENERAL :

(i) N.A. (ii) Grass hoppers—as per treatments. (iii) Count of grass hoppers (nymphs and adults) per 10 strokes at hand net (iv) (a) No. (b) N.A. (c) N.A. (v) N.A. (vi) Nil. (vii) The data were converted to  $\sin^{-1}\sqrt{p}$  and then analysed. Transformed back means have been presented after applying bias correction. The experiment was conducted by Ento. (K). on cultivator's field.

## 5. RESULTS :

(i) to (iv) Reduction in grass hopper population 72 hrs. after the application of treatments.

Treatment	Mean angle	Transformed back—mean %
1.	70.25	88.22
2.	40.90	42.97
3.	60.20	75.05
4.	25.84	19.31
5.	19.89	11.98
G.M.	43.42	
S.E./mean	5.039	
Sig.	Highly significant.	

Crop :- Wheat (*Rabi*).

Ref :- U.P. 49(246).

Site :- B. R. College Farm, (Bichpuri), Agra.

Type :- 'M'.

Object :- To study the effect of organic and inorganic nitrogenous manures on Wheat.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) (a) Loam and medium in texture, quite porous. (b) Refer soil analysis, B.R. College Farm, Bichpuri. (iii) 3.11.1949. (iv) (a) 10 ploughings, 3 *pata*, 2 times stubble picking. (b) Behind the plough by drilling seeds with *Nai*, regular depth of 5". (c) 40 seers/ac. (d) Rows 9" apart. (e) —. (v) Nil. (vi) Pb-591 (late variety). (vii) Irrigated. (viii) One weeding. (ix) Nil. (x) 13.4.1950.

## 2. TREATMENTS :

1. No manure.
  2. Farm compost at 60 lb./ac. of N.
  3. A/S at 60 lb./ac. of N and Super to give  $P_2O_5$  as contained in treatment 2.
- Compost spread about 25 days before sowing ; A/S and Super applied 1 day before sowing.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 3. (b) 121' × 59'. (iii) 3. (iv) (a) 57' × 38', 57' × 41' and 57' × 40'. (b) 49' × 30'. (v) 4' × 4', 4' × 5' and 4' × 5½'. (vi) Yes.

## 4. GENERAL :

(i) Lodging occurred in plots and treated with inorganic manures in the later stage. (ii) Nil. (iii) Grain and straw yield, etc. (iv) (a) No. (b) No. (c) Nil. (v) (a) Nil. (b) Nil. (vi) Nil. (vii) The experiment was conducted by B.R. College.

## 5. RESULTS:

- (i) 2024 lb./ac.  
 (ii) 438.2 lb./ac.  
 (iii) Treatment differences are not significant.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	2021
2.	1949
3.	2101
S.E./mean	=253.0 lb./ac.

Crop :- Wheat (*Rabi*).

Ref :- U.P. 49(247).

Site :- B. R. College Farm, (Bichpuri) Agra.

Type :- 'M'.

Object :- To study of the effect of different sources of  $P_2O_5$  applied at varying depths on Wheat.

## 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Alluvial origin, It is a loam type of soil having more % of sand than the clay. (b) Refer soil analysis, B.R. College Farm, Bichpuri. (iii) 7.11.1949. (iv) (a) N.A. (b) Behind the plough with the help of a *Nat*. (c) 90 lb./ac. (d) 9" apart. (e) —. (v) N.A. (vi) P-591 (late). (vii) Irrigated. (viii) One weeding on 14.12.1949. Roguing of extra plants removed from the field before harvesting. (ix) N.A. (x) 29.4.1950.

## 2. TREATMENTS :

Main-plot treatments : All combinations of (1) and (2)

(1) 2 sources of  $P_2O_5$ :  $F_1$  = Bonemeal and  $F_2$  = Super.

(2) 2 levels of  $P_2O_5$ :  $P_1$  = 20 and  $P_2$  = 40 lb./ac.

Sub-plot treatments :

4 depths of placement of  $P_2O_5$ :  $D_1$  = Surface,  $D_2$  = 3",  $D_3$  = 6" and  $D_4$  = 9".

A/S additional dressing to  $F_2$  plots to compensate for N in B.M. Super, finely powdered and sieved, placed at different depths on 5 to 7.11.1949.

## 3. DESIGN :

(i) Split-plot. (ii) (a) 4 main-plots/block and 4 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 20' x 26'. (b) 18' x 24'. (v) 1' around. (vi) Yes.

## 4. GENERAL :

(i) Satisfactory. (ii) N.A. (iii) Grain, *bhusa* yield and other characters. (iv) (a) No. (b) No. (c) Nil. (v) (a) Nil. (b) Nil. (vi) Nil. (vii) Experiment conducted by B.R. College. Raw data N.A.

## 5. RESULTS :

- (i) 1957 lb./ac.  
 (ii) (a) 416.5 lb./ac.  
 (b) 218.2 lb./ac.  
 (iii) None of the effects is significant.  
 (iv) Av. yield of grain in lb./ac.

Main plot treatments	Av. yield	sub-Plot treatments	Av. yield
$F_1$	1898	$D_1$	2020
$F_2$	2016	$D_2$	1942
$P_1$	1955	$D_3$	1983
$P_2$	1960	$D_4$	1883
S.E./mean	=73.63 lb./ac.	S.E./mean	=54.55 lb./ac.

Crop :- Wheat (*Rabi*).

Ref :- U.P. 53(383).

Site :- B. R. College Farm, (Bichpuri), Agra.

Type :- 'M'.

Object :- To study the effect of green manure crops buried in different ways on soil fertility and Wheat yield.

## 1. BASAL CONDITIONS :

(i) Cow pea—Wheat. (b) As per treatments. (c) Nil to green manures. (ii) (a) Sandy loam of average fertility. (b) Refer soil analysis, B.R. College Farm, Bichpuri. (iii) 4.11.1953. (iv) (a) *Palewa* applied, after burying the green manuring crops, the field was ploughed by tractor disc two times before wheat sowing. (b) By tractor driven seed drill. (c) 80 lb./ac. (d) Rows 9" apart. (e) —. (v) N.A. (vi) Pb. 591. (vii) Irrigated. (viii) 2 weedings. (ix) N.A. (x) 14.4.1954.

## 2. TREATMENTS :

Main-plot treatments :

Two methods of burying the green manuring crops :  $M_1$  = Burying the whole plant and  $M_2$  = Burying the under ground portion only (harvesting the complete above ground portion).

Sub-plot treatments :

5 green manures :  $G_1$  = *Moong* at 10 lb./ac.,  $G_2$  = *Sana* at 50 lb./ac.,  $G_3$  = *Gucr* at 10 lb./ac.,  $G_4$  = Cow pea at 20 lb./ac. and  $G_5$  = *Chinamug* at 10 lb./ac.

G.M. on 19.7.1953 by broadcast followed by harrowing and planking off set disc. Harrow attached with *pata* driven by tractor to mix seeds. Burying of G.M. done on 1.9.1953.

## 3. DESIGN :

(i) Split-plot. (ii) (a) 2 main-plots/replication and 5 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 15' x 36'. (v) Plot border—2', block border—4' and channels—4'.

## 4. GENERAL :

(i) Poor in plots at a bit higher level. Patchy germination. (ii) N.A. (iii) Yield of grain and *bhusa*. (iv) (a) No. (b) No. (c) Nil. (v) (a) Nil. (b) No. (vi) Nil. (vii) The experiment was conducted by B.R. College.

## 5. RESULTS :

(i) 1051 lb./ac.  
 (ii) (a) 74.21 lb./ac.  
 (b) 179.49 lb./ac.  
 (iii) M and G effects are highly significant. Interaction is not significant.  
 (iv) Av. yield of grain in lb./ac.

	$G_1$	$G_2$	$G_3$	$G_4$	$G_5$	Mean
$M_1$	708	1178	691	963	943	897
$M_2$	1182	1687	874	1164	1123	1206
Mean	945	1432	782	1064	1013	1051

S.E. of difference of two

1. M marginal means = 23.47 lb./ac.
2. G marginal means = 89.74 lb./ac.
3. G means at the same level of M = 126.9 lb./ac.
4. M means at the same level of G = 115.9 lb./ac.

Crop :- Wheat (*Rabi*).

Ref :- U.P. 50(312).

Site :- B. R. College Farm, (Bichpuri), Agra.

Type :- 'M'.

Object :- To study the effect of N with and without basal dressing of compost on yield of Wheat.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Pea and then fallow. (c) Nil. (ii) (a) High loam. (b) Refer soil analysis, B.R. College Farm Bichpuri. (iii) 8.11.1950. (iv) (a) Ploughings by tractor with disc harrow on 9.5.1950. 6 *desi* ploughings. Ploughing by tractor with disc harrow on 21.10.1951. (b) By *Nai* plough method at 3" depth. (c) 40 ars./ac. (d) N.A. (e) —. (v) Nil. (vi) Pb. 591 (late). (vii) Irrigated. (viii) 2 weedings by *khurpl*. (ix) N.A. (x) 21.4.1953.



**2. TREATMENTS:****Main-plot treatments:**

2 basal applications:  $B_0=0$  and  $B_1=20$  lb./ac. of N as compost.

**Sub-plot treatments:**

8 levels of N as A/S:  $N_0=0$ ,  $N_1=15$ ,  $N_2=30$ ,  $N_3=45$ ,  $N_4=60$ ,  $N_5=75$ ,  $N_6=90$ ,  $N_7=105$  and  $N_8=120$ .  
Farm compost: Cattle dung including litter, sugarcane trash and other farm refuse including straw of mustard, etc. applied on 5.10.1952 followed by *desl* plough on 6.10.1950, A/S applied on 7.11.1950 by spreading evenly.

**3. DESIGN:**

(i) Split/plot. (ii) (a) 2 main-plot/replication and 8 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a)  $42' \times 19'$  and  $42' \times 21'$ . (b)  $36' \times 15'$ . (v) Block border—4' and plot border—2'. (vi) Yes.

**4. GENERAL:**

(i) Lodging occurred due to showers followed by wind at high velocity. (ii) N.A. (iii) Grain and *bhusa* yield. (iv) (a) No. (b) No. (c)—. (v) (a) Nil. (b) No. (vi) Nil. (vii) The experiment was conducted by B.R. College.

**5. RESULTS:**

- (i) 1679 lb./ac.  
(ii) (a) 212.03 lb./ac.  
(b) 215.11 lb./ac.  
(iii) levels of N differ highly significantly.  
(iv) Av. yield of grain in lb./ac.

	Av. yield		Av. yield
$B_0$	1674	$N_0$	1178
$B_1$	1683	$N_1$	1413
S.E./mean	= 37.48 lb./ac.	$N_2$	1575
		$N_3$	1852
		$N_4$	1933
		$N_5$	1842
		$N_6$	1828
		$N_7$	1814
		S.E./mean	= 76.05 lb./ac.

Crop :-Wheat (*Rabi*).

Ref :-U.P. 50(69).

Site :-Central Dairy Farm, Aligarh.

Type :-'M'.

Object :-To study the effect of N and P fertilizers applied alone and in combination on Wheat crop.

**1. BASAL CONDITIONS:**

(i) (a) to (c) N.A. (ii) (a) Loam. (b) N.A. (iii) 17.11.1950. (iv) (a) to (c) N.A. (v) Nil. (vi) N.A. (vii) N.A. (viii) N.A. (ix) N.A. (x) 17.4.1951.

**2. TREATMENTS:**

All combinations of (1) and (2)

(1) 3 levels of N as A/S:  $N_0=0$ ,  $N_1=30$  and  $N_2=60$  lb./ac.

(2) 3 levels of  $P_2O_5$ :  $P_0=0$ ,  $P_1=60$  and  $P_2=120$  lb./ac.

A/S was broadcast while  $P_2O_5$  placed pre drilling it in bands near the root zone on 13, 14.11.1950.

**3. DESIGN:**

(i)  $3 \times 3$  Fact. in R.B.D. (ii) (a) 9. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 1/40th acre. (v) N.A. (vi) Yes.

**4. GENERAL:**

(i) Growth patchy in 2 blocks. (ii) No. (iii) Grain yield. (iv) (a) No. (b) No. (c) N.A. (v) (a) Kalyanpur, Atarra (Banda), Kalai, Banaras, Partapgarh, Nawabganj, and Bharari. (b) N.A. (vi) Nil. (vii) The field was uneven with alkaline patches. The patchy growth had, however considerably vitiated the accuracy of the experiment. Experiment was planned with 6 replications but 2 replications were omitted for analysis for patchy growth. The experiment conducted by A.C.

## 5. RESULTS :

- (i) 1479 lb./ac.  
(ii) 111.43 lb./ac.  
(iii) All effects are highly significant.  
(iv) Av. yield of grain in lb./ac.

	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>	Mean
N <sub>0</sub>	1030	1350	1380	1253
N <sub>1</sub>	1550	1650	1720	1640
N <sub>2</sub>	1790	1220	1620	1543
Mean	1457	1407	1573	1479

S.E. of any marginal mean = 32.17 lb./ac.  
S.E. of body of table = 55.72 lb./ac.

Crop :-Wheat (*Rabi*).

Ref :-U.P. 53(371).

Site :-Allahabad Agricultural Institute, Allahabad. Type :-'M'.

Object :—To study the effect of N, P and K applied alone and in combination on Wheat yield.

## 1. BASAL CONDITIONS :

(i) (a) No. (b) N.A. (c) N.A. (ii) (a) Fine sandy loam. (b) Refer soil analysis, Allahabad Agricultural Institute. (iii) 29.10.1953 [missing strips replanted on 10.11.1953]. (iv) (a) to (e) N.A. (v) N.A. (vi) N.P.720 (N.A.) (vii) Irrigated. (viii) N.A. (ix) 1.00%. (x) 27.3.1954.

## 2. TREATMENTS :

All combinations of (1), (2) and (3) + N<sub>1</sub> + Mg at 40 lb./ac. of N + 120 lb./ac. of Mg. (selective treatment.)

(1) 2 levels of P<sub>2</sub>O<sub>5</sub> : P<sub>0</sub>=0 and P<sub>1</sub>=40 lb./ac.

(2) 2 levels of N : N<sub>0</sub>=0 and N<sub>1</sub>=40 lb./ac.

(3) 2 levels of K : K<sub>0</sub>=0 and K<sub>1</sub>=41.5 lb./ac.

N as A/S, P<sub>2</sub>O<sub>5</sub> as Super, K as Potassium chloride and Mg as Magnesium Sulphate. Fertilizer applied 20 to 27.10.1953. Cultivated the fertilizer on 28.10.1953. These were spread on ploughed land and mixed with the surface soil by cultivation just before the crop was planted on 20 to 27.10.1953.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 9. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 9' x 36'. (v) 3' border between the plots. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) Attack of termite. (iii) Yield of grain and straw. (iv) (a) No. (b) No. (c) Nil. (v) (a)&(b) Nil. (vi) Nil. (vii) Experiment conducted by Dr. George H. Dungan, I.C.A. (representative from the University of Illinois who worked in collaboration with the Agronomy Department). Plot wise yield data N.A.

## 5. RESULTS :

- (i) 1837 lb./ac.  
(ii) 332.64 lb./ac.  
(iii) Effects of NP, NK and N are Significant.  
While effect NPK is highly significant.  
(iv) Av. yield of grain in lb./ac.

Selective treatment (N+Mg)=1827 lb./ac.

	P <sub>0</sub>	P <sub>1</sub>	Mean	K <sub>0</sub>	K <sub>1</sub>
N <sub>0</sub>	1535	1642	1588	1568	1609
N <sub>1</sub>	1995	2181	2088	2020	2156
Mean	1765	1911	1838	1794	1882
K <sub>0</sub>	1736	1851	1794		
K <sub>1</sub>	1794	1971	1882		

S.E. of any marginal mean = 83.16 lb./ac.  
S.E. of body of table = 117.61 lb./ac.

Crop :- Wheat (*Rabi*.)

Ref :- U.P. 52(325).

Site :- Allahabad Agricultural Institute, Allahabad. Type :- 'M'.

Object :—To see the effect of four different leguminous crops, when ploughed into the soil as green manures, on the following Wheat crop.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) As per treatments. (c) N.A. (ii) (a) Fine sandy loam. (b) Refer soil analysis, Allahabad Agricultural Institute. (iii) 11.10.1952. (iv) (a) N.A. (b) Sown in rows. (c) 30 srs./ac. (d) 12 rows/plot. (e) —. (v) N.A. (vi) C-13 (early). (vii) Irrigated. (viii) N.A. (ix) 1.78". (x) 30.3.1953.

## 2. TREATMENTS :

1. Sannhemp.
2. Cow Pea.
3. *Mung*.
4. *Dhaincha*.
5. No manure.

Green manures sown on 7.6.1952 and ploughed into the soil on 20.9.1952.

## 3. DESIGN ;

(i) R.B.D. (ii) (a) 5. (b) 73' × 60'. (iii) 6. (iv) (a) 73' × 12'. (b) 71' × 10'. (v) 1' around. (vi) Yes.

## 4. GENERAL :

(i) The germination poor and patchy. (ii) N.A. (iii) Ear emergence, germination and yield of grain. (iv) (a) No. (b) No. (c) Nil (v) (a) and (b) No. (vi) Nil. (vii) Seed received from Govt. seed store was bad. Experiment conducted by the Head, Agronomy Department, (A.A.I.).

## 5. RESULTS :

- (i) 1636 lb./ac.  
 (ii) 210.42 lb./ac.  
 (iii) Treatment differences are highly significant.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	2040
2.	1715
3.	1725
4.	1641
5.	1041
S.E./mean	=85.90 lb./ac.

Crop :- Wheat (*Rabi*.)

Ref :- U.P. 53 (369).

Site :- Allahabad Agri. Inst, Allahabad.

Type :- 'M'.

Object :—To see the effect of four different leguminous crops when ploughed into the soil as green manure, on the following Wheat crop.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Wheat—*Bajra*. (c) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis, Allahabad Agri. Institute. (iii) 29.10.1953. (iv) (a) N.A. (b) Drilling by *Malabasa*. (c) 30 srs./ac. (d) 12 rows/plot. (e) —. (v) N.A. (vi) C-13 (early). (vii) Irrigated. (viii) Weeding on 4, 5.12.1953. (ix) 1.00". (x) 2.4.1953.

## 2. TREATMENTS :

1. Sannhemp.
2. Cow pea.
3. *Mung*.
4. *Dhaincha*.
5. Control (no manure).

Green manures sown on 7.6.1952 and ploughed into the soil on 20.9.1952. Their effects studied on wheat (1952), residual effect studied on *Bajra* 1953 and again residual effect on wheat studied now.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) 73' × 60'. (iii) 6. (iv) (a) 73' × 12'. (b) 71' × 10'. (v) 1' around. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) N.A. (iii) Yield of grain and *bhusa*. (iv) (a) and (b) No. (c) Nil. (v) (a) and (b) No. (vi) Nil. (vii) Experiment conducted by the Head, Agronomy Department (A.A.I.).

## 5. RESULTS :

(i) 1020 lb./ac.

(ii) 113.31 lb./ac.

(iii) Treatment differences are significant.

(iv) Av. yield of grain in lb./ac.

Treatments	Av. yield
1.	1125
2.	1052
3.	1020
4.	1010
5.	894
S.E./mean	=46.26 lb./ac.

Crop :- Wheat.

Site :- Govt. Agri. Farm, Atarra.

Ref :- U.P. 49(23).

Type :- 'M'.

Object :- To study the effect of N and P manures alone and in combination on Wheat.

## 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) *Parwa*. (b) N.A. (iii) 29, 30.10.1949. (iv) (a) to (c) N.A. (v) Nil. (vi) N.A. (vii) N.A. (viii) N.A. (ix) N.A. (x) 20.3.1950.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 3 levels of N as A/S :  $N_0=0$ ,  $N_1=30$  and  $N_2=60$  lb./ac.

(2) 3 levels of  $P_2O_5$  as Super :  $P_0=0$ ,  $P_1=60$  and  $P_2=120$  lb./ac.

Super placed 3"-4" deep in furrows A/S was top dressed on 27, 28.9.1949.

## 3. DESIGN :

(i)  $3 \times 3$  Fact. in R.B.D. (ii) (a) 9. (b) N.A. (iii) 6. (iv) (a) and (b) 1/40th ac. (v) Nil. (vi) Yes.

## 4. GENERAL :

(i) Satisfactory. Germination 90%. (ii) Nil. (iii) Grain and straw yield. (iv) (a) 1949-1953. (b) N.A. (c) N.A. (v) (a) Kanpur, Kalai, Banaras, Partapgarh, Bharari, Nawabganj. (b) N.A. (vi) During harvesting there was a hailstorm, hence it delayed threshing. (vii) Conducted by A.C.

## 5. RESULTS :

(i) 6.0 lb./ac.

(ii) 61.45 lb./ac.

(iii) All the effects are highly significant.

(iv) Av. yield of grain in lb./ac.

	$P_0$	$P_1$	$P_2$	Mean
$N_0$	313	507	820	547
$N_1$	380	633	887	633
$N_2$	567	1060	1047	891
Mean	420	733	918	690

S.E. of any marginal mean  
S.E. of body of the table

=14.48 lb./ac.  
=25.09 lb./ac.

Crop :- Wheat.  
Site :- Govt. Agri. Farm, Atarra.

Ref :- U.P. 50(70).  
Type :- 'M'.

Object :- To study the effect of N and P fertilizers alone and in combination on Wheat crop.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) Fallow. (c) No. (ii) (a) *Parwa*. (b) N.A. (iii) 7.12.1950. (iv) (a) Seed bed was prepared after cross ploughings. (b) In lines behind a *desi* plough. (c) to (e) N.A. (v) Nil. (vi) N.A. (vii) Irrigated. (viii) N.A. (ix) N.A. (x) 9 to 11.4.1951.

2. TREATMENTS :

All combinations of (1) and (2)

(1) 3 levels of N :  $N_0=0$ ,  $N_1=30$  and  $N_2=60$  lb./ac.

(2) 3 levels of  $P_2O_5$  :  $P_0=0$ ,  $P_1=6$  and  $P_2=12$  lb./ac.

N as A/S was broadcast and  $P_2O_5$  as Super through Pre-drilling in bands (4'-5' deep) near the root zone on 6.12.1950.

3. DESIGN :

(i) 3x3 Fact. in R.B.D. (ii) (a) 9. (b) N.A. (iii) 6. (iv) (a) N.A. (b) 1/40th ac. (v) 1' plot to plot and 3' block to block. (vi) Yes.

4. GENERAL :

(i) Lodging on account of rains. (ii) No. (iii) Grain yield. (iv) (a) 1949-1953. (b) No. (c) No. (v) (a) Kalyanpur, Ka ai, Aligarh, Banaras, Partapgarh, Nawabganj and Bharari. (b) N.A. (vi) Slight damage caused by rats. (vii) Conducted by A.C.

5. RESULTS :

(i) 1520 lb./ac.

(ii) 91.22 lb./ac.

(iii) All effects are highly significant.

(iv) Av. yield of grain in lb./ac.

	$P_0$	$P_1$	$P_2$	Mean
$N_0$	1067	1213	1413	1231
$N_1$	1587	1407	1380	1458
$N_2$	1780	1893	1940	1871
Mean	1478	1504	1578	1520

S.E. of any marginal mean

=21.50 lb./ac.

S.E. of body of table

=37.24 lb./ac.

Crop :- Wheat.  
Site :- State Agri. Farm, Atarra.

Ref :- U.P. 51(102).  
Type :- 'M'.

Object :- To study the effect of N and P applied alone and in combination on Wheat crop.

1. BASAL CONDITIONS :

(i) (a) No. (b) N.A. (c) N.A. (ii) (a) Light *Parwa*. (b) N.A. (iii) 27, 28.10.1951. (iv) (a) 4 ploughings with warts plough. One ploughing with *desi* plough after Palewa. (b) Banda country seed drill. (c) to (e) N.A. (v) Nil. (vi) N.A. (vii) Irrigated. (viii) N.A. (ix) N.A. (x) 29 to 31.3.1952.

2. TREATMENTS :

All combinations of (1) and (2)

(1) 3 levels of N :  $N_0=0$ ,  $N_1=30$  and  $N_2=60$  lb./ac.

(2) 3 levels of  $P_2O_5$  :  $P_0=0$ ,  $P_1=6$  and  $P_2=12$  lb./ac.

N as A/S was broadcast and  $P_2O_5$  as Super was placed deep in bands near the root zone through fertilizer drill and then pata applied on 26.10.1951.

3. DESIGN .

(i) 3x3 Fact. in R B D. (ii) (a) 9 (b) N.A. (iii) 6. (iv) (a) N.A. (b) 38'x28'-8". (v) 1 to 3 feet plot to plot and 3 to 4 feet between blocks. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) No. (iii) Grain yield. (iv) (a) 1949 to 1953. (b) & (c) No. (v) (a) Kalyanpur, Kalai (Aligarh), Raya, Tissuhi, Partapgarh, Bharari and Matkota. (b) N.A. (vi) Nil. (vii) Conducted by A.C.

## 5. RESULTS :

- (i) 1578 lb./ac.  
 (ii) 111.03 lb./ac.  
 (iii) N and P effects are highly significant while interaction is not significant.  
 (iv) Av. yield of grain in lb./ac.

	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>	Mean
N <sub>0</sub>	1333	1473	1593	1466
N <sub>1</sub>	1533	1533	1593	1546
N <sub>2</sub>	1666	1686	1813	1722
Mean	1511	1557	1666	1578

S.E. of any marginal mean = 26.17 lb./ac.  
 S.E. of body of table = 45.33 lb./ac.

Crop :- Wheat.

Ref :- U.P. 52(18).

Site :- Govt. Agri. Farm, Atarra.

Type :- 'M'.

Object :- To study the effect of N and P alone and in combination on Wheat crop.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) Early paddy. (c) N.A. (ii) (a) Parwa (un classified). (b) N.A. (iii) 7.11.1952. (iv) (a) 4 ploughings. (b) Sown behind the plough. (c) to (e) N.A. (v) Nil. (vi) N.A. (vii) N.A. (viii) N.A. (ix) N.A. (x) 28.3.1953.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 3 levels of N : N<sub>0</sub>=0, N<sub>1</sub>=30 and N<sub>2</sub>=60 lb./ac.(2) 3 levels of P<sub>2</sub>O<sub>5</sub> : P<sub>0</sub>=0, P<sub>1</sub>=60 and P<sub>2</sub>=120 lb./ac.N as A/S applied as top dressing by broadcast and P<sub>2</sub>O<sub>5</sub> as Super placed 4" deep in bands near the root zone-applied on 5.11.1952.

## 3. DESIGN :

(i) 3x3 Fact. in R.B.D. (ii) (a) 9. (b) N.A. (iii) 6. (iv) (a) and (b) 20'x54.5'. (v) Nil. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Nil. (iii) Grain and straw yield. (iv) (a) 1949 to 1953. (b) Yes. (c) N.A. (v) (a) Pura, Kalai, Raya, Tissuhi, Matkota, Banaras, Bharari and Farrukhabad. (b) N.A. (vi) Nil. (vii) Conducted by A.C.

## 5. RESULTS :

- (i) 1405 lb./ac.  
 (ii) 66.39 lb./ac.  
 (iii) N and P effects are highly significant while interaction is not significant.

	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>	Mean
N <sub>0</sub>	1119	1279	1305	1234
N <sub>1</sub>	1332	1385	1539	1419
N <sub>2</sub>	1425	1592	1672	1563
Mean	1292	1419	1505	1405

S.E. of any marginal mean = 15.65 lb./ac.  
 S.E. of body of table = 27.10 lb./ac.

Crop :- Wheat.  
Site :- Govt. Agri. Farm, Atarra.

Ref :- U.P. 53 (345).  
Type :- 'M'.

Object :- To study the effects of N and P alone and in combination on Wheat.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) *Chari* and *Jowar*. (c) Nil. (ii) (a) *Parwa*. (b) N.A. (iii) 31.10.1953. (iv) (a) 4 ploughings with watts plough and 1 ploughing with cultivator. (b) Line sowing by Banda—country seed drill. (c) (e) N.A. (v) Nil. (vi) N.A. (vii) Irrigated. (viii) N.A. (ix) 3.80°. (x) 11.4.1954 and 13.4.1954.

2. TREATMENTS :

All combinations of (1) and (2)

(1) 3 levels of N as A/S :  $N_0=0$ ,  $N_1=30$  and  $N_2=60$  lb./ac.

(2) 3 levels of  $P_2O_5$  as Super :  $P_0=0$ ,  $P_1=60$  and  $P_2=120$  lb./ac.

$P_2O_5$  placed in 4" deep bands at 9" apart (Furrows opened by either a victory or U.P. plough or even two *desi* ploughs one behind the other in the same furrows)  $P_2O_5$  is about 1" to 2" below the seed. Manures applied on 30.10.1953.

3. DESIGN :

(i) 3x3 Fact. in R.B.D. (ii) (a) 9. (b) N.A. (iii) 6. (iv) (a) N.A. (b) 40.33'x27'. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Germination satisfactory. (ii) N.A. (iii) Yield of grain and *busha*. (iv) (a) 1949 to 1953. (b) N.A. (c) Nil. (v) (a) Phoolbagh, Matkota, Tissuhi, Gazipur, and Raya. (b) —. (vi) The lack of irrigation has resulted in the incomplete response of fertilizers. (vii) Expt. conducted by A.C.

5. RESULTS :

(i) 1012 lb./ac

(ii) 56.86 lb./ac.

(iii) N, P effects are highly significant while interaction is not significant.

(iv) Av. yield of grain in lb./ac.

	$P_0$	$P_1$	$P_2$	Mean
$N_0$	810	907	973	897
$N_1$	927	1017	1130	1025
$N_2$	973	1147	1227	1116
Mean	903	1024	1110	1012

S.E. of any marginal mean = 13.40 lb./ac.

S.E. of body of table = 23.21 lb./ac.

Crop :- Wheat (*Rabi*).  
Site :- Govt. Agri. Farm, Atarra.

Ref :- U.P. 53(193).  
Type :- 'M'.

Object :- To study the effect of different fertilizers on growth and yield of Wheat.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) Paddy. (c) Nil. (ii) (a) *Parwa*. (b) N.A. (iii) 23.11.1953. (iv) (a) 4 ploughings. (b) Drilling. (c) 10 chks/plot (d) and (e) N.A. (v) Nil. (vi) Pb. 591 (mid-late). (vii) Irrigated. (viii) N.A. (ix) N.A. (x) 16.4.1953.

2. TREATMENTS :

All combinations of (1) and (2)

(1) 4 fertilizers :  $M_1=60$  lb./ac. of N as A/S,  $M_2=50$  lb./ac. of  $P_2O_5$  as Super,  $M_3=40$  lb./ac. of  $K_2O$  as Pot. Sulphate and  $M_4=60$  lb./ac. of CaO as Gypsum.

(2) 3 methods of application of fertilizers :  $A_1=$ By broadcast,  $A_2=$ Placement behind plough in furrows and  $A_3=$ Drilled mixed with seed through improved seed drill.

Date of manuring 23.11.1953.

## 3. DESIGN:

(i) 3×4 Fact. in R.B.D. (ii) (a) 12. (b) N.A. (iii) 3. (iv) (a) 36'×40'. (b) 33'×27'. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) Satisfactory. (ii) No. (iii) Grain and straw yield. (iv) (a) 1953 to 1954. (b) and (c) No. (v) (a) Faizabad and Partapgarh. (b) N.A. (vi) Nil. (vii) Conducted by C.P. (R).

## 5. RESULTS :

- (i) 735 lb./ac.  
 (ii) 15.11 lb./ac.  
 (iii) All effects are highly significant.  
 (iv) Av. yield of grain in lb./ac.

	A <sub>1</sub>	A <sub>2</sub>	A <sub>3</sub>	Mean
M <sub>1</sub>	769	1018	1035	941
M <sub>2</sub>	715	645	610	657
M <sub>3</sub>	754	541	830	708
M <sub>4</sub>	769	503	629	634
Mean	752	677	776	735

S.E. of M marginal mean = 5.04 lb./ac.  
 S.E. of A marginal mean = 4.36 lb./ac.  
 S.E. of body of table = 8.72 lb./ac.

Crop :- Wheat.

Ref :- U.P. 49(30).

Site :- Mechanised Farm, Bharari.

Type :- 'M'.

Object :—To study the effect of N and P<sub>2</sub>O<sub>5</sub> applied alone and in combination on the yield of Wheat.

## 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) *Parwa* (Bundelkhand T<sub>2</sub>). (b) N.A. (iii) 15.11.1949. (iv) (a) to (c) N.A. (v) Nil. (vi) N.A. (vii) Irrigated. (viii) N.A. (ix) N.A. (x) 13.4.1950.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 3 levels of N : N<sub>0</sub>=0, N<sub>1</sub>=30 and N<sub>2</sub>=60 lb./ac.

(2) 3 levels of P<sub>2</sub>O<sub>5</sub> : P<sub>0</sub>=0, P<sub>1</sub>=60 and P<sub>2</sub>=120 lb./ac.

P<sub>2</sub>O<sub>5</sub> as single Super applied 3"-4" deep in soil and N as A/S top dressed

## 3. DESIGN :

(i) 3×3 Fact. in R.B.D. (ii) (a) 9. (b) N.A. (iii) 6. (iv) (a) and (b) 1/40th ac. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) Satisfactory. (ii) Nil. (iii) Yield of grain and straw. (iv) (a) 1949 to 1953. (b) No. (c) N.A. (v) (a) Atarra, Banaras, Kanpur, Nawabganj, Kalai and Partapgarh. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 1188 lb./ac.  
 (ii) 253.33 lb./ac.  
 (iii) Only N effect is highly significant.  
 (iv) Av. yield of grain in lb./ac.

	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>	Mean
N <sub>0</sub>	893	833	860	862
N <sub>1</sub>	1253	1167	1167	1196
N <sub>2</sub>	1387	1500	1633	1507
Mean	1178	1167	1220	1188

S.E. of any marginal mean = 59.7 lb./ac.  
 S.E. of body of table = 103.4 lb./ac.



Crop :- Wheat.

Ref :- U.P. 50(68).

Site :- Mechanised Farm, Bharari.

Type :- 'M'.

Object :- To study the effect of N and  $P_2O_5$  applied alone and in combination on yield of Wheat.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) Maize. (c) No. (ii) (a) *Parwa*. (b) N.A. (iii) 14.11.1950. (iv) (a) Seed bed was prepared after two ploughings and one harrowing by tractor. (b) to (e) N.A. (v) Nil. (vi) N.A. (vii) N.A. (viii) N.A. (ix) N.A. (x) 4.4.1951.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 3 levels of N as A/S :  $N_0=0$ ,  $N_1=30$  and  $N_2=60$  lb./ac.(2) 3 levels of  $P_2O_5$  as Super :  $P_0=0$ ,  $P_1=60$  and  $P_2=120$  lb./ac.

A/S was broadcast and Super applied on 11.11.1950 through predrilling it in bands near the root zone.

## 3. DESIGN :

(i)  $3 \times 3$  Fact. in R.B.D (ii) (a) 9. (b) N.A. (iii) 6. (iv) (a) N.A. (b)  $1/40$ th ac. (v) 1' between plots and 3' between blocks. (vi) Yes.

## 4. GENERAL :

(i) Crop lodged due to heavy rains. (ii) No. (iii) Grain yield. (iv) (a) 1949—1952. (b) No. (c) No. (v) (a) Kalyapur, Atarra, Kalai, Aligarh, Banaras, Partapgarh and Nawabganj. (b) N.A. (vi) Nil. (vii) Conducted by A.C.

## 5. RESULTS :

(i) 2589 lb./ac.

(ii) 332.07 lb./ac.

(iii) Only N effect is highly significant.

(iv) Av. yield of grain in lb./ac.

	$P_0$	$P_1$	$P_2$	Mean
$N_0$	2227	2393	2533	2384
$N_1$	2420	2740	2733	2631
$N_2$	2800	2740	2713	2751
Mean	2482	2624	2660	2589

S.E. of any marginal mean

= 78.27 lb./ac.

S.E. of body of table

= 135.57 lb./ac.

Crop :- Wheat.

Ref :- U.P. 51(114).

Site :- Mechanised Farm, Bharari.

Type :- 'M'.

Object :- To study the effect of N and  $P_2O_5$  applied alone and in combination on the yield of Wheat.

## 1. BASAL CONDITIONS :

(i) (a) No. (b) N.A. (c) N.A. (ii) (a) *Parwa*. (b) N.A. (iii) 30.11.1951. (iv) (a) 3 tractor harrowings, and one *palewa*. (b) Drilled. (c) to (e) N.A. (v) Nil. (vi) N.A. (vii) Irrigated. (viii) N.A. (ix) N.A. (x) 5 to 7.4.1952.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 3 levels of N :  $N_0=0$ ,  $N_1=30$  and  $N_2=60$  lb./ac.(2) 3 levels of  $P_2O_5$  :  $P_0=0$ ,  $P_1=60$  and  $P_2=120$  lb./ac.N as A/S was broadcast and  $P_2O_5$  as Super placed deep in bands near the root zone through a fertilizer drill and then *pata* applied on 24.11.1951.

## 3. DESIGN :

(i)  $3 \times 3$  Fact. in R.B.D. (ii) (a) 9. (b) N.A. (iii) 6. (iv) (a) N.A. (b)  $33' \times 33'$ . (v) 1' to 3' between plots and 3' to 4' between blocks. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) No. (iii) Grain yield. (iv) (a) 1949—1952. (b) No. (c) No. (v) (a) Kalyanpur, Kalai, Raya, Tissuhi, Atarra, Partapgarh and Matkota. (b) N.A. (vi) Nil. (vii) Conducted by A.C.

## 5. RESULTS :

- (i) 1347 lb./ac.  
 (ii) 208.46 lb./ac.  
 (iii) N and P effects are highly significant while interaction is not significant.  
 (iv) Av. yield of grain in lb./ac.

	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>	Mean
N <sub>0</sub>	880	1213	1260	1118
N <sub>1</sub>	1093	1380	1640	1371
N <sub>2</sub>	1253	1647	1760	1553
Mean	1075	1413	1553	1347

S.E. of any marginal mean = 49.13 lb./ac.  
 S.E. of body of table = 85.10 lb./ac.

Crop :- Wheat.

Ref :- U.P. 52(19)

Site :- Mechanised Farm, Bharari.

Type :- 'M'.

Object :—To study the effect of N and P fertiliser, alone and in combinations on Wheat yield.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) and (c) N.A. (ii) (a) Parwa (b) N.A. (iii) 7.11.1952. (iv) (a) One tractor ploughing and 2 harrowings. (b) Drilling. (c) to (e) N.A. (v) Nil. (vi) N.A. (vii) Irrigated. (viii) Nil. (ix) N.A. (x) 26, 27.3.1953.

## 2. TREATMENTS :

All combinations of (1) and (2).

(1) 3 levels of N : N<sub>0</sub>=0, N<sub>1</sub>=30 and N<sub>2</sub>=60 lb./ac.(2) 3 levels of P<sub>2</sub>O<sub>5</sub> : P<sub>0</sub>=0, P<sub>1</sub>=60 and P<sub>2</sub>=120 lb./ac.N as A/S applied as top dressing by broadcast and P<sub>2</sub>O<sub>5</sub> as Super placed 4" deep in bands near the root zone on 5.11.1952.

## 3. DESIGN :

(1) 3×3 Fact. in R.B.D. (ii) (a) 9. (b) N.A. (iii) 6. (iv) (a) and (b) 33'×33'. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) Satisfactory. (ii) Nil. (iii) Grain and straw yield. (iv) (a) 1949 to 1952. (b) and (c) No. (v) (a) Pura, Kalai, Raya, Banaras, Tissuhi, Matkota, Atarra and Farrukhabad. (b) N.A. (vi) Nil. (vii) Conducted by A.C.

## 5. RESULTS :

- (i) 1930 lb./ac.  
 (ii) 221.12 lb./ac.  
 (iii) N and P effects are highly significant. Interaction is not significant.  
 (iv) Av. yield of grain in lb./ac.

	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>	Mean
N <sub>0</sub>	1527	1727	1693	1649
N <sub>1</sub>	1633	1947	2047	1876
N <sub>2</sub>	1960	2353	2480	2264
Mean	1707	2009	2073	1930

S.E. of any marginal mean = 52.12 lb./ac.  
 S.E. of body of table = 90.27 lb./ac.

Crop :- Wheat (*Rabi*).  
Site :- Mechanised Farm, Bharari.

Ref :- U.P. 52(119).  
Type :- 'M'.

Object :- To study the effect of different trace elements on growth, yield and quality of Wheat.

### 1. BASAL CONDITIONS :

(i) (a) Nil. (b) and (c) N.A. (ii) (a) *Parwa* soil, clay loam, (b) N.A. (iii) 6.11.1952. (iv) (a) One ploughing, 2 harrowings & 2 Pata. (b) to (c) N.A. (v) Nil. (vi) Pb. 591 (mid-late). (vii) Irrigated. (viii) N.A. (ix) N.A. (x) 28.3.1953.

### 2. TREATMENTS :

1. Control.
2. Molybdenum as Molybdic acid at 6 lb./ac. of Mo.
3. Copper as Copper sulphate at 6 lb./ac. of Cu.
4. Boron as commercial Borax at 1 lb./ac. of B.
5. Ca as Gypsum at 30 lb./ac. of Ca.
6. Zinc as Zinc Sulphate at 4 lb./ac. of Zn.

A basal dose of (A/S at 30 lb./ac. of N+Super at 15 lb./ac. of  $P_2O_5$ +Pot. Sulphate at 15 lb./ac. of  $K_2O$ ) was applied to all treatments. Treatments applied on 2.11.1952.

### 3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) 42'×37'. (b) 38'×33'. (v) 2' around. (vi) Yes.

### 4. GENERAL :

(i) Good. (ii) Rust was traceable. (iii) Grain and straw yield. (iv) (a) to (c) No. (v) (a) Kanpur, and Lucknow. (b) N.A. (vi) Nil. (vii) Conducted by C.P. (R).

### 5. RESULTS :

- (i) 1856 lb./ac.  
(ii) 153.15 lb./ac.  
(iii) Treatment differences are significant.  
(iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	2102
2.	1787
3.	1907
4.	1787
5.	1697
6.	1858
S.E./mean	= 76.58 lb./ac.

Crop :-Wheat.  
Site :-Mechanised Farm, Bharari.

Ref :-U.P. 53(51).  
Type :-'M'.

Object :-To study the effect of different trace elements on growth, yield and quality of Wheat.

### 1. BASAL CONDITIONS:

(i) (a) *Sanai*-wheat. (b) *Sanai*. (c) Nil. (ii) (a) *Parwa*. (b) N.A. (iii) 21.10.1953. (iv) (a) 1 Ploughing and 2 harrowings. (b) Improved seed drill. (c) 20—25 srs./ac. (d) and (e) N.A. (v) 6 lb./ac. N as A/S, 16 lb./ac.  $P_2O_5$  as Super and 30 lb./ac. of  $K_2O$  as Pot. Sul. applied on 16.11.1953 and 30 lb./ac. of Ca as gypsum applied on 19, 20.11.1953. Super placed 3' to—4' deep in soil behind the plough in furrows while preparing the field. Mixture of A/S and potash as surface dressing 4-5 days before sowing and application of gypsum as surface dressing to be done 2 days before sowing. (vi) Pb. 591 (medium). (vii) Irrigated. (viii) Weeding and hoeing. (ix) N.A. (x) 4.4.1954.

### 2. TREATMENTS :

- |   |  |
|---|--|
| 1. Control (no trace element).              | 6. 2 lb./ac. of Boron as Borax.          |
| 2. 3 lb./ac. of Copper as Copper Sulphate.  | 7. 3 lb./ac. of Boron as Borax.          |
| 3. 6 lb./ac. of Copper as Copper Sulphate.  | 8. 1 lb./ac. of Zinc as Zinc sulphate.   |
| 4. 12 lb./ac. of Copper as Copper Sulphate. | 9. 4 lb./ac. of Zinc as Zinc sulphate.   |
| 5. 1 lb./ac. of Boron as Borax.             | 10. 10 lb./ac. of Zinc as Zinc sulphate. |

Trace elements mixed with fine dry earth as surface dressing a day before sowing so as to secure uniform distribution within the plot.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 10. (b) N.A. (iii) 3. (iv) (a) 35'×36'. (b) 32'×33'. (v) 1.5' around. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Slight attack of rust and frost. (iii) Straw and grain yield. (iv) (a) 1953—continued. (b) and (c) No. (v) (a) Faizabad, Etawah, Kalyanpur (Kanpur) Atarra (Banda), Meerut, Gorakhpur and Muzaffarnagar. (b) N.A. (vi) Nil. (vii) Conducted by C.P.(R).

## 5. RESULTS :

(i) 1229 lb./ac.

(ii) 387.4 lb./ac.

(iii) Treatment differences are not significant.

(iv) Av. yield of grain in lb./ac.

Treatment	Av. yield	Treatment	Av. yield
1.	1496	6.	940
2.	1283	7.	1138
3.	1619	8.	912
4.	1181	9.	1167
5.	1202	10.	1351
S.E./mean.	=223.6 lb./ac.		

Crop :-Wheat (*Rabi*).

Ref :-U.P. 53(341).

Site :- Mechanised Farm, Bharari.

Type :-'M'.

Object :-To study the effect of N,P and K applied alone and in combination on the yield of Wheat crop.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) Fallow. (c) Nil. (ii) (a) *Parwa*. (b) N.A. (iii) 16.11.1953. (iv) (a) 4 ploughings with tractor, one harrowing with tractor. (b) By seed drill. (c) to (e) N.A. (v) Nil. (vi) N.A. (vii) Irrigated. (viii) N.A. (ix) 2.76°. (x) 30.3.1954.

## 2. TREATMENTS :

All combinations of (1), (2) and (3)

(1) 2 levels of N as A/S :  $N_0=0$  and  $N_1=30$  lb./ac.

(2) 2 levels of  $P_2O_5$  as Super :  $P_0=0$  and  $P_1=60$  lb./ac.

(3) 3 levels of  $K_2O$  as Pot. Sul. :  $K_0=0$ ,  $K_1=60$  and  $K_2=120$  lb./ac.

A/S broadcast, Super placed in 4" deep bands at 9" apart ; P 1" to 2" below the seed. Potash applied as deep placement with phosphate. Manures applied on 13, 14.11.1953.

## 3. DESIGN :

(i) 3×2×2 Partially Balanced. (ii) (a) 2 blocks/replication ; 6 plots/block. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 33'×33'. (v) N.A. (vi) Yes.

## 4. GENERAL .

(i) Germination good. (ii) N.A. (iii) Yield of grain and *Bhusa*. (iv) (a) 1953—N.A. (b) N.A. (c) Nil. (v) (a) Matkota, Banaras, Kalai, Pura. (b) N.A. (vi) Crop needed irrigation badly in the month of Jan. and Feb. ; but it could not be applied due to the canal water being not-available. (vii) The experiment was conducted by A.C.

## 5. RESULTS :

(i) 1320 lb./ac.

(ii) 218.03 lb./ac.

(iii) Only P effect is highly significant.

(iv) Av. yield of grain in lb./ac.

	K <sub>0</sub>	K <sub>1</sub>	K <sub>2</sub>	Mean	P <sub>0</sub>	P <sub>1</sub>
N <sub>0</sub>	1228	1310	1260	1266	1098	1433
N <sub>1</sub>	1375	1418	1328	1374	1117	1630
Mean	1301	1364	1294	1320	1108	1531
P <sub>0</sub>	1080	1195	1048	1108		
P <sub>1</sub>	1522	1532	1540	1531		

S.E. of marginal mean of N or P = 44.51 lb./ac.

S.E. of marginal mean of K = 54.51 lb./ac.

S.E. of body of N × P table = 62.94 lb./ac.

S.E. of body of N × K or P × K table = 77.08 lb./ac.

Crop :- Wheat. (Rabi)

Ref :- U.P. 51(293).

Site :- Govt. Agri. School Farm, Bulandshahar.

Type :- 'M'.

Object :- To study the effect of N and P applied by different methods.

## 1. BASAL CONDITIONS :

(i) (a) Green manuring—Wheat—Maize—Gram. (b) *Sanai*. (c) Nil. (ii) (a) Sandy loam of average fertility with free drainage. (b) N.A. (iii) 26.10.1951. (iv) (a) One *palewa*, 6 ploughings by *desi* plough followed by planking. (b) Sowing with *desi* plough and *Nai* method. (c) 40 srs./ac. (d) and (e) N.A. (v) Green manuring with *Sanai* (ploughing on 13.8.1951. (vi) Pb. 591 (late). (vii) Irrigated. (viii) Weeding and hoeing on 22.4.1951. Roguing on 21.2.1952. (ix) 2.78°. (x) 2.4.1952.

## 2. TREATMENTS :

All combinations of (1), (2) and (3)

(1) 3 levels of N as A/S : N<sub>0</sub>=0, N<sub>1</sub>=20 and N<sub>2</sub>=40 lb./ac.(2) 3 levels of P<sub>2</sub>O<sub>5</sub> as Super : P<sub>0</sub>=0, P<sub>1</sub>=80 and P<sub>2</sub>=160 lb./ac.(3) 3 methods of placement of fertilizers : D<sub>0</sub>=Broadcast, D<sub>1</sub>=2½" and D<sub>2</sub>=4½".

Fertilizers thoroughly mixed with equal quantity of earth taken for the same plot and evenly broadcast with hand and was immediately mixed with cultivator. Fertilizers applied on 26.10.1951.

## 3. DESIGN :

(i) 3<sup>3</sup> partially confounded. (ii) (a) 3 blocks/replication ; 9 plots/block. (b) N.A. (iii) 2. (iv) (a) 56' × 13'. (b) 53' × 10'. (v) Block 4' and replication 5' apart. (vi) Yes.

## 4. GENERAL :

(i) Lodging occurred in patches in March (stormy wind). Lodging occurred in NP treatment plots. (ii) A slight attack of white ants was observed after germination. To check this, 1st irrigation was applied on 11.11.1951. Rust attack when earing was complete. No pest attack. (iii) Grain and *bhusa* yield. (iv) (a) and (b) No. (c) Nil. (v) and (a) (b) Nil. (vi) Nil. (vii) The experiment was conducted by B.R.C.

## 5. RESULTS :

(i) 2465 lb./ac.

(ii) 246.7 lb./ac.

(iii) P effect is highly significant, N effect is significant. All other effects are not significant.

(iv) Av. yield of grain in lb./ac.

	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>	Mean	D <sub>0</sub>	D <sub>1</sub>	D <sub>2</sub>
N <sub>0</sub>	2198	2428	2381	2336	2322	2397	2288
N <sub>1</sub>	2496	2651	2662	2603	2503	2602	2705
N <sub>2</sub>	2178	2675	2512	2455	2294	2668	2404
Mean	2291	2584	2518	2465	2373	2556	2466
D <sub>0</sub>	2243	2438	2438				
D <sub>1</sub>	2322	2671	2671				
D <sub>2</sub>	2308	2644	2445				

S.E. of any marginal mean  
S.E. of body of table

= 58.15 lb./ac.  
= 100.72 lb./ac.

Crop :- Wheat (*Rabi*).

Ref :- U.P. 53(63).

Site :- Govt. Agri. Farm, Faizabad.

Type :- 'M'.

Object :- To study the effect of placement of fertilizers on growth and yield of Wheat.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) (a) Clay loam. (b) N.A. (iii) 14.11.1953. (iv) (a) 2 ploughings with *Praja* and *desi* plough. (b) Sown behind plough. (c) 20-25 srs./ac. (d) and (e) N.A. (v) Nil. (vi) NP-52 (medium, early). (vii) Irrigated. (viii) Weeding and hoeing. (ix) N.A. (x) 17.4.1954.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 4 fertilizers : M<sub>1</sub>=A/S at 60 lb./ac. of N, M<sub>2</sub>=Super at 50 lb./ac. of P<sub>2</sub>O<sub>5</sub>, M<sub>3</sub>=Pot. Sulphate at 40 lb./ac. of K<sub>2</sub>O and M<sub>4</sub>=Gypsum at 60 lb./ac. of Ca.

(2) 3 methods of application : A<sub>1</sub>=By broadcast, A<sub>2</sub>=Placement behind plough in furrows and A<sub>3</sub>=Drilled mixed with seed through improved seed drill.

## 3. DESIGN :

(i) 3×4 Fact. in R.B.D. (ii) (a) 12 (3 flanks of 4 plots each). (b) N.A. (iii) 3. (iv) (a) 42'×21'. (b) 39'×18'. (v) 1.5'×1.5'. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) 30% attack by rust. (iii) Grain and straw yield. (iv) (a) 1953—continued. (b) and (c) No (v) (a) Banda, Partapgarh, Hardoi and Lucknow. (b) N.A. (vi) Nil. (vii) Conducted by C. P(R).

## 5. RESULTS :

- (i) 531.6 lb./ac.  
(ii) 76.32 lb./ac.  
(iii) Only M effect is highly significant.  
(iv) Av. yield of grain in lb./ac.

	A <sub>1</sub>	A <sub>2</sub>	A <sub>3</sub>	Mean
M <sub>1</sub>	353.7	337.7	470.7	387.4
M <sub>2</sub>	499.9	515.9	616.9	544.2
M <sub>3</sub>	441.4	484.0	497.3	474.2
M <sub>4</sub>	691.4	771.2	699.4	720.6
Mean	496.6	527.2	571.1	531.6

S.E. of marginal mean of M  
S.E. of marginal mean of A  
S.E. of body of table

= 25.44 lb./ac.  
= 22.02 lb./ac.  
= 44.06 lb./ac.

Crop :- Wheat (*Rabi*).

Ref :- U.P. 53 (329).

Site :- Regional Training Institute, Gazipur.

Type :- 'M'.

Object :- To study the effects of N and  $P_2O_5$  fertilizers applied alone and in combination on the yield of Wheat.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) (a) Sandy loam. (b) N.A. (iii) 1, 2.11.1953. (iv) (a) 2 ploughings. (b) Line sowing behind the plough. (c) N.A. (d) —. (e) —. (v) Nil. (vi) Nil. (vii) Irrigated. (viii) Nil. (ix) 2.31°. (x) 18, 19.3.1954.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 3 levels of N as A/S :  $N_0=0$ ,  $N_1=30$  and  $N_2=60$  lb./ac.

(2) 3 levels of  $P_2O_5$  as Super :  $P_0=0$ ,  $P_1=60$  and  $P_2=120$  lb./ac.

A/S broadcasted.  $P_2O_5$  placed in 4" deep bands at 9" apart ; about 1" to 2" below the seed. Manures applied on 31.10.1953 and 1.11.1953.

## 3. DESIGN :

(i) 3 x 3 Fact. in R.B.D. (ii) (a) 9. (b) N.A. (iii) 6. (iv) (a) N.A. (b) 25' x 42'. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) Germination satisfactory. Heavy rains affected the plots of  $N_2P_2$  and  $N_2P_1$ , which occurred in the third week of February 1954 and caused lodging in few plots. (ii) Rat damage in some plots. (iii) Yield of grain and straw. (iv) (a) 1953—N.A. (b) N.A. (c) Nil. (v) (a) Phoolbagh, Matkota, Tissuhi, Atarra and Raya. (b) N.A. (vi) Nil. (vii) Experiment conducted by A.C.

## 5. RESULTS :

(i) 1550 lb./ac.

(ii) 205.65 lb./ac.

(iii) Only N effect is highly significant.

(iv) Av. yield of grain in lb./ac.

	$P_0$	$P_1$	$P_2$	Mean
$N_0$	1158	1120	1300	1193
$N_1$	1583	1580	1708	1624
$N_2$	1756	1895	1846	1832
Mean	1499	1532	1618	1550

S.E. of any marginal mean

=48.47 lb./ac.

S.E. of body of table

=83.96 lb./ac.

Crop :- Wheat (*Rabi*).

Ref :- U.P. 53(5).

Site :- Regional Res. Stn., Hardoi.

Type :- 'M'.

Object :- To study the effect of fertilizer placement on growth and yield of Wheat.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Moong*. (c) Nil. (ii) (a) Loam. (b) N.A. (iii) 10.10.1953. (iv) (a) 6 ploughings. (b) Behind *desi* plough. (c) 20-25 seers/ac. (d) N.A. (e) N.A. (v) Nil. (vi) C-13 (early). (vii) Irrigated. (viii) Weeding and hoeing. (ix) N.A. (x) 9.4.1954.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 4 fertilizers :  $M_1=A/S$  at 60 lb./ac. of N,  $M_2=Super$  at 50 lb./ac. of  $P_2O_5$ ,  $M_3=Pot. sulphate$  at 40 lb./ac. of  $K_2O$  and  $M_4=Gypsum$  at 60 lb./ac. of  $CaO$ .

(2) 3 methods of application :  $A_1=By$  broadcast,  $A_2=Placement$  behind plough in furrows and  $A_3=Drilled$  mixed with seed through improved seed drill.

## 3. DESIGN :

(i) 3×4 Fact. in R.B.D. (ii) (a) 12 (3 flanks of 4 plots each). (b) N.A. (iii) 3. (iv) (a) 36'×30'. (b) 33'×27'. (v) 1.5'×1.5'. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Nil. (iii) Grain and straw yield. (iv) (a) 1953—continued. (b) No. (c) No. (v) (a) Banda, Partapgarh, Faizabad and Lucknow. (vi) Crop failed due to untimely rains in winter. Grain shriveled due to Westerly winds in March. (vii) Conducted by C.P. (R).

## 5. RESULTS :

- (i) 899 lb./ac.  
 (ii) 198.40 lb./ac.  
 (iii) Only M effect is significant.  
 (iv) Av. yield of grain in lb./ac.

	A <sub>1</sub>	A <sub>2</sub>	A <sub>3</sub>	Mean
M <sub>1</sub>	746	771	712	743
M <sub>2</sub>	947	905	763	872
M <sub>3</sub>	1039	888	905	944
M <sub>4</sub>	1090	939	1081	1037
Mean	955	876	865	899

S.E. of marginal mean of M = 66.13 lb./ac.  
 S.E. of marginal mean of A = 57.27 lb./ac.  
 S.E. of body of table = 114.55 lb./ac.

Crop :-Wheat (*Rabi*).

Site :-Govt. Agri. Farm, Kalai.

Ref :-U.P. 49(21).

Type :-'M'.

Object :—To study the effect of N and P<sub>2</sub>O<sub>5</sub> applied alone and in combination on the yield of Wheat.

## 1. BASAL CONDITIONS .

(i) (a) to (c) N.A. (ii) (a) Light loam (Aligarh T<sub>2</sub>) (b) N.A. (iii) 18.10.1949. (iv) (a) to (e) N.A. (v) Nil. (vi) N.A. (vii) Irrigated. (viii) N.A. (ix) N.A. (x) 9.4.1950.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 3 levels of N as A/S : N<sub>0</sub>=0, N<sub>1</sub>=30 and N<sub>2</sub>=60 lb./ac.

(2) 3 levels of P<sub>2</sub>O<sub>5</sub> as Single Super : P<sub>0</sub>=0, P<sub>1</sub>=60 and P<sub>2</sub>=120 lb./ac.

N top dressed, P<sub>2</sub>O<sub>5</sub> applied 3" to 4" deep in furrows on 17.10.1949.

## 3. DESIGN :

(i) 3×3 Fact. in R.B.D. (ii) (a) 9. (b) N.A. (iii) 6. (iv) (a) and (b) N.A. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of grain and straw. (iv) (a) 1949 to 1952. (b) N.A. (c) N.A. (v) (a) Atarra, Kanpur, Banaras, Partapgarh, Bharari and Nawabganj. (b) N.A. (vi) Nil. (vii) The experiment was conducted by A.C.

## 5. RESULTS :

- (i) 1732 lb./ac.  
 (ii) 337.36 lb./ac.  
 (iii) N and P effects are highly significant. Interaction is not significant.



(iv) Av. yield of grain in lb./ac.

	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>	Mean
N <sub>0</sub>	1147	1393	1473	1338
N <sub>1</sub>	1493	1880	1920	1764
N <sub>2</sub>	1767	2160	2353	2093
Mean	1469	1811	1915	1732

S.E. of any marginal mean = 79.5 lb./ac.

S.E. of body of table = 137.7 lb./ac.

Crop :-Wheat (*Rabi*).

Ref :-U.P. 50(61).

Site :-Govt. Agri. Farm, Kalai.

Type :-'M'.

Object :-To study the effect of N and P applied alone and in combination on the yield of Wheat.

**1. BASAL CONDITIONS :**

(i) (a) to (c) N.A. (ii) (a) Loam (Aligarh Type 3). (b) N.A. (iii) 26.10.1950. (iv) (a) Seed bed prepared after 5 ploughings followed by levelling. (b) In lines by seed drill. (c) to (e) N.A. (v) Nil. (vi) N.A. (vii) Irrigated. (viii) N.A. (ix) N.A. (x) 18.4.1951.

**2. TREATMENTS :**

All combinations of (1) and (2)

(1) 3 levels of N as A/S : N<sub>0</sub>=0, N<sub>1</sub>=30 and N<sub>2</sub>=60 lb./ac.(2) 3 levels of P<sub>2</sub>O<sub>5</sub> as Super : P<sub>0</sub>=0, P<sub>1</sub>=60 and P<sub>2</sub>=120 lb./ac.

A/S was broadcast, Super was applied through pre-drilling it in bands near the root zone (4" to 5" deep) on 25, 26.10.1950.

**3. DESIGN :**

(i) 3×3 Fact. in R.B.D. (ii) (a) 9. (b) N.A. (iii) 6. (iv) (a) N.A. (b) 1/40 acre. (v) N.A. (vi) Yes.

**4. GENERAL :**

(i) Normal. (ii) No. (iii) Grain yield. (iv) (a) 1949 to 1952. (b) No. (c) N.A. (v) (a) Kalyanpur, Atarra, Aligarh, Banaras, Partapgarh, Nawabganj and Bharari. (b) N.A. (vi) Nil. (vii) The experiment was conducted by A.C.

**5. RESULTS :**

(i) 835 lb./ac.

(ii) 85.32 lb./ac.

(iii) All effects are highly significant.

(iv) Av. yield of grain in lb./ac.

	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>	Mean
N <sub>0</sub>	240	267	260	256
N <sub>1</sub>	633	1060	973	889
N <sub>2</sub>	893	1545	1640	1360
Mean	589	958	958	835

S.E. of any marginal mean = 20.11 lb./ac.

S.E. of body of table = 34.83 lb./ac.

Crop :- Wheat (*Rabi*).  
Site :- Govt. Agri. Farm, Kalai.

Ref :- U.P. 51(109).  
Type :- 'M'.

Object :- To study the effects of N and P fertilizers, alone and in combination on the yield of Wheat.

1. BASAL CONDITIONS :

(i) (a) No. (b) *Jowar*. (c) N.A. (ii) (a) Loam. (b) N.A. (iii) 16.11.1951. (iv) (a) 5 initial ploughings with a *desi* plough, finally 1 harrowing. (b) Seed drill. (c) 50 seers/ac. (d) and (e) N.A. (v) Nil. (vi) Pb. 591 (med). (vii) Irrigated. (viii) N.A. (ix) N.A. (x) 9, 10.4.1952.

TREATMENTS :

All combinations of (1) and (2).

(1) 3 levels of N as A/S :  $N_0=0$ ,  $N_1=30$  and  $N_2=60$  lb./ac.

(2) 3 levels of  $P_2O_5$  as Super :  $P_0=0$ ,  $P_1=60$  and  $P_2=120$  lb./ac.

A/S was broadcast and Super placed deep in bands near the root zone by fertiliser drill and then *pata* applied on 15.11.1951.

DESIGN :

(i) 3x3 Fact. in R.B.D. (ii) (a) 9. (b) N.A. (iii) 6. (iv) (a) N.A. (b) 39.4'x26' (v) N.A. (vi) Yes.

4. GENERAL :

(i) Good. (ii) No. (iii) Grain yield. (iv) (a) 1949 to 1952. (b) No. (c) N.A. (v) (a) Kalyanpur, Raya, Tishli, Partapgarh, Atarra, Bharari, and Matkota. (b) N.A. (vi) Nil. (vii) The experiment was conducted by A.C.

5. RESULTS :

- (i) 744.6 lb./ac.
- (ii) 129.81 lb./ac.
- (iii) All the effects are highly significant.
- (iv) Av. yield of grain in lb./ac.

	$P_0$	$P_1$	$P_2$	Mean
$N_0$	163.8	204.7	197.9	188.8
$N_1$	511.8	948.6	955.4	805.3
$N_2$	750.7	1337.6	1631.1	1239.8
Mean	475.4	830.3	928.1	744.6

S.E. of any marginal mean = 30.59 lb./ac.

S.E. of body of table = 52.99 lb./ac.

Crop :- Wheat (*Rabi*).  
Site :- Govt. Agri. Farm, Kalai.

Ref :- U.P. 52(15).  
Type :- 'M'.

Object :- To study the effect of N and P fertilizers alone and in combination on yield of crop.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) *Moong* (failed). (c) Failure of these crops left behind high fertility. (ii) (a) Loam. (b) N.A. (iii) 30.10.1952. (iv) (a) *Palewa* and 1 ploughing with soil turning plough and 6 ploughings with *desi* plough. (b) Behind the plough. (c) to (e) N.A. (v) Nil. (vi) N.A. (vii) Irrigated. (viii) N.A. (ix) N.A. (x) 3, 4.4.1953.

2. TREATMENTS :

All combinations of (1) and (2).

(1) 3 levels of N as A/S :  $N_0=0$ ,  $N_1=30$  and  $N_2=60$  lb./ac..

(2) 3 levels of  $P_2O_5$  as single super :  $P_0=0$ ,  $P_1=60$  and  $P_2=120$  lb./ac.

A/S was applied as surface dressing by broadcast.  $P_2O_5$  was placed in bands 4" deep near the root zone with the help of fertiliser drill attached to a plough on 22.10.1952.

## 3. DESIGN :

(i) 3×3 Fact. in R.B.D. (ii) (a) 9. (b) N.A. (iii) 6. (iv) (a) and (b) 40.33'×27' (v) Nil. (vi) Yes.

## 4. GENERAL :

(i) Very good. (ii) Nil. (iii) Grain and straw yield. (iv) (a) 1949 to 1952. (b) Yes. (c) N.A. (v) (a) Para, Bharari, Banaras, Tissuhi, Matkota, Raya, Atarra and Farrukhabad. (b) N.A. (vi) Nil. (vii) The experiment was conducted by A.C.

## 5. RESULTS :

- (i) 1802 lb./ac.  
 (ii) 158.0 lb./ac.  
 (iii) All effects are highly significant.  
 (iv) Av. yield of grain in lb /ac.

	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>	Mean
N <sub>0</sub>	1387	1360	1433	1393
N <sub>1</sub>	1693	1847	2007	1849
N <sub>2</sub>	1840	2187	2460	2162
Mean	1640	1798	1967	1802

S.E. of any marginal mean =37.24 lb./ac.  
 S.E. of body of table =64.50 lb./ac.

Crop :- Wheat (*Rabi*).

Ref :- U.P. 53(352).

Site :- Govt. Agri. Farm, Kalai.

Type :- 'M'.

Object :—To study the effect of Super and B.M. applied at deep placement with and without N on the yield of Wheat.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) Mixed fodder. (c) Nil. (ii) (a) Aligarh type 2. (b) N.A. (iii) 2.11.1953. (iv) (a) 6 ploughings, one additional ploughing for drilling of the fertilizers, 1 harrowing. (b) Drilling. (c) to (e) N.A. (v) Nil. (vi) N.A. (vii) Irrigated. (viii) Nil. (ix) 4.57°. (x) 8.4.1953.

## 2. TREATMENTS :

## Main-plot treatments :

2 levels of N as A/S : N<sub>0</sub>=30 and N<sub>1</sub>=30 lb./ac.

## Sub-plot treatments :

5 applications of P<sub>2</sub>O<sub>5</sub> : P<sub>0</sub>=0, P<sub>1</sub>=60 lb./ac. of P<sub>2</sub>O<sub>5</sub> as Super, P<sub>2</sub>=60 lb./ac. of P<sub>2</sub>O<sub>5</sub> as B.M., P<sub>3</sub>=120 lb./ac. of P<sub>2</sub>O<sub>5</sub> as super and P<sub>4</sub>=120 lb./ac. of P<sub>2</sub>O<sub>5</sub> as B.M.

A/S broadcast P placed in 4" deep bands at 9" apart on 1.11.1953. P about 1" to 2" below the seed.

## 3. DESIGN :

(i) Split plot. (ii) (a) 2 main-plots/replication and 5 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 72.7'×15'. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) Germination—satisfactory. Crop normal. Some plots lodged due to adverse weather conditions during February, March. (ii) N.A. (iii) Yield of grain and *bhusa*. (iv) (a) 1952—1953. (b) N.A. (c) Nil. (v) (a) Matkota and Banaras. (b) —. (vi) Nil. (vii) Expt. conducted by A.C. Data for 1952 N.A.

## 5. RESULTS :

- (i) 1417 lb./ac.  
 (ii) (a) 223.3 lb./ac.  
 (b) 235.2 lb./ac.  
 (iii) Only N effect is highly significant.

(iv) Av. yield of grain in lb./ac.

	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>	P <sub>3</sub>	P <sub>4</sub>	Mean
N <sub>0</sub>	964	1128	1253	1203	1298	1169
N <sub>1</sub>	1583	1743	1663	1698	1633	1664
Mean	1274	1436	1458	1450	1466	1417

S.E. of difference of two

1. N marginal means = 70.61 lb./ac.
2. P marginal means = 117.62 lb./ac.
3. P means at the same level of N = 165.34 lb./ac.
4. N means at the same level of P = 164.70 lb./ac.

Crop :- Wheat (*Rabi*).

Ref :- U.P. 53(350).

Site :- Govt. Agri. Farm, Kalai.

Type :- 'M'.

Object :- To study the effect of N, P and K, fertilizers alone and in combination on the yield of Wheat.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) Aligarh type 2. (b) N.A. (iii) 30.10.1953. (iv) (a) 9 ploughings followed by *Pata*. 1 more ploughing for fertilizer drilling. (b) Drilling. (c) to (e) N.A. (v) Nil. (vi) N.A. (vii) Irrigated. (viii) N.A. (ix) 4.57°. (x) 8.4.1954.

## 2. TREATMENTS :

All combinations of (1), (2) and (3)

- (1) 2 levels of N as A/S : N<sub>0</sub>=0 and N<sub>1</sub>=30 lb./ac.
- (2) 2 levels of P<sub>2</sub>O<sub>5</sub> as Super : P<sub>0</sub>=0 and P<sub>1</sub>=60 lb./ac.
- (3) 3 levels of K<sub>2</sub>O as Pot.-Sul : K<sub>0</sub>=0, K<sub>1</sub>=60 and K<sub>2</sub>=120 lb./ac.

A/S broadcast. P placed in 4" deep bands at 9" apart. P is about 1" to 2" below the seed. Potash applied as deep placement with phosphate. Manures applied on 29.10.1953.

## 3. DESIGN :

(i) 3×2×2 partially balanced. (ii) (a) 2 blocks/replication and 6 plots/block. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 41'×26½'. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) Crop progressed well upto February and March 1954 and then was damaged due to abnormal weather conditions. Heavy showers and strong winds caused partial lodging. (ii) Attack of rust resulting in shriveling of the grain. (iii) Yield of grain and *bhusa*. (iv) (a) 1953-1954. (b) N.A. (c) Nil. (v) (a) Bharari, Matkota, Banaras and Pura. (b) —. (vi) Nil. (vii) The experiment was conducted by A.C.

## 5. RESULTS :

- (i) 1506 lb./ac.
- (ii) 57.96 lb./ac.
- (iii) Main effect of N, P and K and interactions NK, PK are highly significant other effects are not significant.
- (iv) Av. yield of grain in lb./ac.

	K <sub>0</sub>	K <sub>1</sub>	K <sub>2</sub>	Mean	P <sub>0</sub>	P <sub>1</sub>
N <sub>0</sub>	1253	1383	1285	1307	1269	1344
N <sub>1</sub>	1661	1634	1822	1706	1677	1734
Mean	1457	1508	1554	1506	1473	1539
P <sub>0</sub>	1413	1403	1604			
P <sub>1</sub>	1501	1614	1503			

- S.E. of marginal means of N or P = 11.83 lb./ac.  
 S.E. of marginal means of K = 14.49 lb./ac.  
 S.E. of body of N×P table = 16.73 lb./ac.  
 S.E. of body of N×K or P×K table = 20.49 lb./ac.

Crop :- Wheat (*Rabi*).

Ref :- U.P. 49(22).

Site :- Govt. Agri. Res. Farm, Kalyanpur.

Type :- 'M'.

Object :—To study the effect of N and P applied alone and in combination on the yield of Wheat.

## 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Loam (Kanour T<sub>3</sub>). (b) N.A. (iii) 25.10.1949 Resown on 12.11.1949. (iv) (a) to (c) N.A. (v) Nil. (vi) N.A. (vii) Irrigated. (viii) N.A. (ix) N.A. (x) 7, 8.4.1950.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 3 levels of N as A/S : N<sub>0</sub>=0, N<sub>1</sub>=30 and N<sub>2</sub>=60 lb./ac.(2) 3 levels of P<sub>2</sub>O<sub>5</sub> as super : P<sub>0</sub>=0, P<sub>1</sub>=60 and P<sub>2</sub>=120 lb./ac.A/S was top dressed, P<sub>2</sub>O<sub>5</sub> was placed in deep (3"–4") furrows on 24.10.1949.

## 3. DESIGN :

(i) 3×3 Fact. in R.B.D. (ii) (a) 9. (b) N.A. (iii) 6. (iv) (a) N.A. (b) 57.5'×19'. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) Severe hail storm resulted in heavy damage to the crop. (ii) Nil. (iii) Yield of grain and straw. (iv) (a) 1949–1951. (b) N.A. (c) N.A. (v) (a) Atarra, Kalai, Banaras, Partapgarh, Bharari and Nawabganj. (b) N.A. (vi) Just after sowing there were heavy rains—hence poor germination. So it was resown. (vii) The experiment was conducted by A.C.

## 5. RESULTS :

(i) 2059 lb./ac

(ii) 167.9 lb./ac.

(iii) None of the effects is significant.

(iv) Av. yield of grain in lb./ac.

	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>	Mean
N <sub>0</sub>	1980	2060	1987	2009
N <sub>1</sub>	2014	2153	2166	2111
N <sub>2</sub>	2146	1940	2080	2055
Mean	2047	2051	2078	2059

S.E. of any marginal mean

=39.57 lb./ac.

S.E. of body of table

=68.54 lb./ac.

Crop :- Wheat (*Rabi*).

Ref :- U.P. 50(63).

Site :- Govt. Agri. Res. Farm, Kalyanpur.

Type :- 'M'.

Object :—To study the effect of N and P applied alone and in combination on the yield of Wheat.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) Maize. (c) N.A. (ii) (a) Loam. (b) N.A. (iii) 27.10.1950. (iv) (a) N.A. (b) Sown in lines by seed drill. (c) to (e) N.A. (v) Nil. (vi) N.A. (vii) N.A. (viii) N.A. (ix) N.A. (x) 18, 19.4.1951.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 3 levels of N as A/S : N<sub>0</sub>=0, N<sub>1</sub>=30 and N<sub>2</sub>=60 lb./ac.(2) 3 levels of P<sub>2</sub>O<sub>5</sub> as Super : P<sub>0</sub>=0, P<sub>1</sub>=60 and P<sub>2</sub>=120 lb./ac.A/S broadcast, P<sub>2</sub>O<sub>5</sub> through predrilling it in bands near the root zone i.e. 3" to 4" deep on 25.10.1950.

## 3. DESIGN :

(i) 3×3 Fact. in R.B.D. (ii) (a) 9. (b) N.A. (iii) 6. (iv) (a) N.A. (b) 37.5'×29'. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) Satisfactory. (ii) No. (iii) Grain yield. (iv) (a) 1949–1951. (b) No. (c) N.A. (v) (a) Atarra, Kalai, (Aligarh) Banaras, Partapgarh, Nawabganj, and Bharari. (b) N.A. (vi) Nil. (vii) The experiment was conducted by A.C.

**5. RESULTS :**

- (i) 1176 lb./ac.  
 (ii) 269.4 lb./ac.  
 (iii) Only N effect is highly significant.  
 (iv) Av. yield of grain in lb./ac.

	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>	Mean
N <sub>0</sub>	808	668	741	739
N <sub>1</sub>	1208	1215	1308	1244
N <sub>2</sub>	1535	1509	1589	1544
Mean	1184	1131	1213	1176

S.E. of any marginal mean

= 63.49 lb./ac.

S.E. of body of table

= 109.97 lb./ac.

Crop :- Wheat (*Rabi*).

Ref :- U.P. 51(106).

Site :- Govt. Agri. Res. Farm, Kalyanpur.

Type :- 'M'.

Object :- To study the effects of N and P fertilizers, alone and in combination on the yield of Wheat.

**1. BASAL CONDITIONS :**

- (i) (a) No. (b) Maize. (c) N.A. (ii) (a) Loam. (b) N.A. (iii) 7.11.1951. (iv) (a) 3 ploughings with Watt's plough followed by levelling each time. Finally sown by levelled. (b) seed drill. (c) to (e) N.A. (v) Nil. (vi) C-13 (early). (vii) Irrigated. (viii) One interculture. (ix) N.A. (x) 10.4.1952.

**2. TREATMENTS :**

All combinations of (1) and (2)

- (1) 3 levels of N as A/S : N
- <sub>0</sub>
- =0, N
- <sub>1</sub>
- =30 and N
- <sub>2</sub>
- =60 lb./ac.

- (2) 3 levels of P
- <sub>2</sub>
- O
- <sub>5</sub>
- as Super : P
- <sub>0</sub>
- =0, P
- <sub>1</sub>
- =60 and P
- <sub>2</sub>
- =120 lb./ac.

A/S was broadcast and P<sub>2</sub>O<sub>5</sub> was placed deep in bands near the root zone through a fertiliser drill and *pata* applied on 5, 6.11.1951.**3. DESIGN :**

- (i) 3×3 Fact. in R.B.D. (ii) (a) 9. (b) N.A. (iii) 6. (iv) (a) N.A. (b) 37.5'×29'. (v) N.A. (vi) Yes.

**4. GENERAL :**

- (i) Average. (ii) No. (iii) Grain yield. (iv) (a) 1949 to 1953. (b) No. (c) N.A. (v) (a) Kalai, Raya, Tissuhi, Partapgarh, Atarra, Bharari and Matkota. (b) N.A. (vi) Nil. (vii) The experiment was conducted by A.C.

**5. RESULTS :**

- (i) 955 lb./ac.  
 (ii) 247.0 lb./ac.  
 (iii) Only N effect is highly significant.  
 (iv) Av. yield of grain in lb./ac.

	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>	Mean
N <sub>0</sub>	647	541	641	610
N <sub>1</sub>	968	1035	1041	1015
N <sub>2</sub>	1248	1242	1235	1242
Mean	954	939	972	955

S.E. of any marginal mean

= 58.23 lb./ac.

S.E. of body of table

= 100.9 lb./ac.

Crop :- Wheat (*Rabi*).

Ref :- U.P. 52(117).

Site :- Govt. Agri. Res. Farm, Kalyanpur.

Type :- 'M'.

Object :- To study the effect of rare elements on the yield of Wheat.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fallow. (c) N.A. (ii) (a) Heavy loam. (b) N.A. (iii) 4.11.1952. (iv) (a) 1 victory plough, 1 watts plough, 1 *palewa*, 3 *desi* plough, 1 spring harrow, 6 times *patta* and one ploughing with cultivator plough. (b) N.A. (c) 17.5 lb./ac. (d) and (e) N.A. (v) 30 lb./ac. of N as A/S+15 lb./ac. of  $P_2O_5$  as Super+15 lb./ac. of  $K_2O$  as Pot. Sul, applied 3 days before sowing. (vi) C-13 (medium). (vii) Irrigated. (viii) N.A. (ix) N.A. (x) 21.4.1953.

## 2. TREATMENTS :

1. Control.
2. Molybdc Acid at 6 lb./ac. of Mo.
3. Copper Sulphate at 6 lb./ac. of Cu.
4. Commercial Borax at 1 lb./ac. of B.
5. Gypsum at 30 lb./ac. of Ca.
6. Zinc Sulphate at 4 lb./ac. of Zn.

Treatments applied 1 day before sowing.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 5. (iv) (a) 47'×29'. (b) 43'×25'. (v) 2' around. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) Nil. (iii) Grain and straw yield. (iv) (a) and (b) No. (c) N.A. (v) (a) Jhansi and Lucknow. (b) N.A. (vi) Nil. (vii) The experiment was conducted by C.P. (R).

## 5. RESULTS :

- (i) 1306 lb./ac.  
 (ii) 115.69 lb./ac.  
 (iii) Treatments are highly significantly different.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	1489
2.	1291
3.	1279
4.	1141
5.	1282
6.	1357
S.E./mean	= 57.84 lb./ac.

Crop :-Wheat (*Rabi*).

Ref :-U.P. 53(146).

Site :-Govt. Agri. Res. Farm, Kalyanpur.

Type :-'M'.

Object :-To study the effect of doses of trace elements in presence of adequate N, P, K and Calcium on yield of Wheat.

## 1. BASAL CONDITIONS :

(i) (a) Legume and Cereal. (b) *Lobia*. (c) Nil. (ii) (a) Loam. (b) N.A. (iii) 31.10.1953. (iv) (a) 5 ploughings followed by *pata*. (b) Seed drill. (c) 20-25 srs/ac. (d) and (e) N.A. (v) 15 lb./ac. of  $P_2O_5$  as Super to be placed 3" -4" deep in furrows behind the plough while preparing the field. A/S at 60 lb./ac. of N as surface dressing 4-5 days before sowing and application of gypsum at 30 lb./ac. as surface dressing to be done 2 days before sowing. (vi) C-13. (vii) Irrigated. (viii) Interculturing with cultivator on 2.12.1953. (ix) N.A. (x) 22.4.1954.

## 2. TREATMENTS :

- |                          |                         |
|--------------------------|-------------------------|
| 1. Control.              | 6. 2 lb./ac. of Boron.  |
| 2. 3 lb./ac. of Copper.  | 7. 4 lb./ac. of Boron.  |
| 3. 6 lb./ac. of Copper.  | 8. 1 lb./ac. of Zinc.   |
| 4. 12 lb./ac. of Copper. | 9. 4 lb./ac. of Zinc.   |
| 5. 1 lb./ac. of Boron.   | 10. 10 lb./ac. of Zinc. |

Copper as Copper Sulphate, Boron as Borax and Zinc as Zinc Sulphate mixed with fine dry earth as surface dressing a day before sowing and applied on 30.10.1953.

## 3. DESIGN :

- (i) R.B.D. (ii) (a) 10. (b) N.A. (iii) 3. (iv) (a) 46'×26'. (b) 43'×23'. (v) 1.5' around. (vi) Yes.

## 4. GENERAL :

- (i) Satisfactory. (ii) Slightly damaged by rats. (iii) Germination/sq. yd., grain and straw yield. (iv) (a) 1953—1956. (b) No. (c) N.A. (v) (a) No. (b) N.A. (vi) Borax plots appeared to be better when judged in 1st week of March and these plots have given better yield also. (vii) The experiment was conducted by C.P.(R).

## 5. RESULTS :

- (i) 1584 lb./ac.  
 (ii) 228.9 lb./ac.  
 (iii) Treatment differences are not significant.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield	Treatment	Av. yield
1.	1674	6.	1806
2.	1651	7.	1699
3.	1593	8.	1608
4.	1357	9.	1551
5.	1346	10.	1553
S.E./mean		=132.2 lb./ac.	

Crop :-Wheat (*Rabi*).

Ref :-U.P. 52(345).

Site :-Govt. Agri. Res. Farm, Kalyanpur.

Type :-'M'.

Object :-To study the effect of heavy applications of Phosphatic fertilizers in a rotation on the yield of crops.

## 1. BASAL CONDITIONS :

- (i) (a) Wheat-*Moong*. (b) *Moong*. (c) N.A. (ii) (a) Loam. (b) N.A. (iii) 15.10.1952. (iv) (a) to (e) N.A. (v) Green manuring by *Moong* in 2nd week of September+30 lb./ac. of N as A/S. (vi) N.A. (vii) N.A. (viii) N.A. (ix) N.A. (x) 29.3.1953.

## 2. TREATMENTS :

Application of  $P_2O_5$  as Super in lb./ac. to wheat during

	1952—53	1953—54	1954—55	1955—56
1.	120	—	—	—
2.	60	—	60	—
3.	30	30	30	30
4.	240	—	—	—
5.	120	—	120	—
6.	60	60	60	60
7. Control	—	—	—	—

$P_2O_5$  placed deep in furrows on 14.10.1952.

## 3. DESIGN :

- (i) R.B.D. (ii) (a) 7. (b) 44'×191.25'. (iii) 6. (iv) (a) and (b) 44'×24.75'. (v) Nil. (vi) Yes.

## 4. GENERAL :

- (i) N.A. (ii) N.A. (iii) Yield of grain and straw. (iv) (a) 1952 to 1956. (b) Yes. (c) Nil. (v) (a), (b) Nil. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 1262 lb./ac.  
 (ii) 202.82 lb./ac.  
 (iii) Treatment differences are highly significant.



Crop :- Wheat (*Rabi*).  
Site :- Govt. Dairy Farm, Kanpur.

Ref :- U.P. 48(40).  
Type :- 'M'.

Object :- To study the effect of Super applied at different depths to Wheat.

1. BASAL CONDITIONS :

(i) (a) Wheat-*Jowar* fodder. (b) *Jowar* fodder. (c) No. (ii) (a) Loam. (b) N.A. (iii) 21.10.1948. (iv) (a) N.A. (b) N.A. (c) 50 seers/ac. (d) N.A. (e) N.A. (v) Nil. (vi) C 13-(early). (vii) N.A. (viii) N.A. (ix) N.A. (x) N.A.

2. TREATMENTS :

All combinations of (1) and (2) + one Control (no manure)

(1) 2 levels of  $P_2O_5$  as Super :  $P_1=125$  and  $P_2=250$  lb./ac.

(2) 3 methods of application of  $P_2O_5$  :  $M_1$ =Applied on surface,  $M_2$ =Applied  $2\frac{1}{2}$ " deep and  $M_3$ =Applied  $4\frac{1}{2}$ " deep.

3. DESIGN :

(i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 4. (iv) (a) N.A. (b)  $52' \times 21'$ . (v) N.A. (vi) Yes.

4. GENERAL :

(i) Good. (ii) No. (iii) Grain yield. (iv) (a) 1947—1949. (b) Yes. (c) N.A. (v) (a) No. (b) N.A. (vi) Nil. (vii) The experiment was conducted by A.C.

5. RESULTS :

(i) 1620 lb./ac.

(ii) 176.56 lb./ac.

(iii) None of the effects is significant.

(iv) Av. yield of grain in lb./ac.

	Control = 1616 lb./ac.			Mean
	$M_1$	$M_2$	$M_3$	
$P_1$	1556	1655	1596	1602
$P_2$	1536	1655	1725	1639
Mean	1546	1655	1660	1620

S.E. of marginal mean of M = 62.42 lb./ac.

S.E. of marginal mean of P = 50.97 lb./ac.

S.E. of body of table = 88.28 lb./ac.

Crop :- Wheat (*Rabi*).  
Site :- Govt. Dairy Farm, Kanpur.

Ref :- U.P. 49(90)/48(40).  
Type :- 'M'.

Object :- To study the effect of Super applied at different depths to Wheat.

1. BASAL CONDITIONS :

(i) (a) Wheat-*Jowar* fodder. (b) *Jowar* fodder. (c) No. (ii) (a) Loam. (b) N.A. (iii) 18.10.1949. (iv) (a) and (b) N.A. (c) 50 seers/ac. (d) and (e) N.A. (v) Nil. (vi) C 13-(early). (vii) N.A. (viii) N.A. (ix) N.A. (x) 11.4.1950.

2. TREATMENTS :

All combinations of (1) and (2) + a Control (no manure)

(1) 2 levels of  $P_2O_5$  as Super  $P_1=125$  and  $P_2=250$  lb./ac.

(2) 3 methods of application of  $P_2O_5$  :  $M_1$ =Applied on surface,  $M_2$ =Applied  $2\frac{1}{2}$ " deep and  $M_3$ =Applied  $4\frac{1}{2}$ " deep.

3. DESIGN :

(i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 4. (iv) (a) N.A. (b)  $52' \times 21'$ . (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) Much below average. (ii) No. (iii) Grain yield. (iv) (a) 1947 to 1949. (b) Yes. (c) N.A. (v) (a) No. (b) N.A. (vi) Nil. (vii) The expt. was conducted by A.C.

## 5. RESULTS :

- (i) 548.2 lb./ac.  
 (ii) 92.35 lb./ac.  
 (iii) None of the effects is significant.  
 (iv) Av. yield of grain in lb./ac.

	Control = 565.4 lb./ac.			Mean
	M <sub>1</sub>	M <sub>2</sub>	M <sub>3</sub>	
P <sub>1</sub>	482.7	491.6	550.5	508.3
P <sub>2</sub>	523.6	578.4	645.2	582.4
Mean	503.2	535.0	597.8	545.3

S.E. of marginal mean of M = 32.65 lb./ac.  
 S.E. of marginal mean of P = 26.66 lb./ac.  
 S.E. of body of table = 46.2 lb./ac.

Crop :-Wheat (*Rabi*).

Ref :-U.P. 48(35).

Site :-Govt. Dairy Farm, Kanpur.

Type :-'M'.

Object :-To study the relative efficiency of different manures on the yield of Wheat.

## 1. BASAL CONDITIONS :

(i) (a) Wheat—*Jowar* fodder. (b) *Jowar* fodder. (c) No. (ii) (a) Loam. (b) N.A. (iii) 23.10.1948.  
 (iv) (a) and (b) N.A. (c) 50 lb./ac. (d) and (e) N.A. (v) Nil. (vi) C-13 (early). (vii) N.A. (viii) N.A. (ix) N.A. (x) N.A.

## 3. TREATMENTS :

- |                                    |  |
|------------------------------------|--|
| 1. Control.                        | 5. 50 lb./ac. of N as cowdung manure.                        |
| 2. 50 lb./ac. of N as castor cake. | 6. 25 lb./ac. of N as A/S+25 lb./ac. of N as castor cake.    |
| 3. 50 lb./ac. of N as G.N.C.       | 7. 25 lb./ac. of N as A/S+25 lb./ac. of N as G.N.C.          |
| 4. 50 lb./ac. of N as A/S.         | 8. 25 lb./ac. of N as A/S+25 lb./ac. of N as cowdung manure. |

## 3. DESIGN :

(i) R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a) and (b) 40'×27'. (v) No. (vi) Yes.

## 4. GENERAL :

(i) Germination was bad on account of less moisture in the field at the time of sowing. Growth normal except in Block No. 2. (ii) No. (iii) Grain yield. (iv) (a) 1945 to 1949. (b) Yes. (c) N.A. (v) (a) No. (b) N.A. (vi) Nil. (vii) The expt. was conducted by A.C.

## 5. RESULTS :

- (i) 646.6 lb./ac.  
 (ii) 184.0 lb./ac.  
 (iii) Treatments are not significantly different.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield	Treatment	Av. yield
1.	514.2	5.	635.2
2.	736.1	6.	705.8
3.	786.5	7.	473.9
4.	645.3	8.	675.6
S.E./mean		= 92.0 lb./ac.	

Crop :- Wheat (*Rabi*).

Ref:- U.P. 49(92)/48(35).

Site :- Govt. Dairy Farm, Kanpur.

Type :- 'M'.

Object :-To study the relative efficiency of different N manures on the yield of Wheat.

## 1. BASAL CONDITIONS :

(i) (a) Wheat-*Jowar* fodder. (b) *Jowar* fodder. (c) No. (ii) (a) Loam. (b) N.A. (iii) 20.10.1949.  
 (iv) (a) and (b) N.A. (c) 50 seers/ac. (d) and (e) N.A. (v) Nil. (vi) C-13 (early). (vii) N.A. (viii)  
 N.A. (ix) N.A. (x) 11.4. 1950.

## 2. TREATMENTS :

1. Control. 5. 50 lb./ac. of N as cowdung manure.  
 2. 50 lb./ac. of N as castor cake. 6. 25 lb./ac. of N as A/S+25 lb./ac. of N as castor cake.  
 3. 50 lb./ac. N as G.N.C. 7. 25 lb./ac. of N as A/S+25 lb./ac. of N as G.N.C.  
 4. 50 lb./ac. of N as A/S. 8. 25 lb./ac. of N as A/S+25 lb./ac. of N as cowdung manure.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a) and (b) 40'x27'. (v) No. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) No. (iii) Grain yield. (iv) (a) 1945 to 1949. (b) Yes. (c) N.A. (v) (a) No. (b) N.A.  
 (vi) Nil. (vii) The experiment was conducted by A.C.

## 5. RESULTS :

(i) 661.8 lb./ac.  
 (ii) 196.4 lb./ac.  
 (iii) Treatments are not significantly different.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield	Treatment	Av. yield
1.	436.6	5.	573.7
2.	665.5	6.	668.5
3.	625.0	7.	809.7
4.	704.8	8.	830.9

S.E./mean = 98.2 lb./ac.

Crop :- Wheat (*Rabi*).

Ref :- U.P. 48(34).

Site :- Govt. Dairy Farm, Kanpur.

Type :- 'M'.

Object :-To find the effect of  $P_2O_5$  applied to leguminous crops and its residual effect on the yield of Wheat crop.

## 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Loam. (b) N.A. (iii) 22.10.1948. (iv) (a) to (e) N.A. (v) Nil. (vi) C-13  
 (early). (vii) N.A. (viii) N.A. (ix) N.A. (x) N.A.

## 2. TREATMENTS :

1. 100 lb./ac. of  $P_2O_5$  as Super.  
 2. 100 lb./ac. of  $P_2O_5$  as Ammo. Phos.  
 3. 100 lb./ac.  $P_2O_5$  as Bone Super.  
 4. 75 lb./ac. of  $P_2O_5$  as Super+25 lb./ac. of  $P_2O_5$  as Ammo. Phos.  
 5. 75 lb./ac. of  $P_2O_5$  as Super+25 lb./ac. of  $P_2O_5$  as Bone Super.  
 6. Control.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 5. (iv) (a) and (b) 1/40 ac. (v) No. (vi) Yes.

## 4. GENERAL :

(i) Normal. (ii) No. (iii) Grain yield. (iv) (a) 1945 to 1948. (b) Yes. (c) N.A. (v) (a) No. (b) N.A.  
 (vi) Nil. (vii) The experiment was conducted by A.C.

## 5. RESULTS :

- (i) 1549 lb./ac.  
 (ii) 360.36 lb./ac.  
 (iii) Treatment differences are not significant.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	1560
2.	1712
3.	1432
4.	1776
5.	1472
6.	1344
S.E./mean	= 161.16 lb./ac.

Crop :- Wheat (*Rabi*).

Ref :- U.P. 48(43).

Site :- Govt. Res. Farm, Kanpur.

Type :- 'M'.

Object :- To study the effects of ploughing stubbles of leguminous crops on the yield of Wheat as compared to fallow and green manuring with *Sanal*.

## 1. BASAL CONDITIONS :

- (i) (a) Nil. (b) As per treatments. (c) No. (ii) (a) Loam. (b) N.A. (iii) 29.10.1948. (iv) (a) to (e) N.A. (v) N.A. (vi) C-13 (early). (vii) Irrigated. (viii) N.A. (ix) N.A. (x) 29.3.1949.

## 2. TREATMENTS :

- Sanal* for green manuring sown at 1 md./ac. and ploughed in on 7, 8.8.1948.
- Guar* cut for fodder, sown at 25 srs./ac.
- Jowar* cut for fodder, sown at 25 srs./ac. + 50 lb./ac. of N as F.Y.M. applied from 6 to 8.8.1948.
- Fallow during *Khari* + 50 lb./ac. of N as F.Y.M. applied from 6 to 8.8.1948.

## 3. DESIGN :

- (i) L. Sq. (ii) (a) 4. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 66' x 33'. (v) N.A. (vi) Yes.

## 4. GENERAL :

- (i) Good. (ii) N.A. (iii) Grain yield. (iv) (a) and (b) No. (c) Nil. (v) (a) No. (b) N.A. (vi) Nil. (vii) The experiment was conducted by A.C.

## 5. RESULTS :

- (i) 1830 lb./ac.  
 (ii) 157.6 lb./ac.  
 (iii) Treatments are not significantly different.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	1950
2.	1845
3.	1625
4.	1900
S.E./mean	= 78.8 lb./ac.

Crop :- Wheat (*Rabi*).

Ref :- U.P. 48(21).

Site :- Govt. Res. Farm, Kanpur.

Type :- 'M'.

Object :- To study the manurial value of coconut oil cake for Wheat.

## 1. BASAL CONDITIONS :

- (i) (a) No. (b) and (c) N.A. (ii) (a) Loam. (b) N.A. (iii) 12.11.1948. (iv) (a) to (c) N.A. (v) Nil. (vi) NP-165 (early). (vii) Irrigated. (viii) N.A. (ix) N.A. (x) 20.4.1949.

## 2. TREATMENTS :

4 doses of N :  $N_0=0$ ,  $N_1=25$ ,  $N_2=50$  and  $N_3=75$  lb./ac.  
N applied as coconut oil cake containing 3½% N on 30.12.1948.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 6. (iv) (a) 37'×15'. (b) 34'×13'. (v) 1½'×1'. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of grain and *bhusa*. (iv) (a) 1948 to 1949. (b) No. (c) N.A. (v) (a) No. (b) N.A. (vi) Nil. (vii) The experiment was conducted by E.B. (R).

## 5. RESULTS :

- (i) 1183 lb./ac.  
(ii) 104.8 lb./ac.  
(iii) Treatments are not significantly different.  
(iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
$N_0$	1129
$N_1$	1248
$N_2$	1178
$N_3$	1178
S.E./mean	= 42.80 lb./ac.

Crop :-Wheat (*Rabi*).

Site :-Govt. Res. Farm, Kanpur.

Ref:-U.P. 49(31).

Type :-'M'.

Object :-To study the manurial value of coconut oil cake for Wheat.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Sana* for G.M. (c) Nil. (ii) (a) Loam. (b) N.A. (iii) 8-11.1949. (iv) (a) Ploughing and harrowing—1 with victory plough, 1 with cultivator and 5 with *desi* plough. (b) N.A. (c) 100 lb./ac. (d) and (e) N.A. (v) 5 mds. of G.N.C. (vi) NP—125 (early). (vii) Irrigated. (viii) Nil. (ix) N.A. (x) 20, 21.4.1950.

## 2. TREATMENTS :

4 levels of N :  $N_0=0$ ,  $N_1=25$ ,  $N_2=50$  and  $N_3=75$  lb./ac.  
N applied as coconut oil cake containing 3½% N on 1.12.1949.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 6. (iv) (a) 42½'×12½'. (b) 39½'×11½'. (v) 1½'×½'. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Moderate late infection of Orange rust. Postules reaching a little below the collar. Black rust in traces only. (iii) Yield of fresh and dry grain. (iv) (a) 1948 to 1949. (b) No. (c) N.A. (v) (a) No. (b) N.A. (vi) Nil. (vii) The experiment was conducted by E.B.(R).

## 5. RESULTS :

- (i) 2572 lb./ac.  
(ii) 244.2 lb./ac.  
(iii) Treatments are not significantly different.  
(iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
$N_0$	2504
$N_1$	2685
$N_2$	2500
$N_3$	2601
S.E./mean	=99.68 lb./ac.

Crop :-Wheat (*Rabi*).  
Site :-Govt. Res. Farm, Kanpur.

Ref :-U.P. 50(55).  
Type :-'M'.

Object :-To study the effect of different methods of application of Super on Wheat.

1. BASAL CONDITIONS :

(i) (a) Wheat-*Jowar* fodder. (b) *Jowar* fodder. (c) No. (ii) (a) Loam. (b) N.A. (iii) 7, 8.11.1950. (iv) (a) to (e) N.A. (v) Nil. (vi) N.A. (vii) N.A. (viii) N.A. (ix) N.A. (x) 30.4.1951 to 1.5.1951.

2. TREATMENTS :

All combinations of (1) and (2)

- (1) 4 applications of  $P_2O_5$  :  $P_0=0$ ,  $P_1=100$  lb./ac. of  $P_2O_5$  broadcast,  $P_2=100$  lb./ac. of  $P_2O_5$  applied in furrows by victory plough and  $P_3=100$  lb./ac. of  $P_2O_5$  applied by seed drill.  
(2) 2 levels of N as A/S :  $N_0=0$  and  $N_1=50$  lb./ac.

3. DESIGN :

(i)  $4 \times 2$  Fact. in R.B.D. (ii) (a) 8. (b) N.A. (iii) 5. (iv) (a) N.A. (b)  $35' \times 20'.9''$ . (v) N.A. (vi) Yes.

4. GENERAL :

(i) Good. (ii) No. (iii) Grain yield. (iv) (a) 1950 to 1954. (b) No. (c) N.A. (v) (a) No. (b) N.A. (vi) Nil. (vii) The experiment was conducted by A.C.

5. RESULTS :

- (i) 2071 lb./ac.  
(ii) 412.2 lb./ac.  
(iii) Only N effect is highly significant.  
(iv) Av. yield of grain in lb./ac.

	$P_0$	$P_1$	$P_2$	$P_3$	Mean
$N_0$	2075	1742	2017	1597	1858
$N_1$	2039	2385	2402	2309	2284
Mean	2047	2064	2210	1953	2071

S.E. of marginal mean of N = 92.2 lb./ac.  
S.E. of marginal mean of P = 130.3 lb./ac.  
S.E. of body of table = 184.3 lb./ad.

Crop :- Wheat (*Rabi*).  
Site :- Govt. Res. Farm, Kanpur.

Ref :- U.P. 51(119).  
Type :- 'M'.

Object :-To study the effect of different methods of application of Super on Wheat.

1. BASAL CONDITIONS :

(i) (a) Wheat *Jowar* fodder. (b) *Jowar* fodder. (c) No. (ii) (a) Loam. (b) N.A. (iii) 3.11.1951. (iv) (a) N.A. (b) N.A. (c) 40 seers/ac. (d) N.A. (e) N.A. (v) Nil. (vi) C 13-(early). (vii) Irrigated. (viii) N.A. (ix) N.A. (x) 16 to 19.4.1952.

2. TREATMENTS :

All combinations of (1) and (2)

- (1) 4 applications of  $P_2O_5$  :  $P_0=0$ ,  $P_1=100$  lb./ac. of  $P_2O_5$  broadcast,  $P_2=100$  lb./ac. of  $P_2O_5$  applied in furrows by victory plough and  $P_3=100$  lb./ac. of  $P_2O_5$  applied by seed drill.  
(2) 2 levels of N as A/S :  $N_0=0$  and  $N_1=50$  lb./ac.  
N applied on 28.11.1951.

3. DESIGN

:(i)  $4 \times 2$  Fact. in R.B.D. (ii) (a) 8. (b) N.A. (iii) 5. (iv) (a) N.A. (b)  $35' \times 20'.9''$ . (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) Poor. (ii) No. (iii) Grain yield. (iv) (a) 1950—1954. (b) No. (c) N.A. (v) (a) No. (b) N.A. (vi) Nil. (vii) The experiment was conducted by A.C.

## 5. RESULTS :

- (i) 631.1 lb./ac.  
 (ii) 263.7 lb./ac.  
 (iii) Only N effect is highly significant.  
 (iv) Av. yield of grain in lb./ac.

	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>	P <sub>3</sub>	Mean
N <sub>0</sub>	464.2	537.4	478.6	345.5	456.4
N <sub>1</sub>	560.2	712.6	953.7	996.9	805.8
Mean	512.2	625.0	716.2	671.2	631.1

S.E. of marginal mean of N = 58.96 lb./ac.  
 S.E. of marginal mean of P = 83.39 lb./ac.  
 S.E. of body of table = 117.93 lb./ac.

Crop :- Wheat (*Rabi*).

Ref :- U.P. 52(165).

Site :- Govt. Res. Farm, Kanpur.

Type :- 'M'.

Object :- To study the effect of different methods of application of Super on Wheat.

## 1. BASAL CONDITIONS :

(i) (a) Wheat—*Jowar* fodder. (b) *Jowar* fodder. (c) No. (ii) (a) Loam. (b) N.A. (iii) 5.11.1952. (iv) (a) to (c) N.A. (v) Nil. (vi) C-13 (early). (vii) Irrigated. (viii) N.A. (ix) N.A. (x) 15.4.1953.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 4 applications of P<sub>2</sub>O<sub>5</sub> : P<sub>0</sub>=0, P<sub>1</sub>=100 lb./ac. of P<sub>2</sub>O<sub>5</sub> broadcast, P<sub>2</sub>=100 lb./ac. of P<sub>2</sub>O<sub>5</sub> applied in furrows by victory plough and P<sub>3</sub>=100 lb./ac. of P<sub>2</sub>O<sub>5</sub> by seed drill.

(2) 2 levels of N as A/S : N<sub>0</sub>=0 and N<sub>1</sub>=50 lb./ac.

Manures applied on 5.11.1952.

## 3. DESIGN :

(i) 4×2 Fact. in R.B.D. (ii) (a) 8. (b) N.A. (iii) 5. (iv) (a) N.A. (b) 31'×20'. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) No. (iii) Grain yield. (iv) (a) 1950 to 1954. (b) No. (c) N.A. (v) (a) No. (b) N.A. (vi) Nil. (vii) The experiment was conducted by A.C.

## 5. RESULTS :

- (i) 2168 lb./ac.  
 (ii) 535.9 lb./ac.  
 (iii) Only N effect is significant.  
 (iv) Av. yield of grain in lb./ac.

	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>	P <sub>3</sub>	Mean
N <sub>0</sub>	1877	1758	2122	2067	1956
N <sub>1</sub>	2489	2410	2200	2424	2381
Mean	2183	2084	2161	2246	2168

S.E. of marginal mean of N = 84.7 lb./ac.  
 S.E. of marginal mean of P = 169.5 lb./ac.  
 S.E. of body of table = 239.7 lb./ac.

Crop :-Wheat (*Rabi*).  
Site :-Govt. Res. Farm, Kanpur.

Ref :-U.P. 53(202).  
Type :-'M'.

Object :-To study the effect of different methods of application of Super on Wheat.

1. BASAL CONDITIONS :

(i) (a) Wheat—*Jowar* fodder. (b) *Jowar* fodder. (c) No. (ii) (a) Loam. (b) N.A. (iii) 9.11.1953. (iv) (a) and (b) N.A. (c) 50 seers/ac. (d) and (e) N.A. (v) Nil. (vi) C-13 (early). (vii) Irrigated. (viii) N.A. (ix) N.A. (x) 14.4.1954.

2. TREATMENTS :

All combinations of (1) and (2)

(1) 4 applications of  $P_2O_5$ :  $P_0=0$ ,  $P_1=100$  lb./ac. of  $P_2O_5$  broadcast,  $P_2=100$  lb./ac. of  $P_2O_5$  applied in furrows by victory plough and  $P_3=100$  lb./ac. of  $P_2O_5$  by seed drill.

(2) 2 levels of N as A/S:  $N_0=0$  and  $N_1=50$  lb./ac.

Manures applied on 9.11.1953 before sowing.

3. DESIGN

(i)  $4 \times 2$  Fact. in R.B.D. (ii) (a) 8. (b) N.A. (iii) 5. (iv) (a) N.A. (b)  $31' \times 20'$ . (v) N.A. (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) No. (iii) Grain yield. (iv) (a) 1950 to 1954. (b) No. (c) N.A. (v) (a) No. (b) N.A. (vi) Nil. (vii) The expt. was conducted by A.C.

5. RESULTS :

- (i) 1728 lb./ac.  
(ii) 334.8 lb./ac.  
(iii) Only N effect is highly significant.  
(iv) Av. yield of grain in lb./ac.

	$P_0$	$P_1$	$P_2$	$P_3$	Mean
$N_0$	1255	1305	1315	1385	1315
$N_1$	2151	2193	2035	2184	2141
Mean	1703	1749	1675	1784	1728

S.E. of marginal mean of N = 74.88 lb./ac.  
S.E. of marginal mean of P = 105.88 lb./ac.  
S.E. of body of table = 149.74 lb./ac.

Crop :-Wheat (*Rabi*).  
Site :-Govt. Res. Farm, Kanpur.

Ref :-U.P. 48(41).  
Type :-'M'.

Object :-To test the effect of growing a leguminous crop and ploughing in as against a non leguminous crop and fallow during *Kharif*.

1. BASAL CONDITIONS:

(i) (a) to (c) As per treatments. (ii) (a) Loam. (b) N.A. (iii) 25.10.1948. (iv) (a) to (e) N.A. (v) Nil. (vi) C-13 (early). (vii) Irrigated. (viii) N.A. (ix) N.A. (x) 1.4.1949.

2. TREATMENTS :

1. *Sanai* for green manuring (seed rate 1 md./ac.) and ploughed in September 1948.
  2. *Guar* for fodder (seed rate at 25 seers/ac.)
  3. *Jowar* for fodder + 50 lb./ac. of N as F.Y.M. (seedrate 25 seers/ac.).
  4. Fallow during *Kharif* + 50 lb./ac. of N as F.Y.M.
- G.M. crops sown on 27.6.1948, harvested on 25.8.1948 and compost applied on 25.8.1948.

3. DESIGN :

(i) L. Sq. (ii) (a) 4. (b) N.A. (iii) 4. (iv) (a) N.A. (b)  $36\frac{1}{2}' \times 20'$ . (v) N.A. (vi) Yes.



## 4. GENERAL :

- (i) N.A. (ii) N.A. (iii) Grain yield. (iv) (a) 1943 to 1949. (b) Yes. (c) N.A. (v) (a) Kalyanpur (b) N.A. (vi) Nil. (vii) The expt. was conducted by Agri. chemist. Not conducted during 1944.

## 5. RESULTS :

- (i) 1205 lb./ac.  
 (ii) 99.27 lb./ac.  
 (iii) Treatments are not significantly different.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	1292
2.	1277
3.	1126
4.	1126
S.E./mean	=49.64 lb /ac.

Crop :- Wheat (*Rabi*).

Ref :- U.P. 49(93).

Site :- Govt. Res. Farm, Kanpur.

Type :- 'M'.

Object :—To test the effect of growing a leguminous crop and ploughing in as against a non leguminous crop and fallow during *Kharif*.

## 1. BASAL CONDITIONS :

- (i) (a) to (c) As under treatments. (ii) (a) Loam. (b) N.A. (iii) 21.10.1949. (iv) (a) to (e) N.A. (v) Nil. (vi) C-13 (early). (vii) N.A. (viii) N.A. (ix) N.A. (x) 10, 24, 25.4.1950.

## 2. TREATMENTS :

- Sana* for green manuring, seed rate 4 srs./ac.
  - Guar* for fodder, seed rate 25 srs./ac.
  - Jowar* for fodder and seed rate 25 srs./ac.+50 lb./ac. of N as F.Y.M.
  - Fallow+50 lb./ac. of N as F.Y.M.
- Date of sowing=17.6.1949, date of harvest=10.8.1949 and *Sana* turned out=12.8.1949.

## 3. DESIGN :

- (i) L. Sq., (ii) (a) 4. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 36½'×20'. (v) N.A. (vi) Yes.

## 4. GENERAL :

- (i) N.A. (ii) N.A. (iii) Grain yield. (iv) (a) 1943 to 1949. (b) Yes. (c) N.A. (v) (a) No. (b) N.A. (vi) Nil. (vii) The experiment was conducted by A.C.

## 5. RESULTS :

- (i) 877.6 lb./ac.  
 (ii) 193.4 lb./ac.  
 (iii) Treatments are not significantly different.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	857.7
2.	833.7
3.	931.3
4.	887.7
S.E./mean	=96.7 lb./ac.

Crop :- Wheat (*Rabi*).

Ref :- U.P. 48(39).

Site :- Govt. Res. Farm, Kanpur.

Type :- 'M'.

Object :—To study the optimum dose of F.Y.M. and compost on the yield of Wheat as compared with A/S.

## 1. BASAL CONDITIONS :

- (i) (a) Wheat—*Jowar* fodder. (b) *Jowar* fodder. (ii) (a) Loam. (b) N.A. (iii) 5.10.1948. (iv) (a) and (b) N.A. (c) 50 srs./ac. (d) and (e) N.A. (v) Nil. (vi) C-13 (early). (vii) Irrigated. (viii) N.A. (ix) N.A. (x) 1.4.1949.

**2. TREATMENTS :**

- |                               |                                 |
|-------------------------------|---------------------------------|
| 1. Control.                   | 5. 100 lb./ac. of N as compost. |
| 2. 100 lb./ac. of N as F.Y.M. | 6. 150 lb./ac. of N as compost. |
| 3. 150 lb./ac. of N as F.Y.M. | 7. 200 lb./ac. of N as compost. |
| 4. 200 lb./ac. of N as F.Y.M. | 8. 50 lb./ac. of N as A/S.      |

**3. DESIGN :**

- (i) R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 29'×25'. (v) N.A. (vi) Yes.

**4. GENERAL :**

- (i) Good. (ii) No. (iii) Grain yield. (iv) (a) 1948 to 1949. (b) Yes. (c) N.A. (v) (a) No. (b) N.A. (vi) Nil. (vii) The experiment was conducted by Agri. Chemist.

**5. RESULTS :**

- (i) 2356 lb./ac.  
(ii) 209.60 lb./ac.  
(iii) Treatments are not significantly different.  
(iv) Av. yield of grain in lb./ac.

Treatment	Av. yield	Treatment	Av. yield
1.	2208	5.	2268
2.	2268	6.	2433
3.	2283	7.	2493
4.	2373	8.	2523
S.E./mean = 104.8 lb./ac.			

Crop :-Wheat (*Rabi*).

Ref :- U.P. 49(94).

Site :-Govt. Res. Farm, Kanpur.

Site :-'M'.

Object :—To study the optimum doses of F.Y.M. and compost on the yield of Wheat as compared with A/S.

**1. BASAL CONDITIONS :**

- (i) Wheat-
- Jowar*
- fodder. (b)
- Jowar*
- fodder. (c) No. (ii) (a) Loam. (b) N.A. (iii) 23.10.1949. (iv) (a), (b) N.A. (c) 50 sr./ac. (d) and (e) N.A. (v) Nil. (vi) C-13 (early). (vii) N.A. (viii) N.A. (ix) N.A. (x) 10.4.1950.

**2. TREATMENTS :**

- |                               |                                 |
|-------------------------------|---------------------------------|
| 1. Control.                   | 5. 100 lb./ac. of N as Compost. |
| 2. 100 lb./ac. of N as F.Y.M. | 6. 150 lb./ac. of N as Compost. |
| 3. 150 lb./ac. of N as F.Y.M. | 7. 200 lb./ac. of N as Compost. |
| 4. 200 lb./ac. of N as F.Y.M. | 8. 50 lb./ac. of N as A/S.      |

**3. DESIGN :**

- (i) R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 29'×25'. (v) N.A. (vi) Yes.

**4. GENERAL :**

- (i) Good. (ii) No. (iii) Grain yield. (iv) (a) 1948 to 1949. (b) Yes. (c) N.A. (v) (a) No. (b) N.A. (vi) Nil. (vii) The experiment was conducted by A.C.

**5. RESULTS :**

- (i) 2153 lb./ac.  
(ii) 519.6 lb./ac.  
(iii) Treatments are not significantly different.  
(iv) Av. yield of grain in lb./ac.

Treatment	Av. yield	Treatment	Av. yield
1.	1969	5.	1915
2.	2163	6.	2370
3.	1766	7.	2354
4.	2142	8.	2543
S.E./mean = 259.8 lb./ac.			

Crop :-Wheat (*Rabi*).  
Site :-Govt. Res. Farm, Kanpur.

Ref :-U.P. 50(54).  
Type :-'M'.

Object :-To determine a dose of F.Y.M. equivalent to optimum dose of A/S.

1. BASAL CONDITIONS :

(i) (a) Wheat-*Jowar* fodder. (b) *Jowar* fodder. (c) No. (ii) (a) Loam. (b) N.A. (iii) 6.11.1950. (iv) (a) to (e) N.A. (v) Nil. (vi) C-13 (early). (vii) N.A. (viii) N.A. (ix) N.A. (x) 15, 16.4.1951.

2. TREATMENTS :

1. Control.	5. 150 lb./ac. of N as F.Y.M.
2. 50 lb./ac. of N as A/S.	6. 175 lb./ac. of N as F.Y.M.
3. 100 lb./ac. of N as F.Y.M.	7. 200 lb./ac. of N as F.Y.M.
4. 125 lb./ac. of N as F.Y.M.	8. 225 lb./ac. of N as F.Y.M.

3. DESIGN :

(i) R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 29'×25'. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Good. (ii) No. (iii) Grain yield. (iv) (a) 1950 to 1954. (b) No. (c) N.A. (v) (a) No. (b) N.A. (vi) Nil. (vii) The experiment was conducted by A.C.

5. RESULTS :

(i) 2171 lb./ac.  
(ii) 411.95 lb./ac.  
(iii) Treatment differences are not significant.  
(iv) Av. yield of grain in lb /ac.

Treatment	Av. yield	Treatment	Av. yield
1.	1867	5.	1891
2.	2508	6.	2110
3.	2110	7.	2427
4.	2077	8.	2378
	S.E./mean		=205.98 lb./ac.

Crop :- Wheat (*Rabi*).  
Site :- Govt. Res. Farm, Kanpur.

Ref :- U.P. 51(117).  
Type :- 'M'.

Object :-To determine a dose of F.Y.M. equivalent to optimum dose of A/S.

1. BASAL CONDITIONS :

(i) (a) Wheat-*Jowar* fodder. (b) *Jowar* fodder. (c) No. (ii) (a) Loam. (b) N.A. (iii) 25.10.1951. (iv) (a) N.A. (b) N.A. (c) 40 seers/ac. (d) N.A. (e) N.A. (v) Nil. (vi) C-13 (early). (vii) Irrigated. (viii) N.A. (ix) N.A. (x) 29.30.1952.

2. TREATMENTS :

1. Control.	5. 150 lb./ac. of N as F.Y.M.
2. 50 lb./ac. of N as A/S.	6. 175 lb./ac. of N as F.Y.M.
3. 100 lb./ac. of N as F.Y.M.	7. 200 lb./ac. of N as F.Y.M.
4. 125 lb./ac. of N as F.Y.M.	8. 225 lb./ac. of N as F.Y.M.

F.Y.M. applied on 20.10.1951 while A/S on 28.11.1951.

3. DESIGN :

(i) R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 29'×25'. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) No. (iii) Grain yield. (iv) (a) 1950 to 1955. (b) No. (c) N.A. (v) (a) No. (b) N.A. (vi) Nil. (vii) The experiment was conducted by A. C.

5. RESULTS :

(i) 739.4 lb./ac.  
(ii) 240.41 lb./ac.  
(iii) Treatment differences are significant.

(iv) Av. yield of grain in lb./ac.

Treatment	Av. yield	Treatment	Av. yield
1.	578.3	5.	633.9
2.	1150.6	6.	639.9
3.	629.4	7.	857.7
4.	555.8	8.	869.7
S.E./mean		=120.2 lb./ac.	

Crop :- Wheat (*Rabi*).  
Site :- Govt. Res. Farm, Kanpur.

Ref :- U.P. 52(167).  
Type :- 'M'.

Object :- To determine a dose of F.Y.M. equivalent to the optimum dose of A/S.

#### 1. BASAL CONDITIONS :

(i) (a) Wheat-*Jowar* fodder. (b) *Jowar* fodder. (c) No. (ii) (a) Loam. (b) N.A. (iii) 15.11.1952. (iv) (a) N.A. (b) N.A. (c) 40 seers/ac. (d) N.A. (e) N.A. (v) Nil. (vi) C-13 (early). (vii) Irrigated. (viii) N.A. (ix) N.A. (x) 17.4.1953.

#### 2. TREATMENTS :

1. Control.	5. 150 lb./ac. of N as F.Y.M.
2. 50 lb./ac. of N as A/S.	6. 175 lb./ac. of N as F.Y.M.
3. 100 lb./ac. of N as F.Y.M.	7. 200 lb./ac. of N as F.Y.M.
4. 125 lb./ac. of N as F.Y.M.	8. 225 lb./ac. of N as F.Y.M.

F.Y.M. applied on 28.10.1952 and A/S on 15.11.1952.

#### 3. DESIGN :

(i) R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 36' x 20'. (v) N.A. (vi) Yes.

#### 4. GENERAL :

(i) Satisfactory. (ii) No. (iii) Grain yield. (iv) (a) 1950 to 1954. (b) No. (c) N.A. (v) (a) No. (b) N.A. (vi) Nil. (vii) The experiment was conducted by A. C.

#### 5. RESULTS :

(i) 1673 lb./ac.  
(ii) 278.96 lb./ac.  
(iii) Treatment differences are significant.  
(iv) Av. yield of grain in lb./ac.

Treatment	Av. yield	Treatment	Av. yield
1.	1307	5.	1691
2.	2134	6.	1804
3.	1791	7.	1541
4.	1653	8.	1463
S.E./mean		=139.48 lb./ac.	

Crop :- Wheat (*Rabi*).  
Site :- Govt. Res. Farm, Kanpur.

Ref :- U.P. 53(201).  
Type :- 'M'.

Object :- To determine a dose of F.Y.M. equivalent to the optimum dose of A/S.

#### 1. BASAL CONDITIONS :

(i) (a) *Jowar* fodder-Wheat. (b) *Jowar* fodder. (c) No. (ii) (a) Loam. (b) N.A. (iii) 6.11.1953. (iv) (a) and (b) N.A. (c) 50 seers/ac. (d) and (e) N.A. (v) Nil. (vi) C-13 (early). (vii) Irrigated. (viii) N.A. (ix) N.A. (x) 14.4.1954.

## 2. TREATMENTS :

1. Control.
  2. 50 lb./ac of N as A/S.
  3. 100 lb./ac. of N as F.Y.M.
  4. 125 lb./ac. of N as F.Y.M.
  5. 150 lb./ac. of N as F.Y.M.
  6. 175 lb./ac. of N as F.Y.M.
  7. 200 lb./ac. of N as F.Y.M.
  8. 225 lb./ac. of N as F.Y.M.
- F.Y.M. applied on 25.10.1953 while A/S on 6.10.1953.

## 3. DESIGN :

- (i) R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 36' x 20'. (v) N.A. (vi) Yes.

## 4. GENERAL :

- (i) Ordinary. (ii) No. (iii) Grain yield. (iv) (a) 1950 to 1954. (b) No. (c) N.A. (v) (a) No. (b) N.A. (vi) Nil. (vii) The experiment was conducted by A.C.

## 5. RESULTS :

- (i) 1214 lb./ac.  
 (ii) 280.20 lb./ac.  
 (iii) Treatment differences are highly significant.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield	Treatment	Av. yield
1.	845	5.	1036
2.	1918	6.	1237
3.	1087	7.	1246
4.	1148	8.	1195
S.E./mean = 140.1 lb./ac.			

Crop :- Wheat (*Rabi*).

Site :- Govt. Res. Farm, Kanpur.

Ref :- U.P. 51(35).

Type :- 'M'.

Object :- To study the effect of N, P and K applied alone and in combination on Wheat.

## 1. BASAL CONDITIONS :

- (i) (a) No. (b) *Chari* for fodder. (c) Nil. (ii) (a) Lcam. (b) N.A. (iii) 25.10.1951. (iv) (a) 2<sup>dest</sup>, 2 victory ploughing and 1 spring harrow. (b) N.A. (c) 100 lb./ac. (d) Rows 9' apart. (e) N.A. (v) Nil. (vi) N.P. 125 (medium). (vii) Irrigated. (viii) Two weedings. (ix) N.A. (x) 9.4.1952.

## 2. TREATMENTS :

All combinations of (1), (2) and (3).

- (1) 3 levels of N as A/S :  $N_0=0$ ,  $N_1=25$  and  $N_2=50$  lb./ac.  
 (2) 3 levels of  $P_2O_5$  as super :  $P_0=0$ ,  $P_1=50$  and  $P_2=100$  lb./ac.  
 (3) 3 levels of  $K_2O$  :  $K_0=0$ ,  $K_1=50$  and  $K_2=100$  lb./ac.

## 3. DESIGN :

- (i) 3<sup>3</sup> Fact in R.B.D. (ii) (a) 27 in 3 flanks. (b) N.A. (iii) 3. (iv) (a) 20' x 19'. (b) 16' x 16'. (v) 2' x 14' (vi) Yes.

## 4. GENERAL :

- (i) Fair, the plants of one block in treatment  $N_2P_1K_0$  were semi lodged. (iii) Attack of brown rust. (iii) Grain yield. (iv) (a) 1951 to 1954. (b) Yes. (c) N.A. (v) No. (b) N.A. (vi) Nil. (vii) The expt. was conducted by E.B. (R).

## 5. RESULTS :

- (i) 910.1 lb./ac.  
(ii) 391.47 lb./ac.  
(iii) N effect is highly significant, interaction NK is significant while other effects are not significant.  
(iv) Av. yield of grain in lb./ac.

	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>	Mean	K <sub>0</sub>	K <sub>1</sub>	K <sub>2</sub>
N <sub>0</sub>	657.6	478.5	542.1	559.4	584.6	671.8	421.8
N <sub>1</sub>	985.3	997.1	792.0	924.8	1188.0	1015.9	570.4
N <sub>2</sub>	1086.6	1284.6	1367.1	1246.1	1272.9	1096.1	1369.5
Mean	909.8	920.1	900.4	910.1	1015.2	927.9	787.3
K <sub>0</sub>	1048.9	880.6	1015.9	1015.2			
K <sub>1</sub>	832.1	990.0	961.7	927.9			
K <sub>2</sub>	848.6	789.6	723.6	787.3			

S.E. of any marginal mean = 75.33 lb./ac.  
S.E. of body of table = 130.49 lb./ac.

Crop :-Wheat (*Rabi*).  
Site :-Govt. Res. Farm, Kanpur.

Ref :-U.P. 52(67)/51(35).  
Type :-'M'.

Object :-To study the effects of N, P and K applied alone and in combination on Wheat.

## 1. BASAL CONDITIONS :

(i) (a) No. (b) *Chari* for fodder. (c) Nil. (ii) (a) Loam. (b) N.A. (iii) 7.11.1952. (iv) (a) 5 victory, 8 *desi* and 1 cultivator ploughing. (b) Sown behind the plough. (c) 80 lb./ac. (d) 9' apart. (e) N.A. (v) Nil. (vi) N.P.-125 (medium). (vii) Irrigated. (viii) One weeding on 28.11.1952. (ix) N.A. (x) 2.4.1953.

## 2. TREATMENTS :

All combinations of (1), (2) and (3)

(1) 3 levels of N as A/S : N<sub>0</sub>=0, N<sub>1</sub>=25 and N<sub>2</sub>=50 lb./ac.

(2) 3 levels of P<sub>2</sub>O<sub>5</sub> as Super : P<sub>0</sub>=0, P<sub>1</sub>=50 and P<sub>2</sub>=100 lb./ac.

(3) 3 levels of K<sub>2</sub>O as Potash : K<sub>0</sub>=0, K<sub>1</sub>=50 and K<sub>2</sub>=100 lb./ac.

N and K<sub>2</sub>O dusted and P<sub>2</sub>O<sub>5</sub> applied in rows before sowing.

## 3. DESIGN :

(i) 3<sup>3</sup> Fact. in R.B.D. (ii) (a) 27 in 3 flanks. (b) N.A. (iii) 3. (iv) (a) 15'×19'-5". (b) 11'×9'. (v) 2'× $\frac{1}{2}$ '. (vi) Yes.

## 4. GENERAL :

(i) Not good. (ii) Orange rust or brown rust attack 5%. (iii) Grain yield and germination. (iv) (a) 1951 to 1954. (b) Yes. (c) N.A. (v) (a) No. (b) N.A. (vi) Nil. (vii) The expt. was conducted by E.B. (R).

## 5. RESULTS :

- (i) 1653 lb./ac.  
(ii) 304.59 lb./ac.  
(iii) Only N and K effects are highly significant.

(iv) Av. yield of grain in lb./ac.

	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>	Mean	K <sub>0</sub>	K <sub>1</sub>	K <sub>2</sub>
N <sub>0</sub>	905	1100	999	1001	1018	949	1037
N <sub>1</sub>	1729	1697	1622	1683	1898	1408	1741
N <sub>2</sub>	2288	2351	2275	2305	2439	2143	2332
Mean	1641	1716	1632	1663	1785	1500	1703
K <sub>0</sub>	1659	1936	1760	1785			
K <sub>1</sub>	1659	1421	1421	1500			
K <sub>2</sub>	1603	1791	1716	1703			

S.E. of any marginal mean = 58.62 lb./ac.

S.E. of body of table = 101.53 lb./ac.

Crop :- Wheat (*Rabi*).

Site :- Govt. Res. Farm, Kanpur.

Ref :- U.P. 53(95).

Type :- 'M'.

Object :- To find the manurial requirement of N, P and K for Wheat.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Chari* for fodder. (c) Nil. (ii) (a) Loam. (b) N.A. (iii) 10.11.1953. (iv) (a) Palewa on 9.10.1953. Ploughing with victory plough and pata on 12, 13.9.1953 ; 16 and 19.10.1953. Cultivator and pata on 1, 2 and 16.10.1953. *Desi* plough and *pata* on 25.10.1953, 1 and 10.11.1953. (b) Behind plough. (c) 80 lb./ac (d) 9° apart. (e) N.A. (v) Nil. (vi) N.P. 125 (medium). (vii) Irrigated. (viii) Weeding. (ix) Not recorded. (x) 13.4.1954.

## 2. TREATMENTS :

All possible combinations of (1), (2) and (3)

(1) 3 levels of N as A/S : N<sub>0</sub>=0, N<sub>1</sub>=25 and N<sub>2</sub>=50 lb./ac.(2) 3 levels of P<sub>2</sub>O<sub>5</sub> as Super : P<sub>0</sub>=0, P<sub>1</sub>=50 and P<sub>2</sub>=100 lb./ac.(3) 3 levels of K O as Pot. Sul. : K<sub>0</sub>=0, K<sub>1</sub>=50 and K<sub>2</sub>=100 lb./ac.N and K<sub>2</sub>O were broadcast, P<sub>2</sub>O<sub>5</sub> applied in furrows before sowing.

## 3. DESIGN :

(i) 3<sup>3</sup> Fact. in R.B.D. (ii) (a) 27 (3 flanks of 9 plots each). (b) N.A. (iii) 3. (iv) (a) 15'×10.5'. (b) 11'×9'. (v) 2'×½'. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Attack by rust. (iii) Germination, straw and dry grain yield. (iv) (a) 1951 to 1954. (b) Yes. (c) N.A. (v) (a) No. (b) N.A. (vi) Nil. (vii) The expt. was conducted by E.B. (R).

## 5. RESULTS :

(i) 1624 lb./ac.

(ii) 321.95 lb./ac.

(iii) Main effect of N alone is highly significant.

(iv) Av. yield of grain in lb./ac.

	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>	Mean	K <sub>0</sub>	K <sub>1</sub>	K <sub>2</sub>
N <sub>0</sub>	1169	1377	1232	1259	1301	1157	1320
N <sub>1</sub>	1597	1653	1691	1647	1647	1565	1729
N <sub>2</sub>	1917	1955	2024	1965	1923	1949	2024
Mean	1561	1662	1649	1624	1624	1557	1691
K <sub>0</sub>	1546	1741	1584	1624			
K <sub>1</sub>	1609	1465	1597	1557			
K <sub>2</sub>	1527	1779	1766	1691			

S.E. of any marginal mean = 61.96 lb./ac.  
 S.E. of body of table = 107.32 lb./ac.

Crop :- Wheat (*Rabi*).

Ref :- U.P. 50(140).

Site :- Govt. Res. Farm, Kanpur.

Type :- 'M'.

Object :- To study the effect of time of application of different doses of A/S.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) N.A. (c) N.A. (ii) (a) Loam. (b) N.A. (iii) 8.11.1950. (iv) (a) One ploughing by victory plough and two by *desi* plough. (b) Sown behind the plough. (c) 80 lb./ac. (d) Rows 9' apart. (e) N.A. (v) Nil. (vi) NP-125 (medium). (vii) Irrigated. (viii) Nil. (ix) N.A. (x) 4, 5.5.1951.

## 2. TREATMENTS :

- 50 lb./ac. of N as A/S at the time of sowing.
- 50 lb./ac. of N as A/S at the time of first irrigation.
- 25 lb./ac. of N as A/S at the time of sowing + 25 lb./ac. of N as A/S at first irrigation.
- 37½ lb./ac. of N as A/S at the time of sowing + 12½ lb./ac. of N as A/S at first irrigation.
- 25 lb./ac. of N as Castor cake at the time of sowing + 25 lb./ac. of N as A/S at first irrigation.
- 37½ lb./ac. of N as Castor cake at the time of sowing + 12½ lb./ac. of N as A/S at first irrigation.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) 29' × 18'-9". (b) 25' × 17'-3". (v) 2' × ½'. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Nil. (iii) Grain yield. (iv) (a) No. (b) No. (c) N.A. (v) (a) No. (b) N.A. (vi) Nil. (vii) The experiment was conducted by E.B. (R).

## 5. RESULTS :

- 1886 lb./ac.
- 201.25 lb./ac.
- The treatments do not differ significantly.
- Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	1772
2.	2044
3.	1918
4.	1957
5.	1807
6.	1817
S.E./mean	= 100.62 lb./ac.



Crop :- Wheat (*Rabi*).

Ref :- U.P. 50(139).

Site :- Govt. Res. Farm, Kanpur.

Type :- 'M'.

Object :- To study the effect of N and P on Wheat.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) and (c) N.A. (ii) (a) Loam. (b) N.A. (iii) 7.11.1950. (iv) (a) One ploughing with victory plough and two by *desi* plough. (b) N.A. (c) 80 lb./ac. (d) Rows 3' apart. (e) N.A. (v) Nil. (vi) NP-125 (medium). (vii) Irrigated. (viii) Nil. (ix) N.A. (x) 4, 5.5.1951.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 3 levels of N as A/S :  $N_0=0$ ,  $N_1=25$  and  $N_2=50$  lb./ac.(2) 3 levels of  $P_2O_5$  as Super :  $P_0=0$ ,  $P_1=25$  and  $P_2=50$  lb./ac.N broadcast while  $P_2O_5$  applied in furrows.

## 3. DESIGN :

(i) 3x3 Fact. in R.B.D. (ii) (a) 9. (b) N.A. (iii) 4. (iv) (a)  $32' \times 12\frac{1}{2}'$ . (b)  $28' \times 11\frac{1}{2}'$ . (v)  $2' \times \frac{1}{2}'$ . (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Nil. (iii) Grain yield. (iv) (a) to (c) No. (v) (a) No. (b) N.A. (vi) Nil. (vii) The experiment was conducted by E.B. (R).

## 5. RESULTS :

(i) 1761 lb./ac.

(ii) 218.08 lb./ac.

(iii) Only N effect is highly significant.

(iv) Av. yield of grain in lb./ac.

	$N_0$	$N_1$	$N_2$	Mean
$P_0$	1000	1978	2165	1714
$P_1$	1169	2178	2178	1842
$P_2$	1009	1991	2178	1726
Mean	1059	2049	2174	1761

S.E. of any marginal mean

= 62.95 lb./ac.

S.E. of body of table

= 109.04 lb./ac.

Crop :- Wheat (*Rabi*).

Ref :- U.P. 50(141).

Site :- Govt. Res. Farm, Kanpur.

Type :- 'M'.

Object :- To study the manurial value of coconut oil cake on Wheat crop.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) N.A. (c) N.A. (ii) (a) Loam. (b) N.A. (iii) 8.11.1950. (iv) (a) 3 ploughings by victory plough and 3 ploughings with *desi* plough. (b) Sown behind the plough. (c) 12 ozs/plot. (d) Between rows-9' (e) N.A. (v) 2 srs/plot of A/S. (vi) NP-125 (medium). (vii) Irrigated. (viii) One weeding with *khurpi*. (ix) N.A. (x) 4.11.1951.

## 2. TREATMENTS :

All combinations of (1) and (2)+a control.

(1) 3 levels of N :  $N_1=25$  lb./ac.,  $N_2=50$  lb./ac. and  $N_3=75$  lb./ac.(2) 2 sources of N :  $S_1$ =Castor cake and  $S_2$ =Coconut cake.

Manures broadcast before sowing.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 4. (iv) (a) 38'×10'.6'. (b) 34'×9'. (v) 2'× $\frac{1}{2}$ '. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Nil. (iii) Grain yield. (iv) (a) No. (b) No. (c) No. (v) (a) No. (b) N.A. (vi) Nil. (vii) The experiment was conducted by E.B. (R).

## 5. RESULTS :

- (i) 1739 lb./ac.  
 (ii) 145.27 lb./ac.  
 (iii) Only N and control vs other treatments effects are highly significant.  
 (iv) Av. yield of grain in lb./ac.

Control=897 lb./ac.

	N <sub>1</sub>	N <sub>2</sub>	N <sub>3</sub>	Mean
S <sub>1</sub>	1482	1954	2343	1926
S <sub>2</sub>	1437	1821	2242	1833
Mean	1460	1888	2292	1880

S.E. of marginal mean of N =51.36 lb./ac.  
 S.E. of marginal mean of S =41.94 lb./ac.  
 S.E. of body of table =72.64 lb./ac.

Crop :-Wheat (*Rabi*).

Ref :-U.P. 50(137).

Site :- Govt. Agri. Farm, Kanpur.

Type :-'M'.

Object :-To study the comparative effect of green manuring on the yield of succeeding Wheat crop.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) As per treatments. (c) Nil. (ii) (a) Loam. (b) N.A. (iii) 6.11.1950. (iv) (a) 2 ploughings with victory plough and 4 with *desi* plough. (b) N.A. (c) 80 lb./ac. (d) and (e) N.A. (v) Nil. (vi) C-13 (early). (vii) Irrigated. (viii) Nil. (ix) N.A. (x) First week of May 1951.

## 2. TREATMENTS :

1. Fallow.
2. *Moong* T<sub>1</sub>—pods picked and plants buried.
3. *Sanal* G.M.
4. *Chari* for fodder.
5. Fallow followed by 50 lb./ac. of F.Y.M.
6. Fallow followed by 50 lb./ac. of castor cake.
7. *Chari* followed by 50 lb./ac. of F.Y.M.
8. *Chari* followed by 50 lb./ac. of castor cake.

*Sanal* and *Chari* were broadcast. *Sanal* ploughed in on 6.9.1950. *Moong* (with vegetable parts) ploughed in on 16.9.1950. F.Y.M. and castor cake applied on 5.11.1950.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 8. (b) N.A. (iii) 6. (iv) (a) 28'×15'-9". (b) 24'×14'-3". (v) 2'× $\frac{1}{2}$ '. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) N.A. (iii) Grain yield. (iv) (a) 1950 to 1953. (b) Yes. (c) N.A. (v) (a) No. (b) N.A. (vi) Nil. (vii) The experiment was conducted by E.B.(R).

## 5. RESULTS :

- (i) 1651 lb./ac.  
 (ii) 184.23 lb./ac.  
 (i) Treatments are highly significantly different.

## (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield	Treatment	Av. yield
1.	1759	5.	1912
2.	1558	6.	2158
3.	1806	7.	1143
4.	1135	8.	1735
S.E./mean		=75.22 lb./ac.	

Crop :- Wheat (*Rabi*).

Ref :- U.P. 51(26).

Site :- Govt. Res. Farm, Kanpur.

Type :- 'M'.

Object :- To study the comparative effect of green manure crops on yield of succeeding Wheat crop.

## 1. BASAL CONDITIONS :

(i) (a) No. (b) As per treatments. (c) No. (ii) (a) Loam. (b) N.A. (iii) 10.11.1951. (iv) (a) Ploughing with 4 *desi*, 1 victory, 1 watts and 1 cultivator. (b) N.A. (c) 80 lb./ac. (d) N.A. (e) N.A. (v) Nil. (vi) C-13. (vii) Irrigated. (viii) One weeding. (ix) N.A. (x) 14.4.1952.

## 2. TREATMENTS :

- Fallow.
- Moong* T<sub>1</sub>—pods picked and plants buried on 22.9.1951.
- Sanai* G.M.
- Chari* for fodder.
- Fallow followed by F.Y.M. at 100 lb. 4 oz./plot.
- Fallow followed by Castor cake at 12 lb. 1 oz./plot.
- Chari* followed by F.Y.M. at 100 lb. 4 oz./plot.
- Chari* followed by Castor cake at 12 lb. 10½ oz./plot.

Castor cake and F.Y.M. applied on 9.11.1951, *Chari*, harvested on 15, 16.11.1951.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 8. (b) N.A. (iii) 6. (iv) (a) 28'×15'9". (b) 24'×14'3". (v) 2'×½'. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Nil. (iii) Germination and yield of grain. (iv) (a) 1950—1953. (b) Yes. (c) N.A. (v) (a) No. (b) N.A. (vi) Nil. (vii) The experiment was conducted by E.B. (R).

## 5. RESULTS :

- (i) 735 lb./ac.  
(ii) 172.93 lb./ac.  
(iii) Treatments are highly significantly different.  
(iv) Av. yield of grain in lb./ac.

Treatment	Av. yield	Treatment	Av. yield
1.	549	5.	611
2.	778	6.	1160
3.	802	7.	587
4.	434	8.	958
S.E./mean		=70.60 lb./ac.	

Crop :- Wheat (*Rabi*).

Ref :- U.P. 52(66).

Site :- Govt. Res. Farm, Kanpur.

Type :- 'M'.

Object :- To study the comparative effect of green manure crops on the yield of succeeding Wheat crop.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) As per treatments. (c) 50 lb./ac. of N. (ii) (a) Loam. (b) N.A. (iii) 29.10.1952. (iv) (a) 3 victory, 7 *desi*, 4 cultivator and 2 watts ploughing. (b) N.A. (c) 80 lb./ac. (d) 9". (e) N.A. (v) Nil. (vi) C-13 (early). (vii) Irrigated. (viii) One weeding on 29.12.1952. (ix) N.A. (x) N.A.

## 2. TREATMENTS:

1. Fallow.
  2. *Moong* at 5 seers/ac. (pods picked and plants buried in).
  3. *Sanai* G.M. at 1 md./ac.
  4. *Chari* for fodder at 20 seers/ac.
  5. Fallow followed by F.Y.M. at 101.25 lb./plot.
  6. Fallow followed by Castor cake at 12.66 lb./plot.
  7. *Chari* followed by F.Y.M. at 101.25 lb./plot.
  8. *Chari* followed by Castor cake at 12.66 lb./plot.
- F.Y.M. and Castor cake applied on 28.10.1952; *Sanai*, *Chari* and *Moong* sown on 8.7.1952 while turned in on 30.8.1952, 10.9.1952 and N.A. respectively.

## 3. DESIGN:

- (i) R.B.D. (ii) (a) 8 in two flanks. (b) N.A. (iii) 6. (iv) (a) 28'×15'9". (b) 24'×14'3". (v) 2'× $\frac{1}{2}$ '. (vi) Yes.

## 4. GENERAL:

- (i) Fair. (ii) Brown rust attack 6%. (iii) Germination and grain yield. (iv) (a) 1950—1953. (b) Yes. (c) N.A. (v) (a) No. (b) N.A. (vi) Nil. (vii) The experiment was conducted by E.B. (R).

## 5. RESULTS:

- (i) 1049 lb./ac.  
 (ii) 164.87 lb./ac.  
 (iii) Treatments are highly significantly different.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield	Treatment	Av. yield
1.	901	5.	936
2.	1138	6.	1613
3.	1329	7.	639
4.	540	8.	1296
S.E./mean		=67.31 lb./ac.	

Crop :- Wheat (*Rabi*).

Site :- Govt. Res. Farm, Kanpur.

Ref :- U.P. 53(86)..

Type :- 'M'.

Object :- To study the comparative effect of green manure crops on the yield of succeeding Wheat crop.

## 1. BASAL CONDITIONS:

- (i) (a) N.A. (b) As per treatments. (c) 50 lb./ac. of N. (ii) (a) Loam. (b) N.A. (iii) 28.10.1953. (iv) (a) *Palewa* on 13.10.1953. Ploughing with victory plough on 5/6.9.1953, *dest* plough and pata on 10/10, 26/10, and 8.10.1953 (b) Behind the plough. (c) *Mung* T<sub>1</sub> at 10.28 lb./ac., *Sanai* 82.285 lb./ac. *Chari* at 41.14 lb./ac. Wheat at 80 lb./ac. (d) 9" apart. (e) N.A. (v) Nil. (vi) C-13. (vii) Irrigated. (viii) Weeding on 22.1.1954 with *khurpi*. (ix) N.A. (x) 8.4.1954.

## 2. TREATMENTS:

1. Fallow.
2. *Moong* T<sub>1</sub> at 10.28 lb./ac. (Pod picked and plants turned in).
3. *Sanai* G.M. sown on 4.7.1953 and turned in on 5.9.1953.
4. *Chari* (*Jowar* for fodder) sown on 4.7.53 and harvested on 3.9.1953.
5. Fallow followed by F.Y.M. at 101.25 lb./plot.
6. Fallow followed by castor cake at 12.66 lb./plot.
7. *Chari* followed by F.Y.M. at 101.25 lb./plot.
8. *Chari* followed by castor cake at 12.66 lb./plot.

## 3. DESIGN:

- (i) R.B.D. (ii) (a) 8 (in two flanks). (b) N.A. (iii) 6. (iv) (a) 28'×15.75". (b) 24'×14.25". (v) 2'× $\frac{3}{4}$ ' (vi) Yes.

## 4. GENERAL:

- (i) Fair. (ii) Slight incidence of rust. (iii) Germination, grain and straw yield. (iv) (a) 1950 to 1953. (b) Yes. (c) N.A. (v) (a) No. (b) N.A. (vi) Nil. (vii) The expt. was conducted by E.B. (R).

## 5. RESULTS :

- (i) 962 lb./ac.  
 (ii) 118.02 lb./ac.  
 (iii) Treatment differences are highly significant.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield	Treatment	Av. yield
1.	794	5.	1425
2.	887	6.	854
3.	1073	7.	742
4.	614	8.	1307
	S.E./mean		=48.18 lb./ac.

Crop :- Wheat (*Rabi*)

Ref :- U.P. 48(42).

Site :- Govt. Res. Farm, Kanpur.

Type :- 'M'.

Object :- To study the effects of sanai with different doses of Super on a subsequent crop of Wheat.

## 1. BASAL CONDITIONS :

- (i) (a) Wheat—*Sanai*. (b) *Sanai*. (c) As per treatments. (ii) (a) Loam. (b) N.A. (iii) 26/27.10.1948.  
 (iv) (a), (b) N.A. (c) 50 seers./ac. (d) and (e) N.A. (v) No. (vi) C-13 (early). (vii) Irrigated.  
 (viii) N.A. (ix) N.A. (x) N.A.

## 2. TREATMENTS :

- Control. (no manure).
  - Sanai* for green manuring without  $P_2O_5$  at sowing time.
  - Sanai* for green manuring with 25 lb./ac. of  $P_2O_5$  at sowing of *Sanai*.
  - Sanai* for green manuring with 50 lb./ac. of  $P_2O_5$  at sowing of *Sanai*.
  - Sanai* for green manuring with 75 lb./ac. of  $P_2O_5$  at sowing of *Sanai*.
  - Sanai* for green manuring plus 25 lb./ac. of  $P_2O_5$  at the time of burial of *Sanai*.
  - Sanai* for green manuring plus 50 lb./ac. of  $P_2O_5$  at the time of burial of *Sanai*.
  - Sanai* for green manuring plus 75 lb./ac. of  $P_2O_5$  at the time of burial of *Sanai*.
- $P_2O_5$  as Super applied on 2.7.1948. *Sanai* sown on 2.7.1948 and ploughed in on 1.9.1948.

## 3. DESIGN :

- (i) R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 37.5'×28.5'. (v) N.A. (vi) Yes.

## 4. GENERAL :

- (i) Good. (ii) No. (iii) Grain yield. (iv) (a) 1945 to 1954. (b) yes. (c) N.A. (v) (a) No. (b) N.A.  
 (vi) Nil. (vii) The expt. was conducted by A.C.

## 5. RESULTS :

- (i) 1542 lb./ac.  
 (ii) 251.81 lb./ac.  
 (iii) Treatments are highly significantly different.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield	Treatment	Av. yield
1.	999	5.	1752
2.	1396	6.	1590
3.	1600	7.	1671
4.	1579	8.	1752
	S.E./mean		=125.9 lb./ac.

Crop :- Wheat (*Rabi*).

Ref :- U.P. 49(91).

Site :- Govt. Res. Farm, Kanpur.

Type :- 'M'.

Object :- To study the effect of *Sanai* with different doses of Super on subsequent Wheat crop.

## 1. BASAL CONDITIONS :

- (i) (a) Wheat—*Sanai*. (b) *Sanai*. (c) As per treatments. (ii) (a) Loam. (b) N.A. (iii) 19.10.1949.  
 (iv) (a) and (b) N.A. (c) 50 srs./ac. (d) and (e) N.A. (v) No. (vi) C-13 (early). (vii) N.A. (viii)  
 N.A. (ix) N.A. (x) 11.4.1949.

## 2. TREATMENTS :

1. Control.
2. *Sanai* alone as green manure.
3. *Sanai*+ 75 lb./ac. of  $P_2O_5$  as Super at the time of *Sanai* sowing.
4. *Sanai*+100 lb./ac. of  $P_2O_5$  as Super at the time of *Sanai* sowing.
5. *Sanai*+125 lb./ac. of  $P_2O_5$  as Super at the time of *Sanai* sowing.
6. *Sanai*+ 75 lb./ac. of  $P_2O_5$  as Super at the time of ploughing in of *Sanai*.
7. *Sanai*+100 lb./ac. of  $P_2O_5$  as Super at the time of ploughing in of *Sanai*.
8. *Sanai*+125 lb./ac. of  $P_2O_5$  as Super at the time of ploughing in of *Sanai*.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 28.5'×37.5'. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) No. (iii) Grain yield. (iv) (a) 1945 to 1954. (b) Yes. (c) N.A. (v) (a) No. (b) N.A. (vi) Nil. (vii) The experiment was conducted by E.B. (R).

## 5. RESULTS :

- (i) 1094 lb./ac.
- (ii) 336.69 lb./ac.
- (iii) Treatments are significantly different.
- (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield	Treatment	Av. yield
1.	486	5.	1203
2.	1140	6.	1303
3.	946	7.	1356
4.	1063	8.	1252

S.E./mean = 168.3 lb./ac.

Crop :- Wheat (*Rabi*).

Ref :- U.P. 50(53).

Site :- Govt. Res. Farm, Kanpur.

Type :- 'M'.

Object :- To study the effect of applying  $P_2O_5$  while sowing and while ploughing in *Sanai* crop.

## 1. BASAL CONDITIONS :

(i) (a) Wheat—*Sanai*. (b) *Sanai*. (c) As per treatments. (ii) (a) Loam. (b) N.A. (iii) 5.11.1950. (iv) (a) and (b) N.A. (c) 100 lb./ac. (d) and (e) N.A. (v) No. (vi) C-13 (early). (vii) N.A. (viii) N.A. (ix) N.A. (x) 14.4.1951.

## 2. TREATMENTS :

1. Control (no manure).
  2. *Sanai* alone.
  3. *Sanai*+ 75 lb./ac. of  $P_2O_5$  at sowing of *sanai*.
  4. *Sanai*+100 lb./ac. of  $P_2O_5$  at sowing of *sanai*.
  5. *Sanai*+125 lb./ac. of  $P_2O_5$  at sowing of *sanai*.
  6. *Sanai*+ 75 lb./ac. of  $P_2O_5$  at burying of *sanai*.
  7. *Sanai*+100 lb./ac. of  $P_2O_5$  at burying of *sanai*.
  8. *Sanai*+125 lb./ac. of  $P_2O_5$  at burying of *sanai*.
- $P_2O_5$  as Super. *Sanai* sown on 8.7.1950 and turned in on 23.8.1950.

## 3. DESIGN:

(i) R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 28.5'×37.5'. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) No. (iii) Grain yield. (iv) (a) 1945 to 1954. (b) Yes. (c) N.A. (v) (a) No. (b) N.A. (vi) Nil. (vii) The experiment was conducted by A.C.

## 5. RESULTS :

- (i) 1757 lb./ac.
- (ii) 310.91 lb./ac.
- (iii) Treatment differences are highly significant.

(iv) Av. yield of grain in lb./ac.

Treatment	Av. yield	Treatment	Av. yield
1.	909	5.	2044
2.	1610	6.	2182
3.	1773	7.	2128
4.	1674	8.	1733

S.E./mean = 155.5 lb./ac.

Crop :-Wheat (*Rabi*).

Ref :-U.P. 51(118).

Site :-Govt. Res. Farm, Kanpur.

Type :-'M'.

Object :-To study the effect of applying  $P_2O_5$  while sowing and while ploughing in *Sanai* crop.

## 1. BASAL CONDITIONS :

(i) (a) Wheat-*Sanai*. (b) *Sanai*. (c) As per treatments. (ii) (a) Loam. (b) N.A. (iii) 26.10.1951. (iv) (a), (b) N.A. (c) 40 srs./ac. (d) and (e) N.A. (v) No. (vi) C-13 (early). (vii) Irrigated. (viii) N.A. (ix) N.A. (x) 5.4.1952.

## 2. TREATMENTS :

- Control (no manure).
- Sanai* alone.
- Sanai*+75 lb./ac. of  $P_2O_5$  at sowing time of *sanai*.
- Sanai*+100 lb./ac. of  $P_2O_5$  at sowing time of *sanai*.
- Sanai*+125 lb./ac. of  $P_2O_5$  at sowing time of *sanai*.
- Sanai*+75 lb./ac. of  $P_2O_5$  at burying time of *sanai*.
- Sanai*+100 lb./ac. of  $P_2O_5$  at burying time of *sanai*.
- Sanai*+125 lb./ac. of  $P_2O_5$  at burying time of *sanai*.

The crop of *sanai* was badly damaged by locust and the total produce of *sanai* was equally distributed to all the 28 plots at 2 mds. 18 srs./plot.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 28.5'×37.5'. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) Normal. (ii) No. (iii) Grain yield. (iv) (a) 1945 to 1954. (b) Yes. (c) N.A. (v) (a) No. (b) N.A. (vi) Nil. (vii) The experiment was conducted by A.C.

## 5. RESULTS :

- (i) 1021 lb./ac.  
(ii) 251.79 lb./ac.  
(iii) Treatment differences are highly significant.  
(iv) Av. yield of grain in lb./ac.

Treatment	Av. yield	Treatment	Av. yield
1.	571	5.	1060
2.	835	6.	1190
3.	927	7.	1282
4.	1041	8.	1269
S.E./mean	=112.6 lb./ac.		

Crop :-Wheat (*Rabi*).

Ref :-U.P. 52(166).

Site :-Govt. Res. Farm, Kanpur.

Type :-'M'.

Object :-To study the effect of applying  $P_2O_5$  while sowing and while ploughing in *Sanai* crop.

## 1. BASAL CONDITIONS :

(i) (a) Wheat-*Sanai*. (b) *Sanai*. (c) As per treatments. (ii) (a) Loam. (b) N.A. (iii) 15.10.1952. (iv) (a), (b) N.A. (c) 40 srs./ac. (d), (e) N.A. (v) No. (vi) C-13 (early). (vii) N.A. (viii) N.A. (ix) N.A. (x) 13.4.1953.

## 2. TREATMENTS :

1. Control (no manure).
  2. *Sanai* alone.
  3. *Sanai*+75 lb./ac. of  $P_2O_5$  at sowing time of *sanai*.
  4. *Sanai*+100 lb./ac. of  $P_2O_5$  at sowing time of *sanai*.
  5. *Sanai*+125 lb./ac. of  $P_2O_5$  at sowing time of *sanai*.
  6. *Sanai*+75 lb./ac. of  $P_2O_5$  at burying time of *sanai*.
  7. *Sanai*+100 lb./ac. of  $P_2O_5$  at burying time of *sanai*.
  8. *Sanai*+125 lb./ac. of  $P_2O_5$  at burying time of *sanai*.
- Sanai* sown on 8.7.1952 and buried in on 5.9.1952.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 28.5'×37.5'. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) No. (iii) Grain yield. (iv) (a) 1945 to 1954. (b) Yes. (c) N.A. (v) No. (b) N.A. (vi) Nil. (vii) The experiment was conducted by A.C.

## 5. RESULTS :

- (i) 1284 lb./ac.
- (ii) 256.40 lb./ac.
- (iii) Treatments differ highly significantly.
- (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield	Treatment	Av. yield
1.	627	5.	1320
2.	1246	6.	1526
3.	1325	7.	1477
4.	1202	8.	1550

S.E./mean = 128.2 lb./ac.

Crop :-Wheat (*Rabi*).

Ref :-U.P. 53(200).

Site :-Govt. Res. Farm, Kanpur.

Type :-'M'.

Object:—To study the effect of applying  $P_2O_5$  while sowing and while ploughing in *Sanai* crop.

## 1. BASAL CONDITIONS :

(i) (a) Wheat—*Sanai*. (b) *Sanai*. (c) As per treatments. (ii) (a) Loam. (b) N.A. (iii) 4.11.1953. (iv) (a) and (b) N.A. (c) 50 seers/ac. (d) and (e) N.A. (v) No. (vi) C-13 (early). (vii) N.A. (viii) N.A. (ix) N.A. (x) 11.4.1954.

## 2. TREATMENTS :

1. Control.
  2. *Sanai* alone.
  3. *Sanai*+ 75 lb./ac. of  $P_2O_5$  at sowing time of *Sanai*.
  4. *Sanai*+100 lb./ac. of  $P_2O_5$  at sowing time of *Sanai*.
  5. *Sanai*+125 lb./ac. of  $P_2O_5$  at sowing time of *Sanai*.
  6. *Sanai*+ 75 lb./ac. of  $P_2O_5$  at burying time of *Sanai*.
  7. *Sanai*+100 lb./ac. of  $P_2O_5$  at burying time of *Sanai*.
  8. *Sanai*+150 lb./ac. of  $P_2O_5$  at burying time of *Sanai*.
- Sanai* buried on 23.9.1953.

## 3. DESIGN :

(i) R B D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 28.5'×37.5'. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) Satisfactory. (ii) No. (iii) Grain yield. (iv) (a) 1945 to 1954. (b) Yes. (c) N.A. (v) (a) No. (b) N.A. (vi) Nil. (vii) The experiment was conducted by A.C.

## 5. RESULTS :

- (i) 1250 lb./ac.
- (ii) 274.0 lb./ac.
- (iii) Treatments differ highly significantly.



(iv) Av. yield of grain in lb./ac.

Treatment	Av. yield	Treatment	Av. yield
1.	633	5.	1321
2.	1221	6.	1465
3.	1220	7.	1499
4.	1287	8.	1358
S.E./mean	=137.0 lb./ac.		

Crop :-Wheat (*Rabi*).

Ref :-U.P. 51(24).

Site :-Govt. Res. Farm, Kanpur.

Type :-'M'.

Object :-To study the effect of  $P_2O_5$  applied to green manure crops on Wheat.

## 1. BASAL CONDITIONS :

(i) (a) No. (b) As per treatments. (c) Nil. (ii) (a) Medium loam. (b) N.A. (iii) 26.10.1951. (iv) (a) 3 *desi* ploughings, 1 victory ploughing and 1 cultivator ploughing. (b) N.A. (c) 80 lb./ac. (d) 9' apart. (e) N.A. (v) N.A. (vi) Pb. 591. (vii) Irrigated. (viii) One weeding. (ix) N.A. (x) 17.4.1952.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 3 previous *Kharif* crops :  $C_1$ =Fallow,  $C_2$ =*Moong*  $T_1$  and  $C_3$ =*Sanai* green manure.(2) 2 levels of  $P_2O_5$  as Super applied to *kharif* crops :  $P_0$ =0 and  $P_2$ =50 lb./ac.*Sanai* broadcast, *moong* sown behind the plough on 23.7.1951, green manure ploughed in on 23.9.1951.

## 3. DESIGN :

(i)  $3 \times 2$  Fact. in R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a)  $37' \times 15'-9"$ . (b)  $33' \times 14'-3"$ . (v)  $2' \times \frac{1}{2}'$ . (vi) Yes.

## 4. GENERAL:

(i) Good. (ii) In the early stage, when the ears had not emerged there was a little attack of brown rust. After the emergence of ears in all the plots at later stage, when the ears were just about to mature, the leaves were attacked by rust. (iii) Germination and grain yield. (iv) (a) 1951 to 1954. (b) No. (c) N.A. (v) (a) No. (b) N.A. (vi) Nil. (vii) The expt. was conducted by E.B. (R).

## 5. RESULTS :

(i) 1759 lb./ac.

(ii) 284.95 lb./ac.

(iii) C effect and interaction CP are highly significant.

(iv) Av. yield of grain in lb./ac.

	$C_1$	$C_2$	$C_3$	Mean
$P_0$	1438	1849	2096	1794
$P_1$	1772	1929	1468	1723
Mean	1605	1889	1782	1759

S.E. of marginal mean of C =100.75 lb./ac.

S.E. of marginal mean of P = 82.26 lb./ac.

S.E. of body of table =142.48 lb./ac.

Crop :- Wheat (*Rabi*).  
Site :- Govt. Res. Farm, Kanpur.

Ref :- U.P. 52(45).  
Type :- 'M'.

Object :- To study the effect of  $P_2O_5$  applied to green manure crops on Wheat.

### 1. BASAL CONDITIONS :

(i) (a) No. (b) As per treatments. (c) As per treatments. (ii) (a) Loam (medium). (b) N.A. (iii) 28.10.1952. (iv) (a) 8 ploughings-victory 2, watts 2, *desi* 3 and cultivator 1. (b) Behind the plough. (c) 80 lb./ac. (d) 9" apart. (e) N.A. (v) Nil. (vi) Pb. 591 (medium). (vii) Irrigated. (viii) 2 weedings. (ix) Not recorded. (x) 7.4.1953.

### 2. TREATMENTS :

All combinations of (1) and (2)

(1) 3 previous *kharif* crops :  $C_1$ =Fallow,  $C_2$ =*Moong* and  $C_3$ =*Sanai* green manuring.

(2) 2 levels of  $P_2O_5$  as Super applied to *kharif* crops :  $P_0$ =0 and  $P_1$ =50 lb./ac.

*Sanai* at 80 lb./ac. broadcast and *Moong*  $T_1$  sown behind the plough on 8.7.1952 ; *sanai* ploughed in on 30.8.1952 while *Moong*  $T_1$  on 2.9.1952.

### 3. DESIGN :

(i) 3x2 Fact. in R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) 30'x15'. (b) 26'x13½'. (v) 2'x½'. (vi) Yes.

### 4. GENERAL :

(i) Good. (ii) Brown rust attack 20%. (iii) Grain yield. (iv) (a) 1951—1954. (b) Yes. (c) N.A. (v) (a) No. (b) N.A. (vi) Nil. (vii) The experiment was conducted by E.B. (R).

### 5. RESULTS :

(i) 2220 lb./ac.

(ii) 193.89 lb./ac.

(iii) C effect and interaction CP are highly significant.

(iv) Av. yield of grain in lb./ac.

	$C_1$	$C_2$	$C_3$	Mean
$P_0$	1735	2377	2357	2156
$P_1$	2369	2166	2318	2284
Mean	2052	2271	2337	2220

S.E. of marginal mean of C

=68.55 lb./ac.

S.E. of marginal mean of P

=55.97 lb./ac.

S.E. of body of table

=96.94 lb./ac.

Crop :- Wheat (*Rabi*).  
Site :- Govt. Res. Farm, Kanpur.

Ref :- U.P. 53(92).  
Type :- 'M'.

Object :- To study the effect of  $P_2O_5$  applied to green manure crops on Wheat.

### 1. BASAL CONDITIONS :

(i) (a) to (c) As per treatment. (ii) (a) Loam. (b) N.A. (iii) 2.11.1953. (iv) (a) Light *Palwa* on 11.10.1953. Watt plough and *pata* on 5.10.1953, Spring harrowing and *pata* on 20.10.1953, *desi* plough and *pata* on 30.10.1953. (b) Behind the plough. (c) 80 lb./ac. (d) 9" apart. (e) N.A. (v) Nil. (vi) Pb-591 (late). (vii) Irrigated. (viii) Weeding on 18.1.1954 by *khurpi*. (ix) N.A. (x) 7.4.1954.

### 2. TREATMENTS :

All combinations of (1) and (2)

(1) 3 previous *kharif* crops :  $C_1$ =Fallow,  $C_2$ =*Moong*  $T_1$  and  $C_3$ =*Sanai* for green manuring.

(2) 2 levels of  $P_2O_5$  as Super applied to *kharif* crops :  $P_0$ =0 and  $P_1$ =50 lb./ac.

*Sanai* at 80 lb./ac. *Mung*  $T_1$  at 4 lb./ac, pods removed, upper portion, leaves and stems turned in on 4.9.1953.

## 3. DESIGN :

(i) 3×2 Fact. in R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) 30'×15'. (b) 26'×13.5'. (v) 2'×½'. (vi) Yes.

## 4. GENERAL :

(i) Good. No lodging. (ii) Medium infection of brown and black rust was observed in every plot (treated or untreated). (iii) Germination %, grain and straw yield. (iv) (a) 1951—1954. (b) Yes. (c) N.A. (v) (a) No. (b) N.A. (vi) Nil. (vii) The experiment was conducted by E.B. (R).

## 5. RESULTS :

- (i) 1555 lb./ac.  
 (ii) 223.25 lb./ac.  
 (iii) C effect and interaction CP are highly significant.  
 (iv) Av. yield of grain in lb./ac.

	C <sub>1</sub>	C <sub>2</sub>	C <sub>3</sub>	Mean
P <sub>0</sub>	1025	1978	1723	1575
P <sub>1</sub>	1257	1839	1508	1535
Mean	1141	1909	1616	1555

S.E. of marginal mean of C = 78.90 lb./ac.  
 S.E. of marginal mean of P = 64.45 lb./ac.  
 S.E. of body of table = 91.14 lb./ac.

Crop :- Wheat (*Rabi*).

Ref :- U.P. 50(311).

Site :- Students' Instructional Farm, Govt. College,  
 Kanpur.

Type :- 'M'.

Object :—To study the residual effect of N and P on Wheat.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) Maize. (c) As per treatments. (ii) (a) and (b) N.A. (iii) 25.10.1950. (iv) (a) Punjab plough on 28.9.1950, 2 *desi* plough after *palewa*. Each ploughing was followed by *pata*. (b) Sown behind *desi* plough. (c) 50 srs/ac. (d) and (e) N.A. (v) Nil. (vi) NP-125 (N.A.). (vii) Irrigated. (viii) One weeding with *khurpi* to remove weeds like *rougeing*. Ears of other varieties were picked before harvesting to maintain the purity of the variety. (ix) 5.54°. (x) 14 and 15.4.1951.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 3 levels of N as A/S : N<sub>0</sub>=0, N<sub>1</sub>=40 and N<sub>2</sub>=80 lb./ac.

(2) 3 levels of P<sub>2</sub>O<sub>5</sub> as Super : P<sub>0</sub>=0, P<sub>1</sub>=50 and P<sub>2</sub>=100 lb./ac.

## 3. DESIGN :

(i) 3×3 Fact. in R.B.D. (ii) (a) 9. (b) N.A. (iii) 4. (iv) (a) 64'×15'. (b) 61'×12'. (v) 2 rows on either side and 1½' at each end of the plot. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) A very mild attack of black rust. (iii) Germination counts, shoot height, tillers, final shoot height, ear height, grain and *bhusa* yield. (iv) (a) and (b) No. (c) Nil. (v) (a) No. (b) N.A. (vi) Nil. The experiment conducted by Govt. Agril. College, Kanpur.

## 5. RESULTS :

- (i) 1056 lb./ac.  
 (ii) 68.85 lb./ac.  
 (iii) Only P effect is highly significant.

(iv) Av. yield of grain in lb./ac.

	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>	Mean
N <sub>0</sub>	1004	1016	1185	1068
N <sub>1</sub>	1010	1023	1154	1062
N <sub>2</sub>	965	996	1148	1036
Mean	993	1012	1162	1056

S.E. of any marginal mean = 19.88 lb./ac.  
 S.E. of body of table = 34.42 lb./ac.

Crop :- Wheat (*Rabi*).

Ref :- U.P. 49(70).

Site :- Crop Physiological Res. Stn., Lucknow.

Type :- 'M'.

Object :- To study the effect of different forms of N on yield of Wheat.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) Fallow. (c) No. (ii) (a) Light loam. (b) N.A. (iii) 20.11.1949. (iv) (a) Two ploughings by mould board plough, crosswise ploughing by tractor and two harrowings. (b) Sown behind the plough. (c) 45 srs./ac. (d) and (e) N.A. (v) T.C. applied on 21.10.1949. Amount N.A. (vi) Po. 591 (mid late). (vii) Irrigated. (viii) 2 weedings and 2 hoeings. (ix) N.A. (x) 3 and 4.4.1950.

## 2. TREATMENTS :

60 lb./ac. of N applied on 19.11.1949 in the form of

- |                         |                          |
|-------------------------|--------------------------|
| 1. Sulphate of Ammonia. | 9. Castor cake.          |
| 2. Groundnut cake.      | 10. Stable manure.       |
| 3. Ammonium phosphate.  | 11. Neem cake.           |
| 4. <i>Kurdi</i> cake.   | 12. <i>Mohawa</i> cake.  |
| 5. Town compost.        | 13. Mustard cake.        |
| 6. Poultry manure.      | 14. Ammonium Nitrate.    |
| 7. F.Y.M.               | 15. Linseed cake.        |
| 8. Zoo excreta.         | 16. Control (no manure). |

## 3. DESIGN :

(i) R.B.D. (ii) (a) 16. (b) N.A. (iii) 2. (iv) (a) N.A. (b) 30' x 20'. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) N.A. (iii) Grain yield, height and length of ear/plant. (iv) (a), (b) and (c) No. (v) (a) and (b) No. (vi) Nil. (vii) Conducted by C.P.

## 5. RESULTS :

(i) 1130 lb./ac.

(ii) 115.89 lb./ac.

(iii) Treatment differences are highly significant.

(iv) Av. yield of grain in lb./ac.

Treatment	Av. yield	Treatment	Av. yield
1.	1724	9.	1134
2.	1089	10.	1016
3.	1307	11.	907
4.	1343	12.	1016
5.	1062	13.	1016
6.	1243	14.	1125
7.	1053	15.	1334
8.	889	16.	817
	S.E./mean		= 81.95 lb./ac.

Crop :- Wheat.

Ref :- U.P. 50(117).

Site :- Crop Physiological Res. Stn., Lucknow.

Type :- 'M'.

Object :- To study the effect of various forms of N on yield of Wheat.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) *Jowar*. (c) N.A. (ii) (a) Sandy loam. (b) N.A. (iii) 23.10.1950. (iv) (a) 2 ploughings by mould board plough, 4 *deshi* and one by cultivator. (b) Sown behind the *deshi* plough. (c) 50 srs./ac. (d) and (e) N.A. (v) T.C. applied on 1, 2.10.1950. (vi) C-13. (vii) N.A. (viii) 2 interculturations. (ix) N.A. (x) 18.4.1951.

## 2. TREATMENTS :

60 lb./ac. of N applied on 22.10.1950 as :

- |                        |                  |
|------------------------|------------------|
| 1. Control (no manure) | 6. F.Y.M.        |
| 2. A/S                 | 7. T.C.          |
| 3. Ammonium Nitrate    | 8. Castor cake.  |
| 4. Sodium Nitrate      | 9. Linseed cake. |
| 5. Ammonium Phosphate  | 10. G.N.C.       |

## 3. DESIGN :

(i) R.B.D. (ii) (a) 10. (b) N.A. (iii) 3. (iv) (a) 25'×24'. (b) 22'×21'. (v) 1½' around. (vi) Yes.

## 4. GENERAL :

(i) Below normal. (ii) N.A. (iii) Grain and fodder yield. (iv) (a) to (c) No. (v) (a) and (b) No. (vi) Nil. (vii) Conducted by C.P.

## 5. RESULTS :

- (i) 837 lb./ac.  
 (ii) 404.7 lb./ac.  
 (iii) Treatments do not differ significantly.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield	Treatment	Av. yield
1.	1260	6.	670
2.	1066	7.	1115
3.	1212	8.	170
4.	824	9.	489
5.	678	10.	888

S.E./mean = 233.7 lb./ac.

Crop :- Wheat (*Rabi*).

Ref :- U.P. 53(139).

Site :- Crop Physiological Res. Stn., Lucknow.

Type :- 'M'.

Object :- To study the effect of different trace elements on growth and yield of Wheat.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Dhaincha*. (c) Nil. (ii) (a) Sandy loam. (b) N.A. (iii) 25.10.1953. (iv) (a) 6 ploughings and 1 planking. (b) Behind the plough. (c) 30-35 srs./ac. (d) and (e) N.A. (v) Pea and (G.M.) *dhaincha* turned in on 12.8.1953 and A/S on 24.10.1953 at 2 lb./ac. of N, 30 lb./ac. of P<sub>2</sub>O<sub>5</sub> as Super, 30 lb./ac. of K<sub>2</sub>O as Pot. Sul., and Gypsum at 30 lb./ac. of Ca applied on 20.10.1953. (vi) K-13 (early). (vii) Irrigated. (viii) Nil. (ix) 5.78". (x) 10, 11.4.1954.

## TREATMENTS :

- |                                  |                                 |
|----------------------------------|---------------------------------|
| 1. Control (no manure).          | 6. Borax at 2 lb./ac.           |
| 2. Copper Sulphate at 3 lb./ac.  | 7. Borax at 4 lb./ac.           |
| 3. Copper Sulphate at 6 lb./ac.  | 8. Zinc Sulphate at 1 lb./ac.   |
| 4. Copper Sulphate at 12 lb./ac. | 9. Zinc Sulphate at 4 lb./ac.   |
| 5. Borax at 1 lb./ac.            | 10. Zinc Sulphate at 10 lb./ac. |

Trace elements applied mixed with fine earth as surface dressing a day before sowing.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 10. (b) N.A. (iii) 2. (iv) (a) 20'×40'. (b) 16'×36'. (v) 2' around. (vi) Yes.

## 4. GENERAL :

- (i) Fair. (ii) Nil. (iii) Physiological aspects of plants. Grain and straw yield. (iv) (a) to (c) No. (v) (a) and (b) Nil. (vi) Instead of 4 replications, only 2 have been used for analysis purpose, as the remaining 2 replications were shaded. (vii) Conducted by C.P. (R).

## 5. RESULTS :

- (i) 706.4 lb./ac.  
 (ii) 124.0 lb./ac.  
 (iii) Treatments are not significantly different.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield	Treatment	Av. yield
1.	495.9	6.	807.0
2.	661.2	7.	773.0
3.	646.6	8.	724.4
4.	690.3	9.	870.2
5.	753.5	10.	641.7

S.E./mean = 87.69 lb./ac.

Crop :-Wheat.

Ref :-U.P. 52(188).

Site :-Crop Physiological Res. Stn., Lucknow.

Type :-'M'.

Object : -To study the effect of different trace elements (in presence of adequate quantities of N, P, K and Ca) on the growth, yield and quality of Wheat.

## 1. BASAL CONDITIONS :

- (i) (a) Nil. (b) *Guar*. (c) Nil. (ii) (a) Sandy loam. (b) N.A. (iii) 6.11.1952. (iv) (a) 10 ploughings. (b) Seed drilled. (c) 40 srs./ac. (d) and (e) N.A. (v) 30 lb./ac. of N as A/S, 15 lb./ac. of  $P_2O_5$  as Super, 15 lb./ac. of  $K_2O$  as Pot. Sul. and 12 lb./ac. of Ca applied during 19 to 21.10.1952. + town compost. (vi) C-13 (early). (vii) Irrigated. (viii) Weedings and hoeings from 4 to 24.12.1952. (ix) N.A. (x) 2 to 5.5.1953.

## 2. TREATMENTS :

- Control.
  - Manganese Sulphate at 5 lb./ac.
  - Borax at 1 lb./ac.
  - Copper Sulphate at 6 lb./ac.
  - Molibdic acid at 6 lb./ac.
  - Gypsum at 30 lb./ac.
  - Zinc Sulphate at 4 lb./ac.
  - Magnesium Sulphate at 5 lb./ac.
- Trace elements applied on 4, 5, 6.11.1952.

## 3. DESIGN :

- (i) R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a) 41'x26'. (b) 38'x23'. (v) N.A. (vi) Yes.

## 4. GENERAL :

- (i) N.A. (ii) N.A. (iii) Grain yield and *bhusa*. (iv) (a) No. (b) and (c) No. (v) (a), (b) N.A. (vi) Nil. (vii) Conducted by C.P.

## 5. RESULTS :

- (i) 383.1 lb./ac.  
 (ii) 154.7 lb./ac.  
 (iii) Treatment differences are not significant.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield	Treatment	Av. yield
1.	387.7	5.	503.0
2.	400.5	6.	342.8
3.	432.5	7.	323.6
4.	400.5	8.	291.6

S.E./mean = 77.34 lb./ac.

Crop :-Wheat.

Ref :-U.P. 52(184).

Site :-Crop Physiological Res. Stn., Lucknow.

Type :-'M'.

Object :- study the effect of ploughing in *moong*, *lobia* and *sanai* at different times on the yield of Wheat.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Moong*, *lobia* and *sanai*. (c) N.A. (ii) (a) Sandy loam. (b) N.A. (iii) 23.10.1952. (iv) (a) 6 ploughings. (b) Sown behind the plough. (c) 50 seers/ac. (d) & (e) N.A. (v) Double Super at 10 lb./ac. of  $P_2O_5$ , Sulphate of Potash at 5 lb./ac. of  $K_2O$ , Gypsum at 10 lb./ac. of Ca. Gypsum applied as surface dressing, super phosphate applied behind the plough and Potash as surface dressing before planting on 22.10.1952. (vi) C-13 (early). (vii) Irrigated. (viii) Weeding and hoeing. (ix) N.A. (x) 24 to 26.3.1953.

## 2. TREATMENTS :

All combinations of (1) and (2)+Control (fallow).

(1) 3 green manures :  $G_1=Moong$   $T_1$ ,  $G_2=Sanai$  and  $G_3=Lobia$ .(2) 5 times of application of G.M. :  $T_1=25$ ,  $T_2=35$ ,  $T_3=45$ ,  $T_4=55$  and  $T_5=65$  days after germination.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 16. (b) N.A. (iii) 3. (iv) (a) 18'×11'. (b) 15'×8'. (v) Irrigation channel 2'. Plot border 1½'. Block border 2'. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) N.A. (iii) Grain yield. (iv) (a) No. (b), (c) No. (v) (a), (b) No. (vi) Nil. (vii) Conducted by C.P.

## 5. RESULTS :

(i) 727.3 lb./ac.

(ii) 348.8 lb./ac.

(iii) 'Control vs other treatments' effect alone is highly significant.

(iv) Av. yield of grain in lb./ac.

Control=1742 lb./ac.

	$T_1$	$T_2$	$T_3$	$T_4$	$T_5$	Mean
$G_1$	544.5	466.7	933.4	591.2	964.5	700.1
$G_2$	544.5	466.7	575.6	373.4	886.8	569.4
$G_3$	902.3	575.6	746.7	731.2	591.2	709.4
Mean	663.8	503.0	751.9	565.3	814.2	659.6

S.E. of marginal mean of G = 90.01 lb./ac.

S.E. of marginal mean of T = 116.3 lb./ac.

S.E. of body of table = 201.4 lb./ac.

Crop :-Wheat.

Ref :-U.P. 52(185).

Site :-Crop Physiological Res. Stn., Lucknow.

Type :-'M'.

Object :-To study the residual effect of different green manure crops in presence and absence of P on growth and yield of Wheat.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) G.M. as per treatments. (c) No. (ii) (a) Sandy loam. (b) N.A. (iii) 26.10.1952. (iv) (a) 7 ploughings. (b) Behind *desi* plough with sowing funnel. (c) 50 seers/ac. (d) and (e) N.A. (v) 10 lb./ac. of Ca as Gypsum and 5 lb./ac. of  $K_2O$  as Pot. Sul. applied on 2.10.1952. (vi) C-13 (early). (vii) Irrigated. (viii) 2 weedings and hoeings. (ix) N.A. (x) 21 and 23.3.1953.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 6 green manures :  $G_0=Fallow$ ,  $G_1=Moong$   $T_1$ ,  $G_2=Lobia$ ,  $G_3=Udid$ ,  $G_4=Dhaincha$  and  $G_5=Sanai$ .(2) 2 levels of  $P_2O_5$  as Super :  $P_0=0$  and  $P_1=30$  lb./ac. Fertilizers applied on 26.10.1952.

## 3. DESIGN :

(i) 2×6 Fact. in R.B.D. (ii) (a) 12. (b) N.A. (iii) 4. (iv) (a) 27'×13'. (b) 24'×10'. (v) Irrigation channel 2', block border 4' and field border=4' around. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) N.A. (iii) Grain yield. (iv) (a) No. (b) and (c) No. (v) (a) and (b) No. (vi) Nil. (vii) Conducted by C.P.

## 5. RESULTS :

- (i) 1105 lb./ac.  
 (ii) 456.0 lb./ac.  
 (iii) None of the effects is significant.  
 (iv) Av. yield of grain in lb./ac.

	G <sub>0</sub>	G <sub>1</sub>	G <sub>2</sub>	G <sub>3</sub>	G <sub>4</sub>	G <sub>5</sub>	Mean
P <sub>0</sub>	1120	1348	1056	817	1003	677	1004
P <sub>1</sub>	1546	986	998	1324	1318	1068	1207
Mean	1333	1167	1027	1070	1160	873	1105

S.E. of the marginal mean of G = 161.2 lb./ac.  
 S.E. of the marginal mean of P = 93.1 lb./ac.  
 S.E. of body of table = 228.0 lb./ac.

Crop :- Wheat (*Rabi*).

Ref :- U.P. 51(112).

Site :- Tarai State Farm (Western Block), Matkota. Type :- 'M'.

Object :- To study the effect of N and P fertilizers, alone and in combination on the yield of Wheat crop.

## 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Loam. (b) N.A. (iii) 23.11.1951. (iv) (a) Ploughing and harrowing with a tractor, ploughed with a victory plough at the time of drilling of Super. (b) Sown in lines behind *dest* plough. (c) to (e) N.A. (v) Nil. (vi) to (ix) N.A. (x) April, 1952.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 3 levels of N: N<sub>0</sub>=0, N<sub>1</sub>=30 and N<sub>2</sub>=60 lb./ac.

(2) 3 levels of P<sub>2</sub>O<sub>5</sub>: P<sub>0</sub>=0, P<sub>1</sub>=60 and P<sub>2</sub>=120 lb./ac.

N as A/S broadcast and P<sub>2</sub>O<sub>5</sub> as Super placed deep in bands near the root zone through a fertilizer drill and then *pata* applied; manured on 22.11.1951 and 14.1.1952.

## 3. DESIGN :

(i) 3×3 Fact. in R.B.D. (ii) (a) 9. (b) N.A. (iii) 6. (iv) (a) N.A. (b) 27'×40'-4'. (v) 1' to 3' between plots and 3' to 4' between blocks. (vi) Yes.

## 4. GENERAL :

(i) Very good growth, completely lodged due to rains. Very little grain could be recovered. (ii) No. (iii) Grain yield. (iv) (a) 1951—Continued. (b) and (c) No. (v) (a) Kalyanpur, Kalai, Raya, Tissuhi, Atarra, Partapgarh and Bharari. (b) N.A. (vi) Nil. (vii) Conducted by A.C.

## 5. RESULTS :

- (i) 1280 lb./ac.  
 (ii) 228.66 lb./ac.  
 (iii) N effect and interaction NP are highly significant. P effect is not significant.



(iv) Av. yield of grain in lb./ac.

	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>	Mean
N <sub>0</sub>	1253	1713	1567	1511
N <sub>1</sub>	1433	1273	1173	1293
N <sub>2</sub>	1207	967	933	1036
Mean	1298	1318	1224	1280

S.E. of any marginal mean = 53.90 lb./ac.  
 S.E. of body of table = 93.35 lb./ac.

Crop :- Wheat (*Rabi*).

Ref :-U.P. 52(20).

Site :- Tarai State Farm (Western Block), Matkota. Type :- 'M'.

Object:—To study the effect of N and P fertiliser, alone and in combination on the yield of Wheat.

**1. BASAL CONDITIONS :**

(i) (a) to (c) N.A. (ii) (a) Loam (Matkota loam). (b) N.A. (iii) 19.11.1952. (iv) (a) One tractor ploughing followed by harrowing and *pata*. (b) to (e) N.A. (v) Nil. (vi) N.A. (vii) Irrigated. (viii) Nil. (ix) N.A. (x) 9 to 11.4.1953.

**2. TREATMENTS:**

All combinations of (1) and (2)

(1) 3 levels of N : N<sub>0</sub>=0, N<sub>1</sub>=30 and N<sub>2</sub>=60 lb./ac.(2) 3 levels of P<sub>2</sub>O<sub>5</sub> : P<sub>0</sub>=0, P<sub>1</sub>=60 and P<sub>2</sub>=120 lb./ac.

N as A/S applied as surface dressing by broadcast and P<sub>2</sub>O<sub>5</sub> as Super drilled in furrows 4" deep near the root done by plough. A/S applied on 2.1.1953 and P<sub>2</sub>O<sub>5</sub> on 18.11.1952.

**3. DESIGN :**

(i) 3×3 Fact. in R.B.D. (ii) (a) 9. (b) N.A. (iii) 6. (iv) (a) and (b) 49.5'×22'. (v) Nil. (vi) Yes.

**4. GENERAL :**

(i) Very good. (ii) Badly attacked by rats. (iii) Grain and straw yield. (iv) (a) 1951—Contd. (b) and (c) No. (v) (a) Pura, Kalai, Bharari, Raya, Tissuhi, Atarra, Banaras and Farrukhabad. (b) N.A. (vi) Nil. (vii) Conducted by A.C.

**5. RESULTS :**

(i) 1828 lb./ac.

(ii) 408.22 lb./ac.

(iii) None of the effects is significant.

(iv) Av. yield of grain in lb./ac.,

	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>	Mean
N <sub>0</sub>	1280	2053	2160	1831
N <sub>1</sub>	1813	1813	2000	1875
N <sub>2</sub>	1680	1740	1913	1778
Mean	1591	1869	2024	1828

S.E. of any marginal mean = 96.22 lb./ac.  
 S.E. of body of table = 166.66 lb./ac.

Crop :- Wheat (*Rabi*).

Ref :- U.P. 53(339)

Site :- Tarai State Farm (Western Block), Matkota. Type :- 'M'.

Object :- To study the effects of N and P applied alone and in combination on the yield of Wheat.

## 1. BASAL CONDITIONS :

- (i) (a) N.A. (b) Paddy. (c) Nil. (ii) (a) Matkota clay loam, calcareous. (b) N.A. (iii) 18 to 20.11.1953.  
 (iv) (a) Disc ploughing, harrowing—including one cultivator. (b) Behind the *desi* plough. (c) N.A.  
 (d) and (e) —. (v) Nil. (vi) N.A. (vii) Irrigated. (viii) N.A. (ix) 7.37". (x) N.A.

## 2. TREATMENTS :

All combinations of (1) and (2).

(1) 3 levels of N as A/S :—  $N_0=0$ ,  $N_1=30$ ,  $N_2=60$  lb./ac.(2) 3 levels of  $P_2O_5$  as Super :—  $P_0=0$ ,  $P_1=60$  and  $P_2=120$  lb./ac.

A/S broadcast, Super placed in 4" deep bands 9" apart ; P is about 1" to 2" below the seed ; manures applied on 15 to 17.11.1953.

## 3. DESIGN :

- (i) 3×3 Fact. in R.B.D. (ii) (a) 9. (b) N.A. (iii) 6. (iv) (a) N.A. (b) 49.5'×22'. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) Heavy rains accompanied by strong winds caused severe lodging especially in N plots. Germination good. Growth normal. (ii) Attack of rust and smut. Damage due to rats was severe in lodged plots while light damage in all the plots. Attack of weeds. (iii) Grain and *bhusa* yield. (iv) (a) 1951—continued. (b) N.A. (c) Nil. (v) (a) Phoolbagh, Tissuhi, Gazipur, Atarra and Raya. (b) —. (vi) Nil. (vii) Experiment conducted by A.C.

## 5. RESULTS :

- (i) 1282 lbs./ac.  
 (ii) 570.99 lbs./ac.  
 (iii) None of the effects is significant.  
 (iv) Av. yield of grain in lb /ac.

	$P_0$	$P_1$	$P_2$	Mean
$N_0$	1253	1293	1320	1289
$N_1$	1167	1467	1500	1378
$N_2$	1447	1033	1060	1180
Mean	1289	1264	1293	1282

S.E. of any marginal mean=134.58 lb./ac.

S.E. of body of table =233.11 lb./ac.

Crop :- Wheat (*Rabi*).

Ref :- U.P. 53(337).

Site :- Tarai State Farm, Matkota.

Type :- 'M'.

Object :- To study the effect of N,  $P_2O_5$  and  $K_2O$  applied alone and in combination on the yield of Wheat.

## 1. BASAL CONDITIONS :

- (i) (a) to (c) N.A. (ii) (a) Matkota loam, slightly calcareous. (b) N.A. (iii) 3 and 4.11.1953. (iv) (a) 1 tractor harrowing and 2 ploughing followed by *pata*. (b) Behind *desi* plough. (c) N.A. (d) —. (e) —. (v) Nil. (vi) N.A. (vii) Nil. (viii) Weeding and hoeing. (ix) 8.55". (x) 17 and 19.4.1954.

## 2. TREATMENTS :

All combinations of (1), (2) and (3)

(1) 2 levels of N as A/S :  $N_0=0$  and  $N_1=30$  lb./ac.(2) 2 levels of  $P_2O_5$  as Super :  $P_0=0$  and  $P_1=60$  lb./ac.(3) 3 levels of  $K_2O$  as Pot. Sul :  $K_0=0$ ,  $K_1=60$  and  $K_2=120$  lb./ac.

A/S broadcast. Super placed in 4" deep bands at 9" apart and about 1" to 2" below the seed. Potash applied as deep placement with Phosphate. Manures applied on 2.12.1953.

## 3. DESIGN :

(i)  $3 \times 2 \times 2$  partially balanced. (ii) (a) 2 blocks/replication ; 6 plots/block. (b) N.A. (iii) 4. (iv) (a) N.A. (b)  $49.5' \times 22'$ . (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) Heavy rains accompanied by hail storm in the last week of February caused lodging and also general damage of immature ears. Lodging was more marked in N applied plots. Crop condition good. (ii) Outbreak of wheat rust and smut. Also attack of rats, controlled by frequent bait poisoning. (iii) Grain and straw yield. (iv) (a) 1953—N.A. (b) N.A. (c) Nil. (v) (a) Bharari, Banaras, Kalai and Pura. (b) N.A. (vi) Nil. (vii) The experiment was conducted by A.C. One replication was rejected because it involved one missing plot and as such analysis became complex due to partially balanced design of the experiment.

## 5. RESULTS :

(i) 1209 lb./ac.

(ii) 237.72 lb./ac.

(iii) Main effects of P and K are significant. Others are not significant.

(iv) Av. yield of grain in lb./ac.

	K <sub>0</sub>	K <sub>1</sub>	K <sub>2</sub>	Mean	P <sub>0</sub>	P <sub>1</sub>
N <sub>0</sub>	986	1187	1500	1224	1151	1298
N <sub>1</sub>	1100	1273	1207	1193	1084	1302
Mean	1043	1230	1354	1209		
P <sub>0</sub>	920	1133	1300	1118		
P <sub>1</sub>	1167	1327	1407	1300		

S.E. of the marginal mean of K = 68.62 lb./ac.

S.E. of the marginal mean of N or P = 56.03 lb./ac.

S.E. of the body of the table N × P = 79.24 lb./ac.

S.E. of the body of the table N × K or P × K = 97.05 lb./ac.

Crop :- Wheat (*Rabi*).

Site :- Tarai State Farm, Matkota.

Ref :- U.P. 53(340).

Type :- 'M'.

Object :—To study the effect of Super and B.M. applied at deep placement with and without N on the yield of Wheat.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) Paddy. (c) N.A. (ii) (a) Sandy loam. (b) N.A. (iii) 17 and 18.11.1953. (iv) (a) 1 tractor ploughing and 1 harrowing. Ploughing by *desi* plough and victory plough followed by *pata*. (b) Behind *desi* plough. (c) to (e) N.A. (v) Nil. (vi) N.A. (vii) Nil. (viii) Weeding and hoeing twice. (ix) 8.55°. (x) 19 and 20.4.1954.

## 2. TREATMENTS :

Main-plot treatments :

2 levels of N as A/S : N<sub>0</sub>=0 and N<sub>1</sub>=30 lb./ac.

Sub-plot treatments :

5 applications of P<sub>2</sub>O<sub>5</sub> : P<sub>0</sub>=0, P<sub>1</sub>=60 lb./ac. of P<sub>2</sub>O<sub>5</sub> as Super, P<sub>2</sub>=60 lb./ac. of P<sub>2</sub>O<sub>5</sub> as B.M., P<sub>3</sub>=120 lb./ac. of P<sub>2</sub>O<sub>5</sub> as Super and P<sub>4</sub>=120 lb./ac. of P<sub>2</sub>O<sub>5</sub> as B.M.

A/S broadcast. Super placed in 4° deep bands 9° apart and about 1° to 2° below the seed.

## 3. DESIGN :

(i) Split-plot. (ii) (a) 2 main-plots/block and 5 sub-plots main-plot. (b) N.A. (iii) 4. (iv) (a) N.A. (b)  $54.5' \times 20'$ . (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) Normal. (ii) Severe attack of wheat rust and smut. (iii) Grain and *bhusa* yield. (iv) (a) 1953-1954. (b) N.A. (c) N.A. (v) (a) Kalai & Banaras. (b) N.A. (vi) Heavy rains accompanied by hail storm in the last week of February 1954 and severe infection of weeds specially *kateri* which could not be eradicated even by weedings affected the experiment. (vii) Experiment conducted by A.C.

## 5. RESULTS :

- (i) 1168 lb./ac.  
 (ii) (a) 346.76 lb./ac.  
 (b) 162.43 lb./ac.  
 (iii) None of the effects is significant.  
 (iv) Av. yield of grain in lb./ac.

	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>	P <sub>3</sub>	P <sub>4</sub>	Mean
N <sub>0</sub>	1049	989	1139	1129	1049	1071
N <sub>1</sub>	1099	1299	1269	1319	1339	1265
Mean	1074	1144	1204	1224	1194	1168

## S.E. of the difference of two

- marginal means of N = 109.66 lb./ac.
- marginal means of P = 81.22 lb./ac.
- P means at the same level of N = 114.86 lb./ac.
- N means at the same level of P = 150.27 lb./ac.

Crop :-Wheat.

Ref :-U.P. 49(29).

Site :-Regional Res. S tn., Nawabganj.

Type :-'M'.

Object :-To study the effect of N and P applied alone and in combination on the yield of Wheat.

## 1. BASAL CONDITIONS :

(i) (a), (b) and (c) N.A. (ii) (a) Heavy loam (unclassified). (b) N.A. (iii) 13.11.1949. (iv) (a) to (c) N.A. (v) Nil. (vi) N.A. (vii) Irrigated. (viii) N.A. (ix) N.A. (x) 13.4.1950.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 3 levels of N : N<sub>0</sub>=0, N<sub>1</sub>=30 and N<sub>2</sub>=60 lb./ac.(2) 3 levels of P<sub>2</sub>O<sub>5</sub> : P<sub>0</sub>=0, P<sub>1</sub>=60 and P<sub>2</sub>=120 lb./ac.N as A/S top dressed and P<sub>2</sub>O<sub>5</sub> as single Super applied in deep furrows on 13.11.1949.

## 3. DESIGN :

(i) 3x3 Fact. in R.B.D. (ii) (a) 9. (b) N.A. (iii) 6. (iv) (a) N.A. (b) 1/40 ac. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) Satisfactory. (ii) Nil. (iii) Grain and straw yield. (iv) (a) 1949 to 1950. (b) N.A. (c) N.A. (v) (a) Bharari, Atarra, Banaras, Kanpur, Kalai and Partapgarh. (b) N.A. (vi) Nil. (vii) Conducted by A.C.

## 5. RESULTS :

- (i) 1124 lb./ac.  
 (ii) 121.26 lb./ac.  
 (iii) Only N effect is highly significant.

(iv) Av. yield of grain in lb./ac.

	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>	Mean
N <sub>0</sub>	1008	1052	992	1017
N <sub>1</sub>	1108	1198	1132	1146
N <sub>2</sub>	1158	1255	1212	1208
Mean	1091	1168	1112	1124

S.E. of any marginal mean = 28.58 lb./ac.  
 S.E. of body of table = 49.50 lb./ac.

Crop :-Wheat

Ref :-U.P. 50(67).

Site :-Regional Res. Stn., Nawabganj.

Type :-'M'

Object :-To study the effect of N and P applied alone and in combination on the yield of Wheat.

## 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Heavy Loam (Barielly Type 30). (b) N.A. (iii) 6.11.1949. (iv) (a) 4 ploughings after levelling. (b) Sown in lines behind the plough. (c) to (e) N.A. (v) Nil. (vi) to (x) N.A.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 3 levels of N : N<sub>0</sub>=0, N<sub>1</sub>=12 and N<sub>2</sub>=24 lb./ac.(2) 3 levels of P<sub>2</sub>O<sub>5</sub> : P<sub>0</sub>=0, P<sub>1</sub>=20 and P<sub>2</sub>=40 lb./ac.N as A/S broadcast and P<sub>2</sub>O<sub>5</sub> as Super placed through pre-drilling on 5.11.1949.

## 3. DESIGN :

(i) 3×3 Fact. in R.B.D. (ii) (a) 9. (b) N.A. (iii) 6. (iv) (a) N.A. (b) 24'×45.4'. (v) 1' from plot to plot and 3' from block to block was left out. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) No. (iii) Grain yield. (iv) (a) 1949 to 1950. (b), (c) No. (v) (a) Kalyanpur, Atarra, Kalai, Aligarh, Banaras, Pratapgarh and Bharari. (b) N.A. (vi) Nil. (vii) Conducted by A.C.

## 5. RESULTS :

(i) 1504 lb./ac.

(ii) 230.3 lb./ac.

(iii) None of effects is significant.

(iv) Av. yield of grain in lb./ac.

	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>	Mean
N <sub>0</sub>	1473	1712	1366	1517
N <sub>1</sub>	1506	1559	1439	1501
N <sub>2</sub>	1499	1379	1599	1492
Mean	1493	1550	1468	1504

S.E. of any marginal mean = 54.28 lb./ac.  
 S.E. of body of table = 94.01 lb./ac.

Crop :- Wheat.

Ref :- U.P. 49(28).

Site :- Govt. Agril. Farm, Pratapgarh.

Type :- 'M'.

Object :—To study the effect of N and P applied alone and in combination on the yield of Wheat.

**1. BASAL CONDITIONS :**(i) (a) to (c) N.A. (ii) (a) *Domat*. (b) N.A. (iii) 12.11.1949. (iv) (a) to (e) N.A. (v) Nil (vi) to (viii) N.A. (ix) N.A. (x) 30.3.1950 to 8.4.1950.**2. TREATMENTS :**

All combinations of (1) and (2)

(1) 3 levels of N :  $N_0=0$ ,  $N_1=15$  and  $N_2=30$  lb./ac.(2) 3 levels of  $P_2O_5$  :  $P_0=0$ ,  $P_1=60$  and  $P_2=120$  lb./ac.N as A/S and  $P_2O_5$  as Super. Single Super applied on 9.10.1949.**3. DESIGN :**(i)  $3 \times 3$  Fact. in R.B.D. (ii) (a) 9. (b) N.A. (iii) 6. (iv) (a) N.A. (b)  $45' \times 22'$ . (v) N.A. (vi) Yes.**4. GENERAL :**

(i) Good. (ii) Nil. (iii) Grain and straw yield. (iv) (a) 1949 to 1951. (b) and (c) N.A. (v) (a) Atarra, Banaras, Bharari, Nawabgunj and Kalai. (b) N.A. (vi) Nil. (vii) Conducted by A.C.

**5. RESULTS :**

(i) 1537 lb./ac.

(ii) 168.0 lb./ac.

(iii) N effect alone is highly significant.

(iv) Av. yield of grain in lb./ac.

	$P_0$	$P_1$	$P_2$	Mean
$N_0$	1562	1650	1745	1652
$N_1$	1532	1488	1592	1537
$N_2$	1452	1445	1371	1423
Mean	1515	1528	1569	1537

S.E. of any marginal mean

=39.60 lb./ac.

S.E. of body of table

=68.59 lb./ac.

Crop :- Wheat (*Rabi*).

Ref :- U.P. 50(66).

Site :- Govt. Agril. Farm, Pratapgarh.

Type :- 'M'.

Object :—To study the effect of N and P applied alone and in combination on the yield of Wheat.

**2. BASAL CONDITIONS :**(i) (a) N.A. (b) *Moong* type 1. (c) N.A. (ii) (a) Loam. (b) N.A. (iii) 2.11.1950. (iv) (a) 5 ploughings and one harrowing. (b) to (e) N.A. (v) Nil. (vi) to (ix) N.A. (x) 3.4.1951.**2. TREATMENTS :**

All combinations of (1) and (2)

(1) 3 levels of N :  $N_0=0$ ,  $N_1=30$  and  $N_2=60$  lb./ac.(2) 3 levels of  $P_2O_5$  :  $P_0=0$ ,  $P_1=60$  and  $P_2=120$  lb./ac.N as A/S and  $P_2O_5$  as Super applied on 1, 2.11.1950 through pre-drilling.**3. DESIGN :**(i)  $3 \times 3$  Fact. in R.B.D. (ii) (a) 9. (b) N.A. (iii) 6. (iv) (a) N.A. (b)  $45' \times 22'$ . (v) 1' between plots and 3' between blocks. (vi) Yes.

## 4. GENERAL :

(i) Heavy lodging at the time of harvesting. (ii) No. (iii) Grain yield. (iv) (a) 1949 to 1952. (b) and (c) No. (v) (a) Kalyanpur, Atarra, Kalai, Aligarh, Banaras, Nawabgunj and Bharari. (b) No. (vi) Nil. (vii) Conducted by A.C.

## 5. RESULTS :

- (i) 1598 lb./ac.  
 (ii) 321.4 lb./ac.  
 (iii) N effect alone is highly significant. P effect and interaction 'NP' are significant.  
 (iv) Av. yield of grain in lb./ac.

	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>	Mean
N <sub>0</sub>	1350	1459	1173	1327
N <sub>1</sub>	1422	1621	1863	1635
N <sub>2</sub>	1488	1848	2164	1833
Mean	1420	1643	1733	1598

S.E. of any marginal mean

= 75.77 lb./ac.

S.E. of body of table

= 131.23 lb./ac.

Crop :-Wheat (Rabi).

Ref :-U.P. 51(108).

Site :-Govt. Agril. Farm, Pratapgarh.

Type --'M'.

Object :-To study the effect of N and P fertilizers, alone and in combination on the yield of Wheat.

## 1. BASAL CONDITIONS :

(i) (a) No. (b) Green manuring. (c) No. (ii) (a) Loam (unclassified). (b) N.A. (iii) 14.11.1951. (iv) (a) Eight ploughings. (b) Sown in lines behind the plough. (c) to (e) N.A. (v) Nil. (vi) N.A. (vii) Irrigated. (viii) N.A. (ix) N.A. (x) 14.4.1952.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 3 levels of N as A/S : N<sub>0</sub>=0, N<sub>1</sub>=30 and N<sub>2</sub>=60 lb./ac.(2) 3 levels of P<sub>2</sub>O<sub>5</sub> as Super : P<sub>0</sub>=0, P<sub>1</sub>=60 and P<sub>2</sub>=120 lb./ac.

A/S broadcast and Super placed deep in bands through drill.

## 3. DESIGN :

(i) 3×3 Fact. in R.B.D. (ii) (a) 9. (b) N.A. (iii) 6. (iv) (a) N.A. (b) 22'×46'. (v) 1' to 3' between plots and 3' to 4' between blocks. (vi) Yes.

## 4. GENERAL :

(i) Germination good. Growth suffered due to lack of moisture. (ii) Nil. (iii) Grain yield. (iv) (a) 1949 to 1951. (b) and (c) No. (v) (a) Kalyanpur, Kalai, Raya, Tissuhi, Atarra, Bharari and Matkota. (b) N.A. (vi) Nil. (vii) Conducted by A.C.

## 5. RESULTS :

- (i) 1152 lb./ac.  
 (ii) 174.7 lb./ac.  
 (iii) N effect is highly significant. P effect is significant while interaction is not significant.  
 (iv) Av. yield of grain in lb./ac.

	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>	Mean
N <sub>0</sub>	1040	976	1018	1011
N <sub>1</sub>	1148	1191	1348	1229
N <sub>2</sub>	1127	1121	1399	1216
Mean	1105	1096	1255	1152

S.E. of any marginal mean

= 41.18 lb./ac.

S.E. of body of table

= 71.33 lb./ac.

Crop :-Wheat (*Rabi*).  
Site :-Govt. Agril. Farm, Pratapgarh.

Ref :-U.P. 53(53).  
Type :-'M'.

Object :-To study the effect of placement of fertilizers on growth and yield of Wheat.

### 1. BASAL CONDITIONS :

(i) (a) Nil (b) G.M. (c) Nil. (ii) (a) Loam (b) N.A. (iii) 30.10.1953. (iv) (a) 7 ploughings and harrowing. (b) Drilling. (c) 20-25 seers/ac. (d) and (e) N.A. (v) Nil. (vi) C-13 (early). (vii) Irrigated. (viii) Weeding on 19-21.12.1953. (ix) N.A. (x) 29.3.1954.

### 2. TREATMENTS :

All combinations of (1) and (2)

(1) 4 fertilizers :  $M_1=60$  lb./ac. of N as A/S,  $M_2=50$  lb./ac. of  $P_2O_5$  as Super,  $M_3=40$  lb./ac. of  $K_2O$  as Pot. Sulphate and  $M_4=60$  lb./ac. of CaO as Gypsum.

(2) 3 methods of application :  $A_1=$  By broadcast,  $A_2=$  Placement behind plough in furrows and  $A_3=$  Mixed with seed and drilled through improved seed drill.

### 3. DESIGN :

(i)  $3 \times 4$  Fact. in R.B.D. (ii) (a) 12. (b) N.A. (iii) 3. (iv) (a)  $27' \times 40'$ . (b)  $24' \times 37'$ . (v)  $1.5' \times 1.5'$ . (vi) Yes.

### 4. GENERAL :

(i) Good. (ii) Nil. (iii) Grain and straw yield. (iv) (a) 1953—continued. (b) and (c) No. (v) (a) Faizabad, Banda, Hardoi and Lucknow. (b) N.A. (vi) Nil. (vii) Conducted by A.C.

### 5. RESULTS :

(i) 512.8 lb./ac.

(ii) 44.17 lb./ac.

(iii) Only M effect is highly significant.

(iv) Av.yield of grain in lb./ac.

	$M_1$	$M_2$	$M_3$	$M_4$	Mean
$A_1$	645.1	542.1	474.9	405.4	516.9
$A_2$	675.4	575.7	441.3	347.2	509.9
$A_3$	672.0	563.4	436.8	374.1	511.6
Mean	664.2	560.4	451.0	375.6	512.8

S.E. of marginal mean of M =14.72 lb./ac.

S.E. of marginal mean of A =12.75 lb./ac.

S.E. of body of table =25.50 lb./ac.

Crop :-Wheat (*Rabi*).

Ref : U.P. 53(338).

Site :-Tarai State Farm, (Central Block) Phoolbagh. Type :-'M'.

Object :-To study the effects of N and P fertilizers applied alone and in combination on the yield of Wheat.

### 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Slightly calcareous. (b) N.A. (iii) 3, 4.11.1953. (iv) (a) 1 ploughing by disc plough and 3 harrowings. (b) Sown behind the *desi* plough in lines. (c) to (e) N.A. (v) Nil. (vi) N.A. (vii) Irrigated. (viii) N.A. (ix) 7.37". (x) May, 1954.

### 2. TREATMENTS :

All combinations of (1) and (2).

(1) 3 levels of N as A/S :  $N_0=0$ ,  $N_1=30$  and  $N_2=60$  lb./ac.

(2) 3 levels of  $P_2O_5$  as Super :  $P_0=0$ ,  $P_1=60$  and  $P_2=120$  lb./ac.

Method of application : A/S broadcast,  $P_2O_5$  placed in 4" deep bands 9" apart and 1" to 2" below the seed.

### 3. DESIGN :

(i)  $3 \times 3$  Fact. in R.B.D. (ii) (a) 9. (b) N.A. (iii) 6. (iv) (a) N.A. (b)  $49.5' \times 22'$ . (v) N.A. (vi) Yes.



## 4. GENERAL :

(i) Practically good growth. (ii) Rust and smut attack. Rat attack in some treatments. (iii) Grain and straw yield. (iv) (a) 1953—1954. (b) N.A. (c) Nil. (v) (a) Matkora, Tissuhi, Gazipur, Atarra and Raya. (b) N.A. (vi) Heavy rains in the last week of February. (vii) Experiment conducted by A.C.

## 5. RESULTS :

- (i) 1317 lb./ac.  
 (ii) 182.8 lb./ac.  
 (iii) N effect is highly significant and interaction NP is significant.  
 (iv) Av. yield of grain in lb./ac.

	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>	Mean
N <sub>0</sub>	1087	1200	953	1080
N <sub>1</sub>	1300	1460	1507	1422
N <sub>2</sub>	1347	1407	1593	1449
Mean	1245	1356	1351	1317

S.E. of any marginal mean

=43.1 lb./ac.

S.E. of body of table

=74.63 lb./ac.

Crop :-Wheat (*Rabi*).

Ref :-U.P. 52(8).

Site :-Govt. Res. Farm, Pura (Kanpur).

Type :-'M'.

Object :-To study the effect of N and P applied alone and in combination on yield of Wheat.

## 1. BASAL CONDITIONS :

(i) N.A. (b) Sugarcane. (c) N.A. (ii) (a) Loam (Kanpur type 2). (b) Refer soil analysis, Pura. (iii) 25.10.1949. (iv) (a) 1 ploughing with victory plough and 3 ploughings with *gurjar* plough, one harrowing to remove weeds and stubbles on 26.9.1952. Ploughing again with *desi* plough. (b) Sown behind the plough. (c) to (e) N.A. (v) Nil. (vi) N.A. (vii) Irrigated. (viii) Nil. (ix) N.A. (x) 23 to 25.3.1953.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 3 levels of N as A/S : N<sub>0</sub>=0, N<sub>1</sub>=30 and N<sub>2</sub>=60 lb./ac.(2) 3 levels of P<sub>2</sub>O<sub>5</sub> as Super: P<sub>0</sub>=0, P<sub>1</sub>=60 and P<sub>2</sub>=120 lb./ac.N applied as surface dressing by broadcast, P<sub>2</sub>O<sub>5</sub> drilled in furrows (4" deep) on 24, 25.10.1952.

## 3. DESIGN :

(i) 3×3 Fact. in R.B.D. (ii) (a) 9. (b) N.A. (iii) 6. (iv) (a) and (b) 33'×15'. (v) Nil. (vi) Yes.

## 4. GENERAL :

(i) Good. Lodging due to rains and stormy winds. (ii) Lodged ; crop attacked by rats. Anti rat measures taken. (iii) Grain and straw yield. (iv) (a) 1952—1953. (b) No. (c) N.A. (v) (a) Kalai, Raya, Banaras, Tissuhi, Matkota, Bharari, Atarra and Farrukhatad. (b) N.A. (vi) Nil. (vii) The experiment was conducted by A.C.

## 5. RESULTS :

- (i) 1686 lb./ac.  
 (ii) 228.7 lb./ac.  
 (iii) Both the main effects are highly significant. Interaction is not significant.  
 (iv) Av. yield of grain in lb./ac.

	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>	Mean
N <sub>0</sub>	1151	1333	1507	1330
N <sub>1</sub>	1479	1781	1963	1741
N <sub>2</sub>	1799	1927	2237	1988
Mean	1476	1680	1902	1686

S.E. of any marginal mean

=53.92 lb./ac.

S.E. of body of table

=93.39 lb./ac.

Crop :- Wheat (*Rabi*).

Ref :- U.P. 53(358).

Site :- Govt. Agril. Farm, Pura (Kanpur).

Type :- 'M'.

Object :- To study the effect of N, P and K fertilizers applied alone and in combination on the yield of Wheat.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) Paddy. (c) N.A. (ii) (a) Kanpur—type 2 soil. (b) Refer soil analysis, Pura. (iii) 2, 3.11.1953. (iv) (a) 1 ploughing by *gurjar* plough, 3 by *desi* plough and 1 disc harrowing. (b) Behind the plough in lines. (c) to (e) N.A. (v) Nil. (vi) N.A. (vii) Irrigated. (viii) N.A. (ix) 4.1. (x) 5.4.1954.

## 2. TREATMENTS :

All combinations of (1), (2) and (3)

(1) 2 levels of N as A/S :  $N_0 = 0$  and  $N_1 = 30$  lb./ac.

(2) 2 levels of  $P_2O_5$  as Super :  $P_0 = 0$  and  $P_1 = 6$  lb./ac.

(3) 3 levels of  $K_2O$  as Pot. Sul. :  $K_0 = 0$ ,  $K_1 = 60$  and  $K_2 = 120$  lb./ac.

A/S broadcast,  $P_2O_5$  placed in 4" deep bands 9" apart and  $K_2O$  applied as deep placement with  $P_2O_5$  on 1, 2.11.1953.

## 3. DESIGN :

(i)  $3 \times 2 \times 2$  partially confd. (ii) (a) 2 blocks/replication ; 6 plots/block. (b) N.A. (iii) 4. (iv) (a) N.A. (b)  $47' - 4" \times 23'$ . (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) Germination good. Growth poor in January. (ii) N.A. (iii) Grain and *bhusa* yield. (iv) (a) 1953—N.A. (b) N.A. (c) Nil. (v) (a) Matkota, Banaras, Kalai and Bharari. (b) N.A. (vi) Nil. (vii) Experiment was conducted by A.C.

## 5. RESULTS :

(i) 682.6 lb./ac.

(ii) 171.9 lb./ac.

(iii) N, P effects are highly significant. Interaction NP is significant, while other effects are not significant.

(iv) Av. yield of grain in lb./ac.

	$K_0$	$K_1$	$K_2$	Mean	$P_0$	$P_1$
$N_0$	576.7	570.7	514.2	553.9	338.5	719.2
$N_1$	836.8	792.7	804.7	811.4	517.8	1105.0
Mean	706.7	681.7	659.4	682.6	453.1	912.1
$P_0$	456.6	431.1	471.6	453.1		
$P_1$	956.8	932.3	847.3	912.1		

S.E. of marginal mean of N or P

=35.09 lb./ac.

S.E. of marginal mean of K

=42.98 lb./ac.

S.E. of body of table  $N \times P$

=49.63 lb./ac.

S.E. of body of table  $N \times K$  or  $P \times K$

=60.78 lb./ac.

Crop :- Wheat (*Rabi*).

Ref :- U.P. 51(111).

Site :- Govt. Cotton Res. Sub-Stn., Raya.

Type :- 'M'.

Object :- To study the effect of N and P applied, alone and in combination on Wheat crop.

## 1. BASAL CONDITIONS :

(i) (a) No. (b) *Jowar* as green fodder. (c) N.A. (ii) (a) Sandy loam (unclassified). (b) Refer soil analysis, Raya. (iii) 22.11.1951. (iv) (a) 6 ploughings with *desi* plough and one ploughing with victory plough. (b) Sown in lines with drill behind the *desi* plough. (c) to (e) N.A. (v) Nil. (vi) Pb. 591 (medium). (vii) N.A. (viii) 1 weeding and 1 harrowing. (ix) N.A. (x) 17 to 19.4.1952.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 3 levels of N :  $N_0=0$ ,  $N_1=30$  and  $N_2=60$  lb./ac.

(2) 3 levels of  $P_2O_5$  :  $P_0=0$ ,  $P_1=60$  and  $P_2=120$  lb./ac.

N as A/S broadcast and  $P_2O_5$  as Super placed deep through fertilizer drill on 21.11.1951.

## 3. DESIGN :

(i)  $3 \times 3$  Fact. in R.B.D. (ii) (a) 9. (b) N.A. (iii) 6. (iv) (a) N.A. (b)  $72' \times 15'$ . (v) 1' to 3' from plot to plot and 3' to 4' from block to block. (vi) Yes.

## 4. GENERAL :

(i) Satisfactory. (ii) No. (iii) Grain yield. (iv) (a) 1951 to 1953. (b) and (c) No. (v) (a) Kalyanpur, Kalai, Tissuhi, Pratapgarh, Atarra, Bharari and Matkota. (vi) Nil. (vii) Conducted by A.C.

## 5. RESULTS :

(i) 1658 lb./ac.

(ii) 108.6 lb./ac.

(iii) N and P effects are highly significant, while interaction is not significant.

(iv) Av. yield of grain in lb./ac.

	$P_0$	$P_1$	$P_2$	Mean
$N_0$	1167	1347	1541	1352
$N_1$	1467	1874	1907	1749
$N_2$	1754	1867	2000	1872
Mean	1463	1696	1816	1658

S.E. of any marginal mean

=25.60 lb./ac.

S.E. of body of table

=44.35 lb./ac.

Crop :- Wheat.

Ref :- U.P. 52(16).

Site :- Govt. Cotton Res. Sub-Stn., Raya.

Type :- 'M'.

Object :- To study the effect of N and P applied alone and in combination on Wheat.

## 1. BASAL CONDITIONS :

(i) (a) to (c) N.A (ii) (a) Sandy loam (unclassified). (b) Refer soil analysis, Raya. (iii) 2.11.1952. (iv) (a) 4 ploughings with *desi* plough, *palewa* followed by 2 more ploughings with *desi* plough and *pata*. (b) Sown in lines behind *desi* plough. (c) to (e) N.A. (v) Nil. (vi) N.A. (vii) Irr gated. (viii) 2 hand weedings and 1 harrowing with level harrow. (ix) 1.8". (x) 3.4.1953.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 3 levels of N :  $N_0=0$ ,  $N_1=30$  and  $N_2=60$  lb./ac.

(2) 3 levels of  $P_2O_5$  :  $P_0=0$ ,  $P_1=60$  and  $P_2=120$  lb./ac.

N as A/S applied as surface dressing by broadcast and  $P_2O_5$  as Super placed 3"-4" deep near the root zone. Date of manuring 25.10.1952.

## 3. DESIGN :

(i)  $3 \times 3$  Fact in R.B.D. (ii) (a) 9. (b) N.A. (iii) 6. (iv) (a) and (b)  $60' \times 18'$ . (v) Nil. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Nil. (iii) Grain and straw yield. (iv) (a) 1951-1953. (b) No. (c) No. (v) (a) Pura, Kalai, Atarra, Tissuhi, Matkota, Bharari and Farrukhabad. (b) N.A. (vi) Nil. (vii) Conducted by A.C.

## 5. RESULTS :

(i) 2193 lb./ac.

(ii) 236.4 lb./ac.

(iii) Only N effect is highly significant.

(iv) Av. yield of grain in lb./ac.

	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>	Mean
N <sub>0</sub>	1827	2046	1960	1944
N <sub>1</sub>	2206	2280	2294	2260
N <sub>2</sub>	2240	2453	2486	2393
Mean	2091	2260	2246	2199

S.E. of any marginal mean  
S.E. of body of the table

=55.72 lb./ac.  
=96.51 lb./ac.

Crop :- Wheat (*Rabi*).

Ref :- U.P. 53(346).

Site :- Govt. Cotton Res. Farm, Raya.

Type :- 'M'.

Object :- To study the effect of N and P applied alone and in combination on the yield of Wheat.

**1. BASAL CONDITIONS :**

(i) (a) N.A. (b) *Jowar* fodder. (c) Nil. (ii) (a) Loam. (b) Refer soil analysis, Raya. (iii) 13.11.1953.  
(iv) (a) 6 ploughings followed by *pata. Palewa* one on 25.10.1953 ; one more ploughing by way drilling of fertilizers. (b) Drilling. (c) to (e) N.A. (v) Nil. (vi) N.A. (vii) Irrigated. (viii) 2 hoeings and weedings. (ix) 1.13. (x) 12.4.1954.

**2. TREATMENTS :**

All combinations of (1) and (2)

(1) 3 levels of N as A/S : N<sub>0</sub>=0, N<sub>1</sub>=30 and N<sub>2</sub>=60 lb./ac.(2) 3 levels of P<sub>2</sub>O<sub>5</sub> as Super : P<sub>0</sub>=0, P<sub>1</sub>=60 and P<sub>2</sub>=120 lb./ac.A/S broadcasted P<sub>2</sub>O<sub>5</sub> placed in 4" deep bands to 9" apart P<sub>2</sub>O<sub>5</sub> is about 1" to 2" below the seed. Manures applied on 10.11.1953.**3. DESIGN :**

(i) 3×3 Fact. in R.B.D. (ii) (a) 9. (b) N.A. (iii) 6. (iv) (a) N.A. (b) 60.5'×18'. (v) N.A. (vi) Yes.

**4. GENERAL :**

(i) Germination excellent. Crop condition good. Rains with strong winds during February 1954 caused lodging in plots with bumper growth. (ii) Affected with rust. (iii) Grain of and *bhusa* yield. (iv) (a) 1951—N.A. (b) N.A. (c) Nil. (v) (a) Phoolbagh, Matkota, Tissuhi, and Gazipur. (b) N.A. (vi) Nil. (vii) Experiment conducted by A.C.

**5. RESULTS :**

(i) 2328 lb./ac.

(ii) 188.4 lb./ac.

(iii) N effect and interaction N×P are highly significant while P effect is not significant.

(iv) Av. yield of grain in lb./ac.

	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>	Mean
N <sub>0</sub>	1900	2150	2327	2126
N <sub>1</sub>	2537	2470	2413	2473
N <sub>2</sub>	2350	2613	2193	2385
Mean	2262	2411	2311	2328

S.E. of any marginal mean  
S.E. of body of the table

=44.41 lb./ac.  
=76.93 lb./ac.

Crop :-Wheat (*Rabi*).  
Site :-Govt. Agril. Farm, Tissuhi.

Ref :-U.P. 51(113).  
Type :-'M'.

Object :-To study the effect of N and P applied alone and in combination on the yield of Wheat.

#### 1. BASAL CONDITIONS:

(i) (a) No. (b) Early paddy. (c) N.A. (ii) (a) Hard clay (Belan clay loam). (b) N.A. (iii) 27 and 28.11.1951. (iv) (a) 5 ploughings. (b) to (e) N.A. (v) Nil. (vi) N.A. (vii) Irrigated. (viii) N.A. (ix) N.A. (x) 4 and 5.4.1952.

#### 2. TREATMENTS :

All combinations of (1) and (2)

(1) 3 levels of N :  $N_0=0$ ,  $N_1=30$  and  $N_2=60$  lb./ac.

(2) 3 levels of  $P_2O_5$  :  $P_0=0$ ,  $P_1=60$  and  $P_2=120$  lb./ac.

N as A/S broadcast and  $P_2O_5$  as Super, deep placed through a fertilizer drill on 21.11.1951.

#### 3. DESIGN :

(i)  $3 \times 3$  Fact. in R.B.D. (ii) (a) 9. (b) N.A. (iii) 6. (iv) (a) N.A. (b)  $26' \times 42'$ . (v) 1' to 3' from plot to plot and 3 from block to block was left out. (vi) Yes.

#### 4. GENERAL :

(i) Below normal due to late sowing and inadequacy of moisture. (ii) Nil. (iii) Grain yield. (iv) (a) 1951 to 1953. (b) and (c) No. (v) (a) Kalyanpur, Kalai, Raya, Pratapgarh, Atarra, and Matkota. (b) N.A. (vi) Nil. (vii) Conducted by A.C.

#### 5. RESULTS :

(i) 571.8 lb./ac.

(ii) 95 20 lb./ac.

(iii) N and P effects alone are highly significant.

(iii) Av. yield of grain in lb./ac.

	$P_0$	$P_1$	$P_2$	Mean
$N_0$	439.0	518.6	564.5	507.4
$N_1$	452.5	604.8	697.8	585.0
$N_2$	459.2	645.1	765.0	623.1
Mean	450.2	589.5	675.8	571.8

S.E. of any marginal mean =22.44 lb./ac.

S.E. of body of table =38.87 lb./ac.

Crop :-Wheat (*Rabi*).  
Site :-Govt. Agril. Farm, Tissuhi.

Ref :-U.P. 52(10).  
Type :-'M'.

Object :-To study the effect of N and P applied alone and in combination on Wheat.

#### 1. BASAL CONDITIONS :

(i) (a) N.A. (b) Fallow. (c) Nil. (ii) (a) *Karail* (Mirzapur—type 2 C) clayey. (b) N.A. (iii) 9.11.1952. (iv) (a) 7 ploughings with *dest* plough and light pre-sowing irrigation. (b) Sown in lines behind the plough. (c) to (e) N.A. (v) Nil. (vi) N.A. (vii) Irrigated. (viii) N.A. (ix) N.A. (x) 1 and 2.4.1953.

#### 2. TREATMENTS :

All combinations of (1) and (2)

(1) 3 levels of N :  $N_0=0$ ,  $N_1=30$  and  $N_2=60$  lb./ac.

(2) 3 levels of  $P_2O_5$  :  $P_0=0$ ,  $P_1=60$  and  $P_2=120$  lb./ac.

N as A/S top dressed by broadcast and  $P_2O_5$  as Super drilled in furrows 4" deep near the root zone.

#### 3. DESIGN :

(i)  $3 \times 3$  Fact. in R.B.D. (ii) (a) 9. (b) N.A. (iii) 6. (iv) (a) and (b)  $42' \times 26'$ . (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Nil. (iii) Grain and straw yield. (iv) (a) 1951 to 1953. (b) No. (c) N.A. (v) (a) Bharari, Pura, Kalai, Raya, Banaras, Matkota, Atarra and Farrukhabad. (b) N.A. (vi) Nil. (vii) Conducted by A.C.

## 5. RESULTS :

- (i) 832.5 lb./ac.  
 (ii) 161.95 lb./ac.  
 (iii) All the effects are highly significant.  
 (iv) Av. yield of grain in lb./ac.

	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>	Mean
N <sub>0</sub>	492.8	560.0	566.7	539.8
N <sub>1</sub>	726.9	993.4	912.8	877.7
N <sub>2</sub>	679.8	1260.0	1300.3	1080.8
Mean	633.2	937.8	926.6	832.5

S.E. of any marginal mean = 38.17 lb./ac.  
 S.E. of body of table = 66.12 lb./ac.

Crop :-Wheat.

Ref :-U.P. 53(354).

Site :-Govt. Agri. Farm, Tissuhi.

Type :-'M'.

Object :-To study the effects of N and P applied alone and in combination on the yield of Wheat.

## 1. BASAL CONDITIONS :

(i) (a) Fallow-Wheat-Paddy-early Wheat-Fallow-Wheat. (b) Fallow. (c) Nil. (ii) (a) Hard clayey (*Kharif*) soil. (b) N.A. (iii) 2<sup>5</sup>, 26.11.1:53. (iv) 3 *palewa*, 4 ploughings. (b) Line sowing behind *desi* plough. (c) to (e) N.A. (v) Nil. (vi) N.A. (vii) Irrigated. (viii) Nil. (ix) 1.61°. (x) 11.4.1954.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 3 levels of N as A/S : N<sub>0</sub>=0, N<sub>1</sub>=30 and N<sub>2</sub>=60 lb./ac.

(2) 3 levels of P<sub>2</sub>O<sub>5</sub> as Super : P<sub>0</sub>=0, P<sub>1</sub>=60 and P<sub>2</sub>=120 lb./ac.

A/S broadcast, P<sub>2</sub>O<sub>5</sub> placed in 4" deep bands at 9" apart is about 1" to 2" below the seed. Manures applied on 23, 24.11.1953.

## 3. DESIGN :

(i) 9×3 Fact. in R.B.D. (ii) (a) 9. (b) N.A. (iii) 6. (iv) (a) N.A. (b) 26'×42'. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) Uniform germination. (ii) N.A. (iii) Grain and straw yield. (iv) (a) 1949 to 1953. (b) N.A. (c) Nil. (v) (a) Phoolbagh, Matkota, Gazipur, Atarra and Raya. (vi) Nil. (vii) Experiment conducted by A.C.

## 5. RESULTS :

- (i) 386.5 lb./ac.  
 (ii) 63.91 lb./ac.  
 (iii) All effects are highly significant.  
 (iv) Av. yield of grain in lb./ac.

	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>	Mean
N <sub>0</sub>	187.8	322.4	455.4	321.9
N <sub>1</sub>	227.3	442.1	563.4	410.9
N <sub>2</sub>	197.9	530.2	551.8	426.6
Mean	204.3	431.6	523.5	386.5

S.E. of any marginal mean = 15.06 lb./ac.  
 S.E. of body of table = 26.09 lb./ac.

Crop :-Wheat (*Rabi*).  
Site :-Regional Res. Stn., Varanasi.

Ref :-U.P. 49(25).  
Type :-'M'.

Object :-To study the effect of N and P applied alone and in combination on Wheat.

1. BASAL CONDITIONS :

(i) N.A. (b) Maize. (c) N.A. (ii) (a) *Domat* (Banaras—Type 2). (b) Refer soil analysis, Varanasi. (iii) 2.11.1949. (iv) (a) to (e) N.A. (v) Nil. (vi) to (ix) N.A. (x) 10 to 17.4.1950.

2. TREATMENTS :

All combinations of (1) and (2)

(1) 4 levels of N :  $N_0=0$ ,  $N_1=30$  and  $N_2=60$  lb./ac.

(2) 3 levels of  $P_2O_5$  :  $P_0=0$ ,  $P_1=60$  and  $P_2=120$  lb./ac.

$P_2O_5$  as Super applied 3"–4" deep through furrows and N as A/S top dressed on 2.11.1949.

3. DESIGN :

(i) 3×3 Fact. in R.B.D. (ii) (a) 9. (b) N.A. (iii) 9. (iv) (a) N.A. (b) 41'×23½'. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Severe lodging due to winter rains. Nil. (iii) Grain and straw yield. (iv) (a) 1949 to 1952. (b) N.A. (c) N.A. (c) (a) Atarra, Kaupur, Pratapgarh, Bharari, Nawabganj and Kalai. (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 1102 lb./ac.

(ii) 193.3 lb./ac.

(iii) N effect is highly significant, P effect is significant while interaction is not significant.

(iv) Av. yield of grain in lb./ac.

	$P_0$	$P_1$	$P_2$	Mean
$N_0$	827	1025	812	888
$N_1$	1017	1191	1176	1128
$N_2$	1290	1419	1161	1290
Mean	1045	1212	1050	1102

S.E. of any marginal mean =45.57 lb./ac.

S.E. of body of table =78.93 lb./ac.

Crop :- Wheat (*Rabi*).  
Site :- Regional Res. Stn., Varanasi.

Ref :- U.P. 50(62).  
Type :- 'M'.

Object :-To study the effect of N and P applied alone and in combination on the yield of Wheat.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) *Moong T<sub>1</sub>*. (c) N.A. (ii) (a) *Domat* (Banaras type 2). (b) Refer soil analysis, Varanasi. (iii) 26.10.1950. (iv) (a) to (c) N.A. (v) Nil. (vi) N.A. (vii) Irrigated. (viii) N.A. (ix) N.A. (x) 6 to 10.4.1951.

2. TREATMENTS :

All combinations of (1) and (2)

(1) 3 levels of N :  $N_0=0$ ,  $N_1=30$  and  $N_2=60$  lb./ac.

(2) 3 levels of  $P_2O_5$  :  $P_0=0$ ,  $P_1=60$  and  $P_2=120$  lb./ac.

N as A/S was broadcast and  $P_2O_5$  as Super through pre-drilling in bands near the root zone.

3. DESIGN :

(i) 3×3 Fact. in R.B.D. (ii) (a) 9. (b) N.A. (iii) 6. (iv) (a) N.A. (b) 27.5'×36'. (v) 1' from plot to plot and 3' from block to block was left out.

## 4. GENERAL :

(i) Good. (ii) No. (iii) Grain yield. (iv) (a) 1949 to 1952. (b) and (c) No. (v) (a) Kalyanpur, Atarra, Kalai, Aligarh, Pratapgarh, Nawabgunj and Bharari. (vi) Nil. (vii) Conducted by A.C. Plots damaged by rats.

## 5. RESULTS :

- (i) 1649 lb./ac.  
 (ii) 233.66 lb./ac.  
 (iii) N effect is highly significant, P effect is significant. Interaction is not significant.  
 (iv) Av. yield of grain in lb./ac.

	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>	Mean
N <sub>0</sub>	1137	1357	1254	1249
N <sub>1</sub>	1591	1907	1841	1780
N <sub>2</sub>	1870	1870	2017	1919
Mean	1533	1711	1704	1649

S.E. of any marginal mean  
 S.E. of body of table

=55.08 lb./ac.  
 =95.39 lb./ac.

Crop :- Wheat (*Rabi*).

Ref :- U.P. 52(9).

Site :- Regional Res. Stn., Varanasi.

Type :- 'M'.

Object :- To study the effect of N and P applied alone and in combination on Wheat.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) Fallow. (c) Nil. (ii) (a) Loam (Banaras—type 2). (b) Refer soil analysis, Varanasi. (iii) 29.10.1952. (iv) (a) Slight *palewa*, 9 ploughings with *desi* plough and one harrowing. (b) Sown by Seed drill. (c) to (e) N.A. (v) Nil (vi) N.A. (vii) Irrigated. (viii) N.A. (ix) N.A. (x) 26/27.3.1953.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 3 levels of N : N<sub>0</sub>=0, N<sub>1</sub>=30 and N<sub>2</sub>=60 lb./ac.

(2) 3 levels of P<sub>2</sub>O<sub>5</sub> : P<sub>0</sub>=0, P<sub>1</sub>=60 and P<sub>2</sub>=120 lb./ac.

N as A/S applied on surface dressing by broadcast and P<sub>2</sub>O<sub>5</sub> as Super drilled in furrows 4" deep near the root zone

## 3. DESIGN :

(i) 3×3 Fact. in R.B.D. (ii) (a) 9. (b) N.A. (iii) 6. (iv) (a) and (b) 42'×25'. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) Very good, no lodging. (ii) Severely attacked by rats. (iii) Grain and straw yield. (iv) (a) 1949 to 1952. (b) and (c) No. (v) (a) Pura, Bharari, Raya, Atarra, Tissuhi, Matkota, Kalai and Farrukhabad. (vi) Nil. (vii) Conducted by A.C.

## 5. RESULTS :

- (i) 894 lb./ac.  
 (ii) 171.15 lb./ac.  
 (iii) N effect is highly significant, interaction is significant, while P effect is not significant.  
 (iv) Av. yield of grain in lb./ac.

	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>	Mean
N <sub>0</sub>	477	622	553	551
N <sub>1</sub>	933	899	1141	991
N <sub>2</sub>	1169	1217	1030	1139
Mean	860	913	908	894

S.E. of any marginal mean  
 S.E. of body of table

=40.34 lb./ac.  
 =69.87 lb./ac.



Crop :- Wheat (*Rabi*).

Ref :- U.P. 53(335).

Site :- Reg. Res. Stn., Varanasi.

Type :- 'M'.

Object :—To study the effect of Super and B.M. applied at deep placement with and without N on the yield of Wheat.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Jowar* fodder. (c) Nil. (ii) (a) Loam. (b) Refer soil analysis, Varanasi. (iii) 19.11.1953. (iv) (a) 1 *palewa*, 3 ploughings and 1 *pata*. (b) Seed drilled. (c) to (e) N.A. (v) Nil. (vi) N.A. (vii) Irrigated. (viii) N.A. (ix) 1.75". (x) 3.4.1954.

## 2. TREATMENTS :

Main-plot treatments :

2 levels of N as A/S :  $N_0=0$  and  $N_1=30$  lb./ac.

Sub-plot treatments :

5 application of  $P_2O_5$  :  $P_0=0$ ,  $P_1=60$  lb./ac. of  $P_2O_5$  as Super,  $P_2=60$  lb./ac. of  $P_2O_5$  as B.M.,  $P_3=120$  lb./ac. of  $P_2O_5$  as Super and  $P_4=120$  lb./ac. of  $P_2O_5$  as B.M.

A/S broadcast on 20.11.1953 Super placed in 4" deep bands 9" apart on 14.11.1953 about 1" to 2" below the seed.

## 3. DESIGN :

(i) Split-plot. (ii) (a) 2 main-plots/replication and 5 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 23' x 47.25'. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) Germination uniform. (ii) N.A. (iii) Grain and straw yield. (iv) (a) 1952-53—N.A. (b) N.A. (c) Nil. (v) (a) Matkota and Kalai. (b) N.A. (vi) Nil. (vii) The experiment was conducted by A.C. Data for 1952 N.A.

## 5. RESULTS :

(i) 672.9 lb./ac.  
 (ii) (a) 89.23 lb./ac.  
 (b) 81.40 lb./ac.  
 (iii) Only N effect is highly significant.  
 (iv) Av. yield of grain in lb./ac.

	$P_0$	$P_1$	$P_2$	$P_3$	$P_4$	Mean
$N_0$	491.0	393.8	462.2	458.4	483.5	457.8
$N_1$	901.9	857.9	914.3	898.1	868.0	888.0
Mean	696.4	625.8	688.2	678.2	675.8	672.9

S.E. of difference of two

1. marginal means of N = 28.22 lb./ac.
2. marginal means of P = 40.70 lb./ac.
3. P means at the same level of N = 57.56 lb./ac.
4. N means at the same level of P = 58.71 lb./ac.

Crop :- Wheat (*Rabi*).

Ref :- U.P. 53(333).

Site :- Reg. Res. Stn., Varanasi.

Type :- 'M'.

Object :—To study the effect of N,  $P_2O_5$  and  $K_2O$  applied alone and in combination on Wheat.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) (a) Loam. (b) Refer soil analysis, Varanasi. (iii) 18.11.1953. (iv) (a) 3 ploughings during *kharif*, 2 *palewa*, 1 ploughing and 1 *pata*. (b) In lines with seed drill. (c) to (e) N.A. (v) Nil. (vi) N.A. (vii) Irrigated. (viii) N.A. (ix) 1.75". (x) 29.3.1954.

**2. TREATMENTS :**

All combinations of (1), (2) and (3)

- (1) 2 levels of N as A/S :  $N_0=0$  and  $N_1=30$  lb./ac.  
 (2) 2 levels of  $P_2O_5$  as Super :  $P_0=0$  and  $P_1=60$  lb./ac.  
 (3) 3 levels of  $K_2O$  as Pot. Sul. :  $K_0=0$ ,  $K_1=60$  and  $K_2=120$  lb./ac.

A/S broadcast on 5, 6.11.1953. Super placed in 4" deep bands 9" apart about 1" to 2" below the seed. Potash applied as deep as Super.

**3. DESIGN :**

- (i)  $3 \times 2 \times 2$  partially confd. (ii) (a) 2 blocks/replication ; 6 plots/block. (b) N.A. (iii) 4. (iv) (a) N.A. (b)  $26' \times 36'$ . (v) N.A. (vi) Yes.

**4. GENERAL :**

- (i) N.A. (ii) Affected by rats. (iii) Grain and *bhusa* yield. (iv) (a) 1953-54—N.A. (b) N.A. (c) Nil. (v) (a) Matkota, Bharari, Kalai, and Pura. (b) N.A. (vi) Nil. (vii) Experiment was conducted by A.C.

**5. RESULTS :**

- (i) 1285 lb./ac.  
 (ii) 178.1 lb./ac.  
 (iii) Only N effect is highly significant.  
 (iv) Av. yield of grain in lb./ac.

	$K_0$	$K_1$	$K_2$	Mean	$P_0$	$P_1$
$N_0$	1093	1095	1088	1092	1104	1080
$N_1$	1454	1484	1493	1477	1438	1516
Mean	1274	1290	1290	1285		
$P_0$	1280	1271	1262	1271		
$P_1$	1267	1308	1319	1298		

S.E. of marginal means of N or P	=36.36 lb./ac.
S.E. of marginal means of K	=44.53 lb./ac.
S.E. of body of $N \times K$ or $P \times K$ tables	=62.98 lb./ac.
S.E. of body of $N \times P$ table	=51.42 lb./ac.

Crop :-Wheat (*Rabi*).

Ref :-U.P. 48(129).

Site :-College of Agri. B.H.U., Varanasi.

Type :-'M'.

Object :-To study the relative effect of organic and inorganic manures on the growth and morphological characters of Wheat.

**1. BASAL CONDITIONS :**

- (i) (a) to (c) N.A. (ii) (a) Medium loam. (b) Refer soil analysis B.H.U., Varanasi. (iii) N.A. (iv) (a) and (b) N.A. (c) 40 seers/ac. (d) and (e) N.A. (v) Nil. (vi) Pusa 52 (N.A.). (vii) to (x) N.A.

**2. TREATMENTS :**

- No manure.
- F.Y.M. at 12000 lb./ac.
- Compost at 7500 lb /ac.
- Castor cake at 1052 lb /ac.
- A/S at 292 lb./ac.
- Pot. Nitrate at 424 lb./ac.
- C/N at 393 lb./ac.

All manures were applied on equal N basis before sowing.

**3. DESIGN :**

- (i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 4. (iv) (a)  $58' \times 26'$ . (b)  $54' \times 22'$ . (v) 2' around. (vi) Yes.

## 4. GENERAL :

- (i) Good and vigorous growth. (ii) N.A. (iii) Grain and straw yield. (iv) (a) and (b) No. (c) Nil. (v) (a) and (b) Nil. (vi) Nil. (vii) The expt. was conducted by B.H.U.

## 5. RESULTS :

- (i) 1063 lb./ac.  
 (ii) 146.68 lb/ac.  
 (iii) Treatments are not significantly different.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	969
2.	1033
3.	979
4.	1215
5.	1133
6.	981
7.	1130
S.E./mean	=73.34 lb./ac.

Crop :-Wheat (*Rabi*).

Ref :-U.P. 53(391).

Site :-College of Agri., B.H.U., Varanasi.

Type :-'M'.

Object :-To study the effect of different trace elements applied alone and in combination on Wheat.

## 1. BASAL CONDITIONS :

- (i) (a) to (c) N.A. (ii) (a) Medium loam. (b) Refer soil analysis, B.H.U., Varanasi. (iii) 9.11.1953.  
 (iv) (a) Field thoroughly ploughed to a fine tilth. (b) Drilled. (c) 50 seers/ac. (d) and (e) N.A. (v) 60 lb./ac. of N as A/S+40 lb./ac. of  $P_2O_5$  as Super+10 lb./ac. of  $K_2O$  as Pot. Sul. (vi) C. 13. (vii) Irrigated.  
 (viii) Hoeing at regular intervals. (ix) N.A. (x) 2.4.1954.

## 2. TREATMENTS :

All combinations of (1), (2) and (3)

- (1) 2 levels of Boron as Borax :  $B_0=0$  and  $B_1=10$  lb./ac.  
 (2) 2 levels of Iron as Fe. Sulphate :  $I_0=0$  and  $I_1=15$  lb./ac.  
 (3) 2 levels of Zinc as Zinc Sulphate :  $Z_0=0$  and  $Z_1=10$  lb./ac.

Treatments applied 15 days after sowing. A light irrigation was given afterwards to help incorporation of the elements into soil.

## 3. DESIGN :

- (i)  $2^3$  Fact. in R.B.D. (ii) (a) 8. (b)  $103' \times 74'$ . (iii) 3. (iv) (a)  $33' \times 23'$ . (b)  $29' \times 19'$ . (v) 2' around. (vi) Yes.

## 4. GENERAL :

- (i) N.A. (ii) N.A. (iii) Grain and *bhusa* yield (iv) (a) No. (b) No. (c) Nil. (v) (a) and (b) No. (vi) Nil. (vii) The expt. was conducted by B.H.U.

## 5. RESULTS :

- (i) 1160 lb./ac.  
 (ii) 347.23 lb./ac.  
 (iii) None of the effects is significant.  
 (iv) Av. yield of grain in lb./ac.

	$Z_0$	$Z_1$	Mean	$I_0$	$I_1$
$B_0$	1292	1198	1245	1167	1324
$B_1$	1050	1088	1069	1067	1070
Mean	1171	1143	1557	1117	1197
$I_0$	1120	1114	1117		
$I_1$	1222	1172	1197		

S.E. of any marginal mean  
 S.E. of body of table

=50.12 lb./ac.  
 =70.88 lb./ac.

Crop :-Wheat (*Rabi*).

Ref :-U.P. 53(392).

Site :-Collage of Agri. B.H.U., Varanasi.

Type :-'M'.

Object:—To study the effect of different trace elements applied alone and in combination on Wheat.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) N.A. (c) N.A. (ii) (a) Medium Loam. (b) Refer soil analysis, B.H.U., Varanasi. (iii) 9.11.1953. (iv) (a) Field ploughed several times to achieve good tilth. (b) Seeds drill. (c) 100 lb./ac. (d) and (e) N.A. (v) 60 lb./ac. of N as A/S+40 lb./ac. of  $P_2O_5$  as Super+10 lb./ac. of  $K_2O$  as Pot. Sul. Uniformly distributed and incorporated into the soil. (vi) C-13. (vii) Irrigated. (viii) Hoeing and other interculture operations at regular intervals. (ix) N.A. (x) 5.4.1954.

## 2. TREATMENTS :

All combinations of (1), (2) and (3)

- (1) 2 levels of Borax :  $B_0=0$  and  $B_1=10$  lb./ac.  
 (2) 2 levels of Zinc oxide :  $Z_0=0$  and  $Z_1=10$  lb./ac.  
 (3) 2 levels of Ammonium Molybdate :  $A_0=0$  and  $A_1=\frac{1}{2}$  lb./ac.

Treatments mixed with sand and applied as top dressing 15 days after germination.

## 3. DESIGN :

(i) 2<sup>3</sup> Fact. in R.B.D. (ii) (a) 8. (b) 103'×74'. (iii) 3. (iv) (a) 33'×23'. (b) 29'×19'. (v) 2' around. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) N.A. (iii) Grain and straw yield. (iv) (a) No. (b) No. (c) Nil. (v) (a) No. (b) No. (vi) Nil.  
 (vii) The experiment was conducted by B.H.U.

## 5. RESULTS :

- (i) 813.5 lb./ac.  
 (ii) 168.1 lb./ac.  
 (iii) None of the effects is significant.  
 (iv) Av. yield of grain in lb./ac.

	$B_0$	$B_1$	Mean	$Z_0$	$Z_1$
$A_0$	733.7	857.4	795.5	713.1	878.0
$A_1$	766.1	897.0	831.5	780.0	883.1
Mean	749.9	877.2	813.5		
$Z_0$	691.0	802.1	746.5		
$Z_1$	808.8	952.3	880.5		

S.E. of any marginal mean =48.52 lb./ac.  
 S.E. of body of table =68.62 lb./ac.

Crop :-Wheat (*Rabi*).

Ref :- U.P. 53(393).

Site :-College of Agri. B.H.U., Varanasi.

Type :-'M'.

Object:—To study the effect of different trace elements applied alone and in combinations on Wheat.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Green manuring. (c) N.A. (ii) (a) Medium loam. (b) Refer soil analysis, B.H.U. Varanasi. (iii) N.A. (iv) (a) Ploughing several times. (b) By drilling. (c) 50 srs./ac. (d) and (e) N.A. (v) Green manuring, 60 lb./ac. of N, 40 lb./ac. of  $P_2O_5$  and 10 lb./ac. of  $K_2O$ . incorporated in the soil. (vi) C-13. (vii) N.A. (viii) N.A. (ix) N.A. (x) 150 days after sowing.

**2. TREATMENTS :**

All combinations of (1), (2) and (3)

- (1) 2 levels of Borax :  $B_0=0$  and  $B_1=10$  lb./ac.  
 (2) 2 levels of Zinc oxide :  $Z_0=0$  and  $Z_1=10$  lb./ac.  
 (3) 2 levels of Manganese :  $M_0=0$  and  $M_1=10$  lb./ac.

Treatments given 15 days after germination followed by irrigation.

**3. DESIGN :**

(i) R.B.D. (ii) (a) 8. (b)  $87' \times 63'$ . (iii) 3. (iv) (a)  $30' \times 21'$ . (b)  $26' \times 17'$ . (v) 2' around. (vi) Yes.

**4. GENERAL :**

(i) N.A. (ii) N.A. (iii) Grain and straw yield. (iv) (a) No. (b) No. (c) Nil. (v) (a), (b) Nil. (vi) Nil. (vii) Nil.

**5. RESULTS :**

- (i) 910 lb./ac.  
 (ii) 210.3 lb./ac.  
 (iii) None of the effects is significant.  
 (iv) Av. yield of grain in lb./ac.

	$B_0$	$B_1$	Mean	$Z_0$	$Z_1$
$M_0$	955	868	912	944	879
$M_1$	807	1008	908	898	917
Mean	881	938	910		
$Z_0$	904	938	921		
$Z_1$	858	938	898		

S.E. of any marginal mean = 60.7 lb./ac.  
 S.E. of body of table = 85.8 lb./ac.

Crop :- Wheat (*Rabi*).

Site :- College of Agri. B.H.U., Varanasi.

Ref :- U.P. 52(397).

Type :- 'M'.

Object :- To study the effect of different trace elements applied alone and in combination on yield of Wheat.

**1. BASAL CONDITIONS :**

(i) (a) to (c) N.A. (ii) (a) Medium loam. (b) Refer soil analysis, B.H.U., Varanasi. (iii) 9.11.1953. (iv) (a) Ploughing several times. (b) N.A. (c) 50 srs./ac. (d) N.A. (e) —. (v) 60 lb./ac. of N as A/S, 40 lb./ac. of  $P_2O_5$  as Super and 10 lb./ac. of  $K_2O$  as Pot. Sul. uniformly spread over the field. (vi) C-13. (vii) N.A. (viii) Hoing was done at regular intervals. (ix) N.A. (x) 5.4.1954.

**2. TREATMENTS :**

All combinations of (1), (2) and (3)

- (1) 2 levels of Borax :  $B_0=0$  and  $B_1=10$  lb./ac.  
 (2) 2 levels of Zinc oxide :  $Z_0=0$  and  $Z_1=10$  lb./ac.  
 (3) 2 levels of Copper Sulphate :  $C_0=0$  and  $C_1=10$  lb./ac.

Treatments applied 15 days after the germination.

**3. DESIGN :**

(i) 2<sup>3</sup> Fact. in R.B.D. (ii) (a) 8. (b)  $90' \times 59'$ . (iii) 3. (iv) (a)  $21' \times 28.51'$ . (b)  $17' \times 24.5'$ . (v) 2' around. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) N.A. (iii) Grain and straw yield. (iv) (a) and (b) No. (c) Nil. (v) (a) and (b) No. (vi) Nil. (vii) Nil.

## 5. RESULTS :

- (i) 908.5 lb./ac.  
(ii) 102.5 lb./ac.  
(iii) None of the effects is significant.  
(iv) Av. yield of grain in lb./ac.

	B <sub>0</sub>	B <sub>1</sub>	Mean	Z <sub>0</sub>	Z <sub>1</sub>
C <sub>0</sub>	913.9	913.1	913.5	978.5	848.5
C <sub>1</sub>	919.9	886.9	903.4	881.7	925.1
Mean	916.9	900.0	908.5		
Z <sub>0</sub>	949.2	911.0	930.1		
Z <sub>1</sub>	884.6	889.0	886.8		

S.E. of any marginal mean

=29.60 lb./ac.

S.E. of body of table

=41.84 lb./ac.

Crop :- Wheat (*Rabi*).

Ref :- U.P. 49(190).

Site :- Koil, Sikandra Roa and Hathras, Aligarh.

Type :- 'M'.

Object :- To draw out a suitable fertilizer schedules for agriculturally important soil type.

## 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) Aligarh type 1 soils and type 2 soils. (iii) N.A. (iv) Improved. (v) (a) After application of manure, the field was levelled by drawing a *pata*. (b) Seeds sown in lines parallel to the fertilizer band. (c) N.A. (d) 1'-2" away from the fertilizer line. (e) N.A. (vi) 23.10.1949 to 3.11.1949. (vii) Irrigated. (viii) N.A. (ix) N.A. (x) 24.3.1950 to 8.4.1950.

## 2. TREATMENTS :

1. Control (no manure)

2. 30 lb./ac. of N.

3. 30 lb./ac. of N as A/S+60 lb./ac. of P<sub>2</sub>O<sub>5</sub> as Super.

A/S added to surface at sowing time. Super placed at a depth of 3"-4" deep in the hole of the furrow and in the side of the seed row made by either an iron plough or two *desi* ploughs, one behind the other in the same furrow.

## 3. DESIGN :

(i) and (ii) villages selected in the district and unreplicated 35 trials laid out. (iii) (a) N.A. (b) 1/40 ac. (iv) N.A.

## 4. GENERAL :

(i) 5 trials attacked and damaged by hail storm, general crop stand normal. (ii) Rust attack in one trial, one trial attacked by white ants. (iii) Yield of grain of wheat and straw of wheat. (iv) (a) 1949-1950. (b) N.A. (c) N.A. (v) N.A. (vi) Nil. (vii) The experiment was conducted by A.C. [Expt. conducted on cultivator's field.]

## 5. RESULTS :

(i) 1618 lb./ac.

(ii) 278.2 lb./ac.

(iii) Treatments are highly significantly different.

(iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	1241
2.	1649
3.	1963
S.E./mean	=47.03 lb./ac.

Crop :-Wheat (*Rabi*).

Ref :-U.P. 50(247).

Site :-Sikandra Rao, Hathras, Koil, Khair, Atrauli and Gis, (Aligarh). Type :-'M'.

Object :-To draw out a suitable fertilizer schedule for this agriculturally important soil type.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) N.A. (iii) N.A. (iv) Improved. (v) (a) to (e) N.A. (vi) October--November. (vii) Irrigated. (viii) N.A. (ix) N.A. (x) April.

2. TREATMENTS:

1. Control (no manure).
2. 30 lb./ac. of N as A/S.
3. 30 lb./ac. of N as A,S+60 lb./ac. of  $P_2O_5$  as Super.

3. DESIGN :

(i) and (ii) Fields selected randomly from 26 villages ; villages randomly selected in the district. (iii) (a) and (b) N.A. (iv) N.A.

4. GENERAL :

(i) Good to fair crop. (ii) N.A. (iii) Grain yield (iv) (a) 1949--1950. (b) and (c) N.A. (v) N.A. (vi) Nil. (vii) The expt. was conducted by A.C. [Expt. on cultivator's field]

5. RESULTS :

- (i) 1806 lb./ac.
- (ii) 252.65 lb./ac.
- (iii) Treatments are highly significantly different.
- (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	1376
2.	1856
3.	2186
S.E./mean	=49.55 lb./ac.

Crop :-Wheat (*Rabi*).

Ref :-U.P. 50(238).

Site :-Nawabganj and Anola, (Bareilly).

Type :-'M'.

Object :-To draw out a suitable fertilizer schedule for this agriculturally important soil type.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) N.A. (iii) N.A. (iv) Improved. (v) (a) to (e) N.A. (vi) November. (vii) Irrigated. (viii) N.A. (ix) N.A. (x) March--April.

2. TREATMENTS :

1. Control (no manure).
2. 30 lb./ac. of N as A/S.
3. 30 lb./ac. of N as A/S+60 lb./ac. of  $P_2O_5$  as Super.

3. DESIGN :

(i) and (ii) Fields selected randomly from 22 villages ; villages randomly selected in the district. (iii) (a) and (b) N.A. (iv) N.A.

4. GENERAL :

(i) Generally good. (ii) N.A. (iii) Grain yield. (iv) (a) No. (b) and (c) N.A. (v) N.A. (vi) Nil. (vii) The expt. was conducted by A.C. [Expt. on cultivator's field.]

5. RESULTS :

- (i) 1415 lb./ac.
- (ii) 147.63 lb./ac.
- (iii) Treatments are highly significantly different.
- (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	1092
2.	1443
3.	1711
S.E./mean	=31.47 lb./ac.

Crop :- Wheat (*Rabi*).

Ref :- U.P. 51(237).

Site :- Bareilly, Bahri and Meerganj (Bareilly).

Type :- 'M'.

Object :- To draw out a suitable fertilizer schedule for this agriculturally important soil type.

## 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) Bareilly soil type 1 (A+B combined), type 2 (A+B combined), type 3 C and type 3 D. (iii) N.A. (iv) Improved. (v) (a) After application of manures the field was levelled by drawing a *pata*. (b) Sown in lines parallel to the fertilizer band. (c) N.A. (d) 1'-2' away from the fertilizer. (e) N.A. (vi) N.A. (vii) N.A. (viii) N.A. (ix) N.A. (x) N.A.

## 2. TREATMENTS :

1. Control (no manure).

2. 30 lb./ac. of N as A/S.

3. 30 lb./ac. of N as A/S+60 lb./ac. of  $P_2O_5$  as Super.

A/S broadcast at the time of sowing and applied, to one of the plots over the N dose. Super is placed at a depth of 3"-4" deep at the sole of the furrow and in the sides of the furrow made by either an iron plough or two *desi* ploughs one behind the other in the same furrow.

## 3. DESIGN :

(i) and (ii) 33 villages selected in the district and unreplicated experiments are laid. (iii) (a) N.A. (b) 1/40 ac. (iv) N.A.

## 4. GENERAL :

(i) On the whole the trials had good growth. About 8 trials suffered due to drought, rats, cattle, weeds or frost. (ii) N.A. (iii) Grain and straw yield. (iv) (a) No. (b) N.A. (c) N.A. (v) N.A. (vi) Nil. (vii) The experiment was conducted by A.C. [Expt. on cultivator's field]

## 5. RESULTS :

(i) 1097 lb./ac.

(ii) 98.16 lb./ac.

(iii) Treatments are highly significantly different.

(iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	912
2.	1103
3.	1276
S.E./mean	=17.09 lb./ac.

Crop :- Wheat (*Rabi*).

Ref :- U.P. 51(227).

Site :- Etah and Jalesar (Etah).

Type :- 'M'.

Object :- To draw out a suitable fertilizer schedule for this agriculturally important soil type.

## 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) *Domat*. (iii) N.A. (iv) Improved. (v) (a) to (e) N.A. (vi) N.A. (vii) Irrigated. (viii) N.A. (ix) N.A. (x) N.A.

## 2. TREATMENTS :

1. Control (no manure).

2. 30 lb./ac. of N.

3. 30 lb./ac. of N+60 lb./ac. of  $P_2O_5$ .

## 3. DESIGN :

(i) and (ii) Villages have been taken as replications. Field selected randomly 30 in randomly selected villages in the district. (iii) (a) N.A. (b) N.A. (iv) N.A.

## 4. GENERAL :

(i) N.A. (ii) N.A. (iii) Grain yield. (iv) (a) No. (b) N.A. (c) N.A. (v) N.A. (vi) Nil. (vii) The experiment was conducted by A.C. [Expt. on cultivator's field].



## 5. RESULTS :

- (i) 1527 lb./ac.  
 (ii) 150.52 lb./ac.  
 (iii) Treatments are highly significantly different.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	1328
2.	1569
3.	1684
S.E./mean	=27.48 lb./ac.

Crop :-Wheat (*Rabi*).

Ref :-U.P. 52(288).

Site :-Kasganj, Jalesar, Etah, Aliganj (Etah).

Type :-'M'.

Object :—To draw out a suitable fertilizer schedule for this agriculturally important soil type.

## 1. BASAL CONDITIONS :

- (i) (a) N.A. (b) N.A. (c) N.A. (ii) Etah type 2, Etah type 3, Etah type 4. (iii) N.A. (iv) Improved.  
 (x) (a) After application of manures  $P_2O_5$ , the field was levelled by drawing a *pata*. (b) Sown in lines parallel to the fertilizer band. (c) N.A. (d) 1" to 2" away from the fertilizer line. (e) N.A. (vi) N.A.  
 (vii) N.A. (viii) N.A. (ix) N.A. (x) N.A.

## 2. TREATMENTS :

- (1) Control (no manure)  
 (2) 30 lb./ac. of N as A/S.  
 (3) 30 lb./ac. of N as A/S. + 60 lb./ac. of  $P_2O_5$  as Super.

A/S added to surface at sowing time ; Super is placed at a depth of about 3"—4" deep at the sole of the furrow and in the side of the seed row made by either an iron plough or two *desi* ploughs—one behind the other in the same furrows.

## 3. DESIGN :

- (i), (ii) 44 villages selected in the district and unreplicated experiments laid out. (iii) (a), (b) 1/40 ac.  
 (iv) N.A.

## 4. GENERAL :

- (i) Good and uniform stand in 33 trials poor growth in 8 trials and average in the rest. (ii) N.A. (iii) Grain and *bhusa* yield. (iv) (a) No. (b), (c) N.A. (v) N.A. (vi) Nil. (vii) The experiment was conducted by A.C. Expt. on cultivator's field].

## 5. RESULTS :

- (i) 1106 lb./ac.  
 (ii) 174.75 lb./ac.  
 (iii) Treatments are highly significantly different.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	937
2.	1096
3.	1286
S.E./mean	=26.34 lb./ac.

Crop :-Wheat (*Rabi*).

Ref :-U.P. 51(229):

Site :-Chibraman, Kanauj. (Farrukhabad).

Type :-'M'.

Object :—To draw out a suitable fertilizer schedule for this agriculturally important soil type.

## 1. BASAL CONDITIONS :

- (i) (a) to (c) N.A. (ii) Sandy Loam, *Bhoor*, *Damat*, *Kapisa*. (iii) N.A. (iv) Improved. (v) (a) to (c) N.A.  
 (vi) N.A. (vii) Irrigated. (viii) N.A. (ix) N.A. (x) N.A.

## 2. TREATMENTS :

- (1) Control (no manure).
- (2) 30 lb./ac. of N.
- (3) 30 lb./ac. of N+60 lb./ac. of  $P_2O_5$ .

## 3. DESIGN :

(i) R.B.D. (ii) Villages have been taken as replications. Field selected randomly in 33 randomly selected villages. (iii) N.A. (iv) N.A.

## 4. GENERAL :

(i) N.A. (ii) N.A. (iii) Grain yield. (iv) (a) No. (b), (c) N.A. (v) (a), (b) N.A. (vi) Nil. (vii) The experiment was conducted by A.C. [Expt. on cultivator's field].

## 5. RESULTS :

- (i) 965 lb./ac.
- (ii) 109.2 lb./ac.
- (iii) Treatments differ highly significantly.
- (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	828
2.	970
3.	1097
S.E./mean	=19.02 lb./ac.

Crop :- Wheat (*Rabi.*)

Ref :- U.P. 52(287).

Site :- Karimganj, Farrukhabad, Chibraman and

Kanunj (Farrukhabad).

Type :- 'M'.

Object :- To draw out suitable fertilizer schedule for this agriculturally important soil types.

## 1. BASAL CONDITIONS :

- (i) (a), (b) and (c) N.A. (ii) Farrukhabad type 1 soil, type 2 soil type 3 soil and type 4 soil. (iii) N.A. (iv) Improved. (v) (a) After application of  $P_2O_5$ , the field was levelled by drawing a *pata*. (b) Sown in lines parallel to the fertilizer band. (c) N.A. (d) 1" to 2" away from the fertilizer line. (e) N.A. (vi) N.A. (vii) N.A. (viii) N.A. (ix) N.A. (x) N.A.

## 2. TREATMENTS :

1. Control (no manure).
2. 30 lb./ac. of N as A/S.
3. 30 lb./ac. of N as A/S+60 lb./ac. of  $P_2O_5$  as Super.

A/S added to surface at sowing time is placed at a depth of about 3"-4" deep at the sole of furrow and in the side of the seed row made by either an iron plough or two *desi* plough—one behind the other in the same furrow.

## 3. DESIGN :

(i), (ii) 46 villages selected in the district and unreplicated experiments laid out. (iii) N.A. ; but roughly about 1/40th ac. (iv) N.A.

## 4. GENERAL :

(i) Poor for 7 expts. good for 20 expts. and average for the rest of the villages. (ii) N.A. (iii) Grain and *bhusa* yield. (iv) (a), (b) and (c) N.A. (v) N.A. (vi) Nil. (vii) The expt. was conducted by A.C. [Expt. on cultivator's fields].

## 5. RESULTS :

- (i) 1530 lb./ac.
- (ii) 93.83 lb./ac.
- (iii) Treatments differ highly significantly.
- (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	1284
2.	1575
3.	1732
S.E./mean	=13.83 lb./ac.

Crop :- Wheat (*Rabi*).  
Site :- Fatehpur (Fatehpur).

Ref :- U.P. 53(420).  
Type :- 'M'.

Object :—To draw out suitable fertilizer schedule for agriculturally important soil types.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) *Juar* for 10 trials, Paddy for 4 trials. (c) N.A. (ii) 12 trials in loam, 1 trial in sandy loam and 1 trial in clay loam. (iii) N.A. (iv) N.A. (v) (a) to (e) N.A. (vi) 30.10.1953 to 13.11.1953. (vii) Irrigated. (viii) N.A. (ix) N.A. (x) 3.4.1954 to 9.4.1954.

2. TREATMENTS:

1. Control.
  2. 25 lb./ac. of N as A/S.
  3. 25 lb./ac. of N as A/S+30 lb./ac. of  $P_2O_5$  as Super.
  4. 25 lb./ac. of N as A/S+60 lb./ac. of  $P_2O_5$  as Super.
- A/S broadcast and super placed deep in furrows behind the plough before sowing.

3. DESIGN :

(i) and (ii) 7 villages were selected in the *tehsil*. In each village two fields were selected. (iii) (a) N.A. (b) Different sizes, Area=1/16th ac. (iv) N.A.

4. GENERAL :

(i) N.A. (ii) N.A. (iii) Grain and straw yield. (iv) (a) 1953—1954. (b) N.A. (v) N.A. (vi) Nil. (vii) Expt. on cultivator's field.

5. RESULTS :

- (i) 1491 lb./ac.  
(ii) 103.81 lb./ac.  
(iii) Treatment differences are highly significant.  
(iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	1223
2.	1371
3.	1589
4.	1782
S.E./mean	=27.74 lb./ac.

Crop :- Wheat (*Rabi*).  
Site :- Khaga (Fatehpur).

Ref :-U.P. 53(421).  
Type :-'M'.

Object :—To draw out suitable fertilizer schedule for this agriculturally important soil type.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) *Jowar* in 3 trials, Paddy in 3 trials. (c) N.A. (ii) Loam. (iii) N.A. (iv) N.A. (v) (a) to (e) N.A. (vi) 9 to 16.11.1953. (vii) Irrigated. (viii) N.A. (ix) N.A. (x) 30.3.1954 to 1.4.1954.

2. TREATMENTS :

1. Control (no manure).
  2. 25 lb./ac. of N as A/S.
  3. 25 lb./ac. of N as A/S+30 lb./ac. of  $P_2O_5$  as Super.
  4. 25 lb./ac. of N as A/S+60 lb./ac. of  $P_2O_5$  as Super.
- A/S broadcast and Super applied deep in furrows behind the plough before sowing.

3. DESIGN :

(i) and (ii) 3 villages were selected in the *tehsil*. In each village 2 fields were selected. (iii) (a) N.A. (b) Different plot sizes, Area = 1/16th ac. (iv) N.A.

4. GENERAL :

(i) N.A. (ii) N.A. (iii) Grain and straw yield. (iv) (a) 1953—54. (b) and (c) N.A. (v) N.A. (vi) Nil. (vii) Interaction village  $\times$  treatment has been taken as Error, because it comes out to be significant when tested with Interaction Treatment  $\times$  Fields within villages. [Expt. on cultivator's field].

## 5. RESULTS :

- (i) 1433 lb./ac.  
(ii) 71.19 lb./ac.  
(iii) Treatment differences are highly significant.  
(iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	993
2.	1255
3.	1625
4.	1859
S.E./mean	=29.06 lb /ac.

Crop :-Wheat (*Rabi*).

Ref :-U.P. 53(422).

Site :-Khajuha (Fatehpur).

Type :-'M'.

Object :—To draw out suitable fertilizer schedules for agriculturally important soil types.

## 1. BASAL CONDITIONS :

- (i) (a) N.A. (b) Fallow for 16 trials, paddy for 3 trials, maize for 1 trial. (c) N.A. (ii) 14 trials in loam, 5 trials in sandy loam and 1 trial in clayey loam. (iii) N.A. (iv) N.A. (v) (a) to (c) N.A. (vi) 27.10.1953 to 11.11.1953. (vii) Irrigated. (viii) N.A. (ix) N.A. (x) 1 to 18.4.1954.

## 2. TREATMENTS :

- Control (no manure).
  - 25 lb./ac. of N as A/S.
  - 25 lb./ac of N as A/S+30 lb /ac. of  $P_2O_5$  as Super.
  - 25 lb./ac. of N as A/S+60 lb./ac. of  $P_2O_5$  as Super.
- A/S broadcast and Super applied deep in furrows behind the plough before sowing.

## 3. DESIGN :

- (i) and (ii) 10 villages were selected in the *tahsil*. In each *tahsil* two fields were selected. (iii) (a) N.A. (b) Different plot size, area=1/16 ac. (iv) N.A.

## 4. GENERAL :

- (i) Good. (ii) Nil. (iii) Grain and straw yield. (iv) (a) 1953—N A. (b) and (c) N.A. (v) N.A. (vi) Nil. (vii) Interaction village×treatment has been taken as Error, because it comes out to be significant when tested with treatment×fields within villages. Experiment conducted by A.C. in cultivators fields.

## 5. RESULTS :

- (i) 1423 lb./ac.  
(ii) 140 02 lb./ac.  
(iii) Treatment differences are highly significant.  
(iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	940
2.	1313
3.	1592
4.	1849
S.E./mean	=31.31 lb./ac.

Crop :-Wheat (*Rabi*).

Ref :-U.P. 53(413).

Site :-Ghaziipur.

Type :-'M'.

Object :—To draw out suitable fertilizer schedules for agriculturally important soil types.

## 1. BASAL CONDITIONS :

- (i) (a) N.A. (b) Fallow for 15 trials, maize for 1 trial and late paddy for 2 trials. (c) N.A. (ii) 6 trials sandy loam, 4 trials in clayey loam to clayey 2 trials in loam and 6 trials in clayey loam. (iii) N.A. (iv) N.A. (v) (a) 7 to 8 ploughings by *desi* plough. (b) Behind the plough. (c) 30 to 40 srs /ac. (d) 4" to 6" between rows. (e) N.A. (vi) 22.10.1953 to 20,11.1953. (vii) 16 trials Irrigated and 2 trials unirrigated. (viii) N.A. (ix) N.A. (x) 9.3.1954 to 4.4.1954.

## 2. TREATMENTS :

1. Control (no manures).
  2. 25 lb./ac. of N as A/S.
  3. 25 lb./ac. of N as A/S+30 lb./ac. of  $P_2O_5$  as Super.
  4. 25 lb./ac. of N as A/S+60 lb./ac. of  $P_2O_5$  as Super.
- N as A/S, broadcast and  $P_2O_5$  as super placed deep in furrows behind the plough, before sowing.

## 3. DESIGN :

(i), (ii) 10 villages were selected in the *tahsil*. In 8 villages 2 fields were selected and in 2 villages one field was selected. (iii) (a) N.A. (b) Different plot sizes, area 1/16 acre. (iv) N.A.

## 4. GENERAL :

(i) Good in 13 trials, fair in 3 trials and very poor in 2 trials. (ii) Damage by rats in 7 trials. (iii) Grain and straw yield. (iv) (a) No. (b), (c) N.A. (v) N.A. (vi) Nil. (vii) Interaction village  $\times$  treatment has been taken as error, because it comes out to be highly significant when tested by the interaction treatment  $\times$  fields within villages. Experiments conducted by A.C. in cultivator's fields.

## 5. RESULTS :

- (i) 1072 lb./ac.
- (ii) 103.7 lb./ac.
- (iii) Treatment differences are highly significant.
- (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	851
2.	1036
3.	1148
4.	1252
S.E./mean	=24.44 lb./ac.

Crop :-Wheat (*Rabi*).

Ref :-U.P. 53(414).

Site :-Saidpur and Ghazipur.

Type :-'M'.

Object :—To draw out suitable fertilizer schedules for agriculturally important soil types.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) Fallow for 6 trials, *Jowar* fodder for 1 trial and early paddy for one trial. (c) N.A. (ii) Sandy loam to loam in 2 trials, clayey loam to clayey in 2 trials. (iii) N.A. (iv) N.A. (v) (a) 7 to 8 ploughings by *desi* plough, (b) Sown behind the plough. (c) 35 to 40 srs./ac. (d) 4" to 6" between rows. (vi) 20.10.1953 to 3.11.1953. (vii) Irrigated. (viii) N.A. (ix) N.A. (x) 6.3.1954 to 22.3.1954.

## 2. TREATMENTS :

1. Control (no manures).
  2. 25 lb./ac. of N as A/S.
  3. 25 lb./ac. of N as A/S+30 lb./ac. lb./ac.  $P_2O_5$  as super.
  4. 25 lb./ac. of N as A/S+60 lb./ac. of  $P_2O_5$  as super.
- A/S broadcasted, Super placed deep in furrows behind the plough before sowing.

## 3. DESIGN :

(i), (ii) 6 villages were selected in the *tahsil*. In 2 villages two fields were selected and in the other 4 villages one field was selected. (iii) (a) N.A. (b) Different plot sizes. Area=1/40 ac. (iv) N.A.

## 4. GENERAL :

(i) Good in 3 trials, fair in 4 trials and very poor in one trial. (ii) Damage by rats in two trials. (iii) Grain and straw yield. (iv) (a) No. (b), (c) N.A. (v) N.A. (vi) In one trial there were alkaline patches. (vii) Interaction village  $\times$  treatment has been taken as Error, because it comes out to be highly significant when tested by the interaction treatment  $\times$  fields within villages. Experiments conducted by A.C. in cultivator's field.

## 5. RESULTS :

- (i) 1216 lb./ac.
- (ii) 272.6 lb./ac.
- (iii) Treatment differences are highly significant.

(iv) Av. yield of grain in lb./ac.	Treatment	Av. yield
	1.	806
	2.	1120
	3.	1442
	4.	1495
	S.E./mean	=96.39 lb./ac.

Crop :- Wheat (*Rabi*).

Ref :- U.P. 53(415).

Site :- Mohamadabad (Ghazipur).

Type :- 'M'.

Object :- To draw out suitable fertilizer schedules for agriculturally important soil types.

### 1. BASAL CONDITIONS :

(i) (a) N.A. (b) Fallow. (c) Nil. (ii) In clayey loam 3 trials, in loam 2 trials and in sandy loam 1 trial. (iii) N.A. (iv) N.A. (v) (a) 7 to 8 ploughings by *desi* plough. (b) Sown behind the plough. (c) 30 to 40 seers/ac. (d) 4" to 6" between rows. (vi) 28.10.1953 to 7.11.1953. (vii) 4 trials irrigated, 2 trials un-irrigated. (viii) N.A. (ix) N.A. (x) 3 to 24.3.1954.

### 2. TREATMENTS :

- Control (no manure).
  - 25 lb./ac. of N as A/S.
  - 25 lb./ac. of N as A/S+30 lb./ac. of  $P_2O_5$  as Super.
  - 25 lb./ac. of N as A/S+60 lb./ac. of  $P_2O_5$  as Super.
- A/S broadcasted, Super placed deep in furrows behind the plough before sowing.

### 3. DESIGN :

(i), (ii) 3 villages were selected in the *tahsil*. In each village 2 fields were selected. (iii) (a) N.A. (b) Different plot sizes. Area = 1/40 ac. (iv) N.A.

### 4. GENERAL :

(i) Good. (ii) 1 trial damaged by rats. (iii) Yield of grain and straw. (iv) (a) 1953—continued. (b) and (c) N.A. (v) N.A. (vi) Nil. (vii) As interaction village  $\times$  treatment is not significant it has been pooled with interaction treatment  $\times$  fields within villages to give the error. Experiment conducted by A.C. in cultivator's fields.

### 5. RESULTS :

- 1399 lb./ac.
- 106.8 lb./ac.
- Treatment differences are highly significant.
- Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	1133
2.	1420
3.	1503
4.	1540
S.E./mean	= 43.61 lb./ac.

Crop :- Wheat (*Rabi*).

Ref :- U.P. 52(274).

Site :- Orai and Kunch (Jalaun).

Type :- 'M'.

Object :- To draw out suitable fertilizer schedules for agriculturally important soil types.

### 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) Bundelkhand type 2 soils and type 3 soils. (iii) N.A. (iv) Improved. (v) (a) After application of manures, the field is levelled by drawing a *pata*. (b) sown in lines parallel to the fertilizer band. (c) N.A. (d) Seeds sown 1" to 2" away from the fertilizer line. (e) N.A. (vi) N.A. (vii) N.A. (viii) N.A. (ix) N.A. (x) N.A.

## 2. TREATMENTS :

1. Control.
2. 30 lb./ac. of N as A/S.
3. 30 lb./ac. of N as A/S+60 lb./ac. of  $P_2O_5$  as Super.

A/S broadcasted at the time of sowing and super applied to one of the plots over N dose. Super placed at a depth of 3" -4" deep in the furrow and on the side of the sole made by either an iron plough or two *desi* ploughs one behind the other in the same furrow.

## 3. DESIGN :

(i) and (ii) Villages selected in the district and unreplicated experiments were laid out. 30 such trails were laid. (iii) (a) and (b) N.A. (iv) N.A.

## 4. GENERAL :

(i) N.A. (ii) N.A. (iii) grain and *bhusa* yield. (iv) (a) No. (b) and (c) N.A. (v) N.A. (vi) Nil. (vii) The experiment was conducted by A.C. in cultivator's fields

## 5. RESULTS :

- (i) 1265 lb./ac.
- (ii) 220.2 lb./ac.
- (iii) Treatments differ highly significantly.
- (iv) Av. yield of grain in lb /ac.

Treatment	Av. yield
1.	815
5.	1427
3.	1553
S.E./mean	=40.20 lb./ac.

Crop :-Wheat (*Rabi*).

Site :-Jalaun (Jalaun).

Ref :-U.P. 53(411).

Type :-'M'.

Object :- To draw out suitable fertilizer schedules for agriculturally important soil type.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) Fallow. (c) Nil. (ii) *Parwa* soil in 10 trials, *Mar* soil in 8 trials and *Kabar* soil in 2 trials. (iii) N.A. (iv) N.A. (v) (a) to (e) N.A. (vi) 15.10.1953 to 14.11.1953. (vii) Irrigated. (viii) N.A. (ix) N.A. (x) 16.3.1954 to 10.4.1954.

## 2. TREATMENTS :

1. Control (no manure).
  2. 25 lb./ac. of N as A/S.
  3. 25 lb./ac. of N as A/S+30 lb./ac. of  $P_2O_5$  as Super.
  4. 25 lb./ac. of N as A/S+60 lb./ac. of  $P_2O_5$  as Super.
- A/S broadcast and Super applied deep in furrows on the day of sowing.

## 3. DESIGN :

(i) 9 villages were selected in the *tahsil*. In 7 villages 2 fields were selected and in two villages 3 fields were selected. (iii) (a) N.A. (b) 1/40 ac. (iv) N.A.

## 4. GENERAL :

(i) Good. (ii) N.A. (iii) Grain and straw yield. (iv) (a) No. (b) and (c) N.A. (v) N.A. (vi) Nil. (vii) There were light weeds in practically every field. Interaction village x treatment has been taken as Error because it comes out to be highly significant when tested by the interaction treatment x fields within villages. Experiment conducted by A.C. in cultivator's fields.

## 5. RESULTS :

- (i) 1521 lb./ac.
- (ii) 329.1 lb /ac.
- (iii) Treatment differences are highly significant.

(iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	816
2.	1524
3.	1834
4.	1910
S.E./mean	=73.58 lb./ac.

Crop :-Wheat (Rabi).

Site :-Kalpi (Jalaun).

Ref :-U.P. 53(412).

Type :-'M'.

Object :-To draw out suitable fertilizer schedules for agriculturally important soil types.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) *Jowar* for 13 trials, *Fallow* for 6 trials and *Sawan* for 1 trial. (c) N.A. (ii) In *Parwa* soil 11 trials, in *Mar* soil 6 trials and in *Kabar* soil 3 trials. (iii) N.A. (iv) N.A. (v) (a) to (e) N.A. (vi) 21.10.1953 to 17.11.1953. (vii) Irrigated. (viii) N.A. (ix) N.A. (x) 16.3.1954 to 8.4.1954.

## 2. TREATMENTS :

- Control (no manure).
  - 25 lb./ac. of N as A/S.
  - 25 lb./ac. of N as A/S+30 lb./ac. of  $P_2O_5$  as Super.
  - 25 lb./ac. of N as A/S+60 lb./ac. of  $P_2O_5$  as Super.
- A/S applied by broadcast and Super placed deep in furrows one day before sowing.

## 3. DESIGN :

(i) and (ii) 9 villages were selected in the *tahsil*. In 7 villages 2 fields were selected and in two villages 3 fields were selected. (iii) (a) N.A. (b) 1/40 ac. (iv) N.A.

## 4. GENERAL :

(i) Satisfactory. (ii) N.A. (iii) Grain and straw yield. (iv) (a) No. (b) and (c) N.A. (v) N.A. (vi) Nil. (vii) As interaction villages  $\times$  treatment is not significant, it has been pooled with treatment  $\times$  fields within villages to give Error. Experiment conducted by A.C. in cultivator's fields.

## 5. RESULTS :

- 1698 lb./ac.
- 145.72 lb./ac.
- Treatment differences are highly significant.
- Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	1338
2.	1760
3.	1810
4.	1885
S.E./mean	=32.58 lb./ac.

Crop :-Wheat.

Site :-Jhansi, Lalitpur and Mahroni (Jhansi).

Ref :-U. P. 50(241).

Type :-'M'.

Object :-To draw out suitable fertilizer schedules for agriculturally important soil types.

## 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) N.A. (iii) N.A. (iv) Improved. (v) (a) to (e) N.A. (vi) N.A. (vii) Generally irrigated. (viii) N.A. (ix) N.A. (x) N.A.

## 2. TREATMENTS :

- Control (no manure).
- 30 lb./ac. of N as A/S.
- 30 lb./ac. of N as A/S+60 lb./ac. of  $P_2O_5$  as Super.



**3. DESIGN :**

(i), (ii) R.B.D. 24 villages have been taken as replications. Field selected randomly in a randomly selected village. (iii) (a), (b) N.A. (iv) N.A.

**4. GENERAL ;**

(i) N.A. (ii) N.A. (iii) Grain yield. (iv) (a) No. (b) N.A. (c) N.A. (v) N.A. (vi) Nil. (vii) The experiment was conducted by A.C. in cultivator's fields.

**5. RESULTS :**

- (i) 1018 lb./ac.  
 (ii) 141.2 lb./ac.  
 (iii) Treatments differ highly significantly.  
 (iv) Av yield of grain in lb./ac.

Treatment	Av. yield
1.	875
2.	1042
3.	1138
S.E./mean	=28.82 lb./ac.

**Crop :-Wheat (Rabi).**

**Ref :-U.P. 51(234).**

**Site :-Moth, Mau Ranipur and Gorotha (Jhansi). Type :-'M'.**

**Object :-To draw out suitable fertilizer schedules for agriculturally important soil types.**

**1. BASAL CONDITIONS :**

(i) (a) to (o) N.A. (ii) N.A. (iii) N.A. (iv) Improved. (v) (a) to (e) N.A. (vi) (a), (b) N.A. (vii) Irrigated. (viii) N.A. (ix) N.A. (x) N.A.

**2. TREATMENTS :**

1. Control.
2. 30 lb./ac. of N.
3. 60 lb./ac. of  $P_2O_5$ .

**3. DESIGN :**

(i), (ii) R.B.D.35 villages have been taken as replications. Field selected randomly in a randomly selected village in the district. (iii) (a), (b) N.A. (iv) N.A.

**4. GENERAL :**

(i) N.A. (ii) N.A. (iii) Grain yield. (iv) (a) No. (b) N.A. (c) N.A. (v) N.A. (vi) Nil. (vii) The experiment was conducted by A.C. in cultivator's fields.

**5. RESULTS :**

- (i) 1116 lb./ac.  
 (ii) 160.22 lb./ac.  
 (iii) Treatments differ highly significantly.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	840
2.	1195
3.	1314
S.E./mean	=27.08 lb./ac.

**Crop :- Wheat (Rabi).**

**Ref :- U.P. 49(187).**

**Site :- Bilhaur, Ghatampur and Kanpur (Kanpur). Type :- 'M'.**

**Object :-To draw out suitable fertilizer schedules for agriculturally important soil types.**

**1. BASAL CONDITIONS :**

(i) (a) to (c) N.A. (ii) N.A. (iii) N.A. (iv) Kanpur-Type 1 soils, Type 2 soils and Type 3 soils. (v) (a) After application of manure the field was levelled by *pata*. (b) Seeds sown in lines parallel to the fertilizer band. (d) N.A. (d) At a distance of 1"–2" from the fertilizer line. (e) N.A. (vi) 18.10.1949 to 15.11.1950. (vii) N.A. (viii) N.A. (ix) N.A. (x) 23.2.1950 to 9.4.1950.

## 2. TREATMENTS :

1. Control.
2. 30 lb./ac. of N as A/S.
3. 30 lb./ac. of N as A/S+60 lb./ac. of  $P_2O_5$  as Super.  
N added to surface at sowing time. Super placed at a depth of 3"—4" in the furrow and on the side of the seed row made by either an iron plough or two *desi* ploughs one behind the other in the same furrow.

## 3. DESIGN :

- (i), (ii) Villages selected in the district and 29 unreplicated trials were laid out. (iii) (a) N.A. (b) 1/40 ac. (iv) N.A.

## 4. GENERAL :

- (i) Good. (ii) N.A. (iii) Grain and straw yield. (iv) (a) No. (b) N.A. (c) N.A. (v) N.A. (vi) Nil. (vii) The expt. was conducted by A.C. in cultivator's fields.

## 5. RESULTS :

- (i) 1209 lb./ac.  
(ii) 139.5 lb./ac.  
(iii) Treatments differ highly significantly.  
(iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	977
2.	1199
3.	1451
S.E./mean	=25.90 lb./ac.

Crop :- Wheat (*Rabi*).

Site :- In 5 tahsils of Kanpur Distt.

Ref :- U.P. 50(244).

Type :- 'M'.

Object :- To draw out suitable fertilizer schedules for agriculturally important soil types.

## 1. BASAL CONDITIONS :

- (i) (a) to (c) N.A. (ii) N.A. (iii) N.A. (iv) Improved. (v) (a) to (c) N.A. (vi) October—November 1950. (vii) Irrigated. (viii) N.A. (ix) N.A. (x) April 1951.

## 2. TREATMENTS :

1. Control (no manure).
2. 30 lb./ac. of N as A/S.
3. 30 lb./ac. of N as A/S+60 lb./ac. of  $P_2O_5$  as Super.

## 3. DESIGN :

- (i), (ii) R.B.D., 32 villages have been taken as replications. Fields selected randomly in randomly selected villages. (iii) (a) and (b) N.A. (iv) N.A.

## 4. GENERAL :

- (i) Generally good growth except in few cases. (ii) N.A. (iii) Grain yield. (iv) (a) No. (b), and (c) N.A. (v) N.A. (vi) Nil. (vii) The expt. was conducted by A.C. in cultivator's fields.

## 5. RESULTS :

- (i) 1308 lb./ac.  
(ii) 175.1 lb./ac.  
(iii) Treatments differ highly significantly.  
(iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	1132
2.	1335
3.	1457
S.E./mean	=30.95 lb./ac.

Crop :- Wheat (*Rabi*).

Ref :- U.P. 53(402).

Site :- Bhogaon (Mainpuri).

Type :- 'M'.

Object :- To draw out suitable fertilizer schedules for agriculturally important soil types.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) Fallow for 18 trials, maize for 2 trials. (c) N.A. (ii) Loam. (iii) N.A. (iv) N.A. (v) (a) About 6 to 8 ploughings by *desi* plough. (b) Sown in lines by seed drill. (c) 35 to 40 seers/ac. (d) Rows 6" to 9" apart. (e) N.A. (vi) 27.10.1953 to 1.11.1953. (vii) Irrigated. (viii) N.A. (ix) N.A. (x) 23.5.1954. to 6.4.1954.

## 2. TREATMENTS :

1. Control (no manure).
  2. 25 lb./ac. of N as A/S.
  3. 25 lb./ac. of N as A/S+30 lb./ac. of  $P_2O_5$  as Super.
  4. 25 lb./ac. of N as A/S+60 lb./ac. of  $P_2O_5$  as Super.
- A/S broadcasted and super applied by drilling before sowing.

## 3. DESIGN :

(i) and (ii) 9 villages were selected in the *tahsil*, in 7 villages 2 fields and in 2 villages 3 fields were selected. (iii) (a) N.A. (b) Different plot sizes, area 1/16 ac. (iv) N.A.

## 4. GENERAL :

(i) 16 trials good, 3 trials average, 1 trial poor (lodging in 3 trials). (ii) 3 trials were damaged by rats and birds. (iii) Grain and straw yield. (iv) (a) 1953—continued. (b) N.A. (c) N.A. (v) N.A. (vi) Nil. (vii) There were alkaline patches in one trial. As interaction village  $\times$  treatment is non significant, it has been pooled with treatments  $\times$  fields within villages to give the error. Experiment conducted by A.C. in cultivator's fields.

## 5. RESULTS :

- (i) 1137 lb./ac.  
(ii) 197.06 lb./ac.  
(iii) Treatment differences are highly significant.  
(iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	863
2.	1077
3.	1260
4.	1349
S.E./mean	—44.06 lb./ac.

Crop :- Wheat (*Rabi*).

Ref :- U.P. 53(403).

Site :- Jasrana (Mainpuri).

Type :- 'M'.

Object :- To draw out suitable fertilizer schedules for agriculturally important soil types.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) Fallow for 3 trials, maize for 3 trials. (c) N.A. (ii) Loam. (iii) N.A. (iv) N.A. (v) (a) About 6 to 8 ploughings by *desi* plough. (b) Sown in lines by seed drill. (c) 35 to 40 seers/ac. (d) Rows 6" to 9" apart. (e) N.A. (vi) 31.10.1953 to 2.11.1953. (vii) Irrigated. (viii) N.A. (ix) N.A. (x) 1.4.1954 to 7.4.1954

## 2. TREATMENTS :

1. Control (no manure).
  2. 25 lb./ac. of N as A/S.
  3. 25 lb./ac. of N as A/S+30 lb./ac. of  $P_2O_5$  as Super.
  4. 25 lb./ac. of N as A/S+60 lb./ac. of  $P_2O_5$  as Super.
- A/S broadcasted and Super drilled before sowing.

## 3. DESIGN :

(i) and (ii) 3 villages were selected. In each village 2 fields were selected. (iii) (a) N.A. (b) Different plot sizes, area = 1/16 ac. (iv) N.A.

## 4. GENERAL :

(i) Good in the beginning. Continuous rains and high winds caused severe lodging. (ii) Slight attack of disease (Name—N.A.). (iii) Grain and straw yield. (iv) (a) 1953—continued. (b) N.A. (c) N.A. (v) N.A. (vi) Nil. (vii) In one field, crop failed. Interaction village×treatment has been taken as error because it comes out to be significant when tested by interactions treatment×fields within villages. Experiments conducted by A.C. in cultivator's fields.

## 5. RESULTS :

- (i) 1168 lb./ac.  
 (ii) 368.5 lb./ac.  
 (iii) Treatment differences are significant.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	749
2.	957
3.	1498
4.	1470
S.E./mean	=164.8 lb./ac.

Crop :-Wheat (*Rabi*).

Site :-Sikohabad (Main puri).

Ref :- U.P. 53(404).

Type :-'M'.

Object :-To draw out suitable fertilizer schedules for agriculturally important soil types.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) Fallow for 5 trials and maize for 1 trial. (c) N.A. (ii) Loam. (iii) N.A. (iv) N.A. (v) (a) About 6 to 8 ploughings by *desi* plough. (b) Sown in lines by seed drill. (c) 35—40 seers/ac. (d) Rows 6" to 9" apart. (e) N.A. (vi) 28 to 30.10.1953. (vii) Irrigated. (viii) N.A. (ix) N.A. (x) 29.3.1954. to 5.4.1954.

## 2. TREATMENTS :

- Control (no manure).
- 25 lb./ac. of N as A/S.
- 25 lb./ac. of N as A/S+30 lb./ac. of P<sub>2</sub>O<sub>5</sub> as Super.
- 25 lb./ac. of N as A/S+60 lb./ac. of P<sub>2</sub>O<sub>5</sub> as Super.  
A/S and super applied by drilling before sowing.

## 3. DESIGN :

(i) and (ii) 3 villages were selected in the *tahsil*. In each village 2 fields were selected. (iii) (a) N.A. (b) Different sizes, area =1/16 ac. (iv) N.A.

## 4. GENERAL :

(i) Good, continuous rains for 3 days and high winds caused lodging. (ii) Slight attack of disease. (iii) Grain and straw yield. (iv) (a) 1953—continued. (b) and (c) N.A. (v) N.A. (vi) Nil. (vii) Interaction village×treatment has been taken as error, because it comes out to be highly significant when tested with interaction treatment×fields within villages. Experiment conducted by A.C. in cultivator's field.

## 5. RESULTS :

- (i) 986.7 lb./ac.  
 (ii) 306.1 lb./ac.  
 (iii) Treatment differences are not significant.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	868.0
2.	986.7
3.	985.3
4.	1106.7
S.E./mean	=125.0 lb./ac.

Crop :-Wheat (*Rabi*).  
Site :-Mainpuri (Mainpuri).

Ref :-U.P. 53(405).  
Type :-'M'.

Object :—To draw out suitable fertilizer schedules for agriculturally important soil types.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) Fallow for 5 trials, maize for 2 trials. (c) N.A. (ii) Clayey loam. (iii) N.A. (iv) N.A. (v) (a) About 6 to 8 ploughings by *desi* plough. (b) Sown in lines by seed drill. (c) 35—40 seers/ac. (d) Rows 6" to 9" apart. (e) N.A. (vi) 3 to 5.11.1953. (vii) Irrigated. (viii) N.A. (ix) N.A. (x) 24.3.1954 to 7.4.1954.

2. TREATMENTS :

1. Control (no manure).
  2. 25 lb./ac. of N as A/S.
  3. 25 lb./ac. of N as A/S+30 lb./ac. of  $P_2O_5$  as Super.
  4. 25 lb./ac. of N as A/S+60 lb./ac. of  $P_2O_5$  as Super.
- A/S broadcasted and Super drilled before sowing.

3. DESIGN :

(i) and (ii) 3 villages were selected. In two villages 2 fields and in one village 3 fields were selected. (iii) (a) N.A. (b) Different plot sizes ; area=1/16 ac. (iv) N.A.

4. GENERAL :

(i) Average in 4 trials, good in 1 trial, poor in 1 trial and 1 trial failed. (ii) Nil. (iii) Grain and straw yield. (iv) (a) 1953—continued. (b) and (c) N.A. (v) N.A. (vi) Nil. (vii) In one field crop failed. As interaction villages  $\times$  treatments is not significant, it has been pooled with treatment  $\times$  fields within village to give error. Experiment conducted by A.C. in cultivator's fields.

5. RESULTS :

- (i) 745.3 lb./ac.  
(ii) 61.65 lb./ac.  
(iii) Treatment differences are highly significant.  
(iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	613.3
2.	674.7
3.	808.0
4.	885.3
S.E./mean	=25.17 lb./ac.

Crop :-Wheat (*Rabi*).  
Site :-Robertsganj and Dudhi (Mirzapur).

Ref :-U.P. 51(223).  
Type :-'M'.

Object :—To draw out suitable fertilizer schedules for agriculturally important soil types.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) *Domat, Karail, Dhanusar*. (iii) N.A. (iv) Improved. (v) (a) to (c) N.A. (vi) N.A. (vii) Irrigated. (viii) N.A. (ix) N.A. (x) N.A.

2. TREATMENTS :

1. Control.
2. 30 lb./ac. of N.
3. 30 lb./ac. of N+60 lb./ac. of  $P_2O_5$ .

3. DESIGN :

(i), (ii) R.B D., 21 villages have been taken as replications. Fields selected randomly in a randomly selected village in the district. (iii) (a), (b) N.A. (iv) N.A.

4. GENERAL :

(i) Good to poor growth. (ii) N.A. (iii) Grain yield. (iv) (a) No. (b) N.A. (c) N.A. (v) N.A. (vi) Nil. (vii) The experiment was conducted by A.C. in cultivator's fields.

## 5. RESULTS :

- (i) 681 lb./ac.  
 (ii) 87.88 lb./ac.  
 (iii) Treatments differ highly significantly.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	553
2.	695
3.	996
S.E./mean	=89.18 lb./ac.

Crop :- Wheat (*Rabi*).

Ref :- U.P. 52(285).

Site :- Chunar, Mirzapur, Robertsganj (Mirzapur).

Type :- 'M'.

Object :- To draw out suitable fertilizer schedules for agriculturally important soil types.

## 1. BASAL CONDITIONS :

- (i) (a) to (c) N.A. (ii) Mirzapur soils—Type 1B (Southern Flats), Type 1C (*Karail*), Type 1E (Eastern Lowlands), Type 2A (Vindhyan Uplands), Type 2B (Vindhyan Flats), Type 2C (Vindhyan Lowlands), Type 3 (Belanseries). (iii) N.A. (iv) Improved. (v) (a) After application of  $P_2O_5$  the field was levelled by drawing *pata*. (b) Seeds sown in lines parallel to the fertilizer band. (c) N.A. (d) At a distance of 1" to 2" from the fertilizer line. (e) N.A. (vi) N.A. (vii) N.A. (viii) N.A. (ix) N.A. (x) N.A.

## 2. TREATMENTS :

1. Control (no manure).  
 2. 30 lb./ac. of N as A/S.  
 3. 30 lb./ac. of N as A/S+60 lb./ac. of  $P_2O_5$  as Super.

N added to surface at sowing time super is placed at a depth of about 3"—4" in the furrow and on the sides of the seed row made by either an iron plough or two *desi* plough—one behind the other in the same furrow.

## 3. DESIGN :

- (i), (ii) Villages selected in the district and 32 unreplicated experiments conducted. (iii) (a), (b) N.A. (iv) N.A.

## 4. GENERAL :

- (i) N.A. (ii) N.A. (iii) Grain and *bhusa* yield. (iv) (a) No. (b) N.A. (c) N.A. (v) N.A. (vi) Nil. (vii) The experiment was conducted by A.C. on cultivator's fields.

## 5. RESULTS :

- (i) 1027 lb./ac.  
 (ii) 146.1 lb./ac.  
 (iii) Treatments differ highly significantly.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	761
2.	969
3.	1351
S.E./mean	=25.83 lb./ac.

Crop :- Wheat (*Rabi*).

Ref :- U.P. 51(236).

Site :- Kichha (Nainital).

Type :- 'M'.

Object :- To draw out suitable fertilizer schedules for agriculturally important soil types.

## 1. BASAL CONDITIONS :

- (i) (a) to (c) N.A. (ii) *Tarai* soils. (iii) N.A. (iv) Improved. (v) (a) After application of manures the field is levelled by drawing a *pata*. (b) Sown in lines parallel to the fertilizer. (c) N.A. (d) At a distance of 1" to 2" from the fertilizer line. (e) N.A. (vi) N.A. (vii) N.A. (viii) N.A. (ix) N.A. (x) N.A.

## 2. TREATMENTS :

1. Control (no manure).
2. 30 lb./ac. of N as A/S.
3. 30 lb./ac. of N as A/S+60 lb./ac. of  $P_2O_5$  as Super.

A/S broadcasted at the time of sowing and super applied to one of the plots over the N dose. Super placed at a depth of 3"-4" in the furrow and on the sides of the furrow made either by an iron plough or two *desi* ploughs one behind the other in the same furrow.

## 3. DESIGN :

(i) and (ii) Villages selected in the district and 10 unreplicated experiments are laid out. (iii) (a) N.A. (b) N.A. (iv) N.A.

## 4. GENERAL :

(i) The crop was sown late but the growth on the whole was satisfactory, one trial damaged by hail storm and rats and one trial badly infested by weeds. (ii) N.A. (iii) Grain and straw yield. (iv) (a) No. (b) N.A. (c) N.A. (v) N.A. (vi) Nil. (vii) The experiment was conducted by A.C. in cultivator's fields.

## 5. RESULTS :

- (i) 1189 lb./ac.
- (ii) 59.58 lb./ac.
- (iii) Treatments differ highly significantly.
- (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	999
2.	1162
3.	1406
S.E./mean	=18.84 lb./ac.

Crop :- Wheat (*Rabi*).

Ref :- U.P. 52(282).

Site :- Matkota (Nainital).

Type :- 'M'.

Object : - To draw out suitable fertilizer schedules for agriculturally important soil types.

## 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) Block wise (1) Clay loam. (2) Loam (slightly calcareous). (3) as in (2). (4) Loam (highly calcareous). (iii) N.A. (iv) Improved. (v) (a) Field was levelled by drawing *pata*. (b) Seeds sown in lines parallel to the fertilizer band. (c) N.A. (d) At a distance of 1" to 2" from the fertilizer line. (e) N.A. (vi) N.A. (vii) N.A. (viii) N.A. (ix) N.A. (x) N.A.

## 2. TREATMENTS :

1. Control.
2. 30 lb./ac. of N as A/S.
3. 30 lb./ac. of N as A/S+60 lb./ac. of  $P_2O_5$  as Super.

N—applied to surface at sowing time, super placed at a depth of about 3"-4" in the furrow and on the sides of the seed row made by either an iron plough or two *desi* ploughs one behind the other in the same furrow.

## 3. DESIGN ;

(i) and (ii) R.B.D. with 3 treatments and 4 replications. (iii) (a) N.A. (b) N.A. (iv) N.A.

## 4. GENERAL :

(i) Growth normal, a very serious rat attack caused heavy damage at the time of seed formation. (ii) N.A. (iii) Grain and straw yield. (iv) (a) No. (b) N.A. (c) N.A. (v) N.A. (vi) Nil. (vii) The experiment was conducted by A.C. in cultivator's fields.

## 5. RESULTS :

- (i) 1160 lb./ac.
- (ii) 103.7 lb./ac.
- (iii) Treatments differ highly significantly.

(iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	974
2.	1120
3.	1386
S.E./mean	=54.35 lb./ac.

Crop :- Wheat (*Rabi*).

Ref :- U.P. 52(278).

Site :- Matkota (Nainital)

Type :- 'M'.

Object :- To draw out suitable fertilizer schedules for agriculturally important soil types.

## 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) 2 block on loam (slightly calcareous). 2 blocks on loam (highly calcareous) One block on clayey loam. (iii) N.A. (iv) Improved. (v) (a) The field was levelled by drawing a *pata*. (b) Seeds sown in lines parallel to the fertilizer band. (c) N.A. (d) 1' to 2' away from the fertilizer line. (e) N.A. (vi) N.A. (vii) N.A. (viii) N.A. (ix) N.A. (x) N.A.

## 2. TREATMENTS :

- Control
- N<sub>1</sub>
- N<sub>2</sub>
- N<sub>1</sub>P<sub>1</sub>
- N<sub>1</sub>P<sub>2</sub>
- N<sub>2</sub>P<sub>1</sub>
- N<sub>2</sub>P<sub>2</sub>

Doses of N and P—N.A.

N as A/S, P<sub>2</sub>O<sub>5</sub> as Super. N added to the surface at sowing time, Super placed at a depth of 3"—4" in the furrow and on the sides of the seed row made either by the iron plough or two *desi* ploughs—one behind the other in the same furrow.

## 3. DESIGN :

(i), (ii) R.B.D. with 5 replications. (iii) (a), (b) N.A. (iv) N.A.

## 4. GENERAL :

(i) Results erratic due to severe damage by rats. (ii) N.A. (iii) Grain and straw yield. (iv) (a) No. (b) and (c) N.A. (v) N.A. (vi) Nil. (vii) The expt. was conducted by A.C. in cultivators' fields.

## 5. RESULTS :

- (i) 1380 lb./ac.  
(ii) 262.10 lb./ac.  
(iii) P effect is significant. The interaction N×P and control vs others are highly significant. N effect is not significant.  
(iv) Av. yield of grain in lb./ac.

Control = 1019 lb./ac.

	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>	Mean
N <sub>0</sub>	1479	1666	1342	1496
N <sub>1</sub>	1160	1444	1552	1385
Mean	1320	1555	1447	1441

S.E. of P marginal mean = 82.88 lb./ac.  
S.E. of N marginal mean = 67.67 lb./ac.  
S.E. of body of table = 117.21 lb./ac.



Crop :- Wheat (*Rabi*).

Ref :- U.P. 53(406).

Site :- Kichha (Nainital).

Type :- 'M'.

Object :- To draw out suitable fertilizer schedules for agriculturally important soil types.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) Fallow in case of 3 trials, maize in case of 2, paddy in case of 1, *sanai* for green manuring in case of 1, and N.A. in case of 3 trials. (c) N.A. (ii) Sandy Loam in 6 trials, Loam (highly calcareous) in 2 trials and loam (slightly calcareous) in case of 2 trials. (iii) Nil. (iv) N.A. (v) (a) About 6 to 8 ploughings by *desi* plough, (b) Sown in lines by seed drill, (c) 30 to 40 seers/ac. (d) rows 6" to 9" apart. (e) N.A. (vi) 23.10.1953 to 14.11.1953. (vii) 8 trials unirrigated. 2 trials irrigated. (viii) N.A. (ix) N.A. (x) 5.4.1954 to 24.4.1954.

## 2. TREATMENTS :

1. Control.
2. 15 lb./ac. of N as A/S + 25 lb./ac. of  $P_2O_5$  as Super.
3. 30 lb./ac. of N as A/S + 25 lb./ac. of  $P_2O_5$  as Super.
4. 15 lb./ac. of N as A/S + 50 lb./ac. of  $P_2O_5$  as Super.
5. 30 lb./ac. of N as A/S + 50 lb./ac. of  $P_2O_5$  as Super.
6. 15 lb./ac. of N as A/S
7. 30 lb./ac. of N as A/S

A/S broadcast before sowing, and Super applied 4" deep in furrows behind the victory plough.

## 3. DESIGN :

(i) and (ii) 3 villages were selected in the *tahsil*. In one village 5 fields were selected, in another 4 fields, and in the third village one field was selected. (iii) (a) 66' x 33'. (b) 33' x 33'. (iv) N.A.

## 4. GENERAL :

(i) Poor in some fields while good to very good in others. (ii) N.A. (iii) Grain and *bhusa* yield. (iv) (a) No. (b), (c) N.A. (v) N.A. (vi) Nil. (vii) Experiment conducted by A.C. in cultivators' fields.

## 5. RESULTS :

- (i) 1059 lb./ac.  
 (ii) 142.14 lb./ac.  
 (iii) Treatment differences are highly significant.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	920
2.	1074
3.	1014
4.	1129
5.	1211
6.	1007
7.	1057
S.E./mean	=44.95 lb./ac.

Crop :- Wheat (*Rabi*).

Ref :- U.P. 50(242).

Site :- Varanasi and Chandauli (Varanasi).

Type :- 'M'.

Object :- To draw out suitable fertilizer schedules for agriculturally important soil types.

## 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) N.A. (iii) NA. (iv) Improved. (v) (a) to (c) N.A. (vi) October—November 1950. (vii) Generally irrigated. (viii) N.A. (ix) N.A. (x) March—April 1951.

## 2. TREATMENTS :

1. Control.
2. 30 lb./ac. of N as A/S.
3. 30 lb./ac. of N as A/S + 60 lb./ac. of  $P_2O_5$  as Super.

## 3. DESIGN :

(i), (ii) R.B.D. in which 14 villages have been taken as replications. Field selected randomly in a randomly selected village in the district. (iii) (a) N.A. (b) N.A. (iv) N.A.

## 4. GENERAL :

(i) Average to good. (ii) N.A. (iii) yield (iv) (a) No. (b), (c) N.A. (v) N.A. (vi) Nil. (vii) The expt. was conducted by A.C. in cultivators' fields.

## 5. RESULTS :

- (i) 1564 lb./ac.  
(ii) 122.46 lb./ac.  
(iii) Treatments are highly significantly different.  
(iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	1218
2.	1583
3.	1890
S.E./mean	= 32.73 lb./ac.

Crop :- Wheat.

Ref :- Complex experiments (T.C.M.), 1953.

Centre :- Varanasi (U.P.) Type :- 'M'.

Object :- I-To study the effect of types and levels of N and P on non-acidic soils.

## 1. BASAL CONDITIONS :

- (i) (a) to (c) N.A. (ii) (a) Loam in texture—brownish in colour. (b) Neutral in reaction. (iii) 14.11.53.  
(iv) N.A. v. N.A. (vi) P-52. (vii) Irrigated. (viii) N.A. (ix) 39.75°. (x) 5.4.1954.

## 2. TREATMENTS :

All combinations of (1), (2) and (3)

- (1) 3 levels of N :  $N_0=0$ ,  $N_1=20$  and  $N_2=40$  lb./ac.  
(2) 2 sources of N :  $S_1=A/S$  and  $S_2=Urea$ .  
(3) 3 levels of  $P_2O_5$  as Triple Super :  $P_0=0$ ,  $P_1=20$  and  $P_2=40$  lb./ac.

A/S and Ure broadcast before sowing and Triple Super placed in bands behind a plough with the help of fertilizer drill

## 3. DESIGN :

- (i) R.B.D. (ii) (a) 15. (b) N.A. (iii) 3. (iv) (a) N.A. (b) 20'×37'. (v) N.A. (vi) Yes.

## 4. GENERAL :

- (i) Normal, no lodging. (ii) Nil. (iii) Grain yield. (iv) (a) 1953—1956. (b) No. (c) N.A. (v) (a) Pura, Paliad. (b) N.A. (vi) Nil. (vii) Nil.

## 5. RESULTS :

- (i) 743 lb./ac.  
(ii) 180.2 lb./ac.  
(iii) Main effect of N is highly significant and that of P is significant. Other effect and interactions are not significant.  
(iv) Av. yield of grain in lb./ac.

	$N_0$	$N_1$	$N_2$	Mean	$S_1$	$S_2$	Mean
$P_0$	374	571	926	674	789	708	748
$P_1$	392	723	1075	798	934	864	899
$P_2$	448	709	960	757	869	801	835
Mean	405	668	997	743	864	791	827
$S_1$	—	666	1062	864			
$S_2$	—	670	912	791			

For table N×P

S.E. of mean in body of table in $N_0$ column	=74.0 lb./ac.
S.E. of mean in body of table in $N_1$ and $N_2$ column	=52.7 lb./ac.
S.E. of marginal mean of $N_0$ column	=42.8 lb./ac.
S.E. of marginal mean of $N_1, N_2$ column	=30.4 lb./ac.
S.E. of marginal mean of P	=32.9 lb./ac.

For table S×P

S.E. of body of table	=52.7 lb./ac.
S.E. of marginal mean of P	=30.4 lb./ac.
S.E. of marginal mean of S	=37.0 lb./ac.

For table S×N

S.E. of body of table	=42.8 lb./ac.
S.E. of any marginal mean	=30.4 lb./ac.

Crop :- Wheat.

Ref :- Complex experiments (T.C.M.), 1953.

Centre :- Varanasi (U.P.).

Type :- 'M'.

Object :- II-To study the best time of application of N.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) N.A. (c) N.A. (ii) (a) Loam in texture-brownish in colour. (b) Neutral in reaction. (iii) 18.11.53 (iv) N.A. (v) N.A. (vi) P-52 (vii) Irrigated. (viii) N.A. (ix) 39.75" (x) 7.4.54.

## 2. TREATMENTS :

All combinations of (1) and (2) + one control (no manure).

(1) 2 source of N (20 lb /ac.) :  $S_1=A/S$  and  $S_2=Urea$ .(2) 2 times of application :  $T_1=at\ sowing$  and  $T_2=at\ first\ irrigation$ .

Manures broadcast as top dressing at sowing time and at first irrigation.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 5. (iv) (a) N.A. (b) 16'x44'. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) Normal, no lodging. (ii) Nil. (iii) Grain yield (iv) (a) 1953-56 (b) No. (c) N.A. (v) (a) Kotah, Pura, Niphad, Satna and Paliad, (b) N.A. (vi) Nil. (vii) Nil.

## 5. RESULTS :

(i) 534 lb./ac.

(ii) 52.68 lb./ac.

(iii) Main effect of S and control vs others are highly significant. Others are not significant.

(iv) Av. yield of grain in lb./ac.

	Control =325 lb./ac.		Mean
	$T_1$	$T_2$	
$S_1$	605	647	626
$S_2$	538	552	545
Mean	572	600	586

S.E. of any marginal mean =16.57 lb./ac.

S.E. of body of table =23.56 lb./ac.

Crop :-Wheat

Ref : Complex experiments (T.C.M.), 1953

Centre :- Varanasi (U.P.).

Type :-'M'.

Object :- IV-To study the effect of types, levels and method of application of P.

## 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Loam in texture--brownish in colour. (b) Neutral in reaction. (iii) 27.11.1953. (iv) N.A. (v) N.A. (vi) P-52. (vii) Irrigated. (viii) N.A. (ix) 39.75". (x) 7.4.1954.

## 2. TREATMENTS :

All combinations of (1), (2) and (3) + 2 extra treatments

(1) 3 sources of  $P_2O_5$  :  $S_1=Super$ ,  $S_2=Nitro. Phos.$  and  $S_3=Ammo. Phos.$ (2) 2 levels of  $P_2O_5$  :  $P_1=15$  and  $P_2=30$  lb./ac.(3) 2 methods of application :  $M_1=Broadcast\ before\ final\ cultivation$ ,  $M_2=2\frac{1}{2}"\ below\ seed$ .

Extra treatments : one control (no manure)/block, one plot receiving 30 lb./ac. of N as A/S broadcast at sowing.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 14. (b) N.A. (iii) 3. (iv) (a) N.A. (b) 20'x37'. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) Normal, no lodging. (ii) Nil. (iii) Grain yield. (iv) (a) 1953-56. (b) No. (c) N.A. (v) (a) Kotah, Pura and Paliad. (b) N.A. (vi) Nil. (vii) Nil.

## 5. RESULTS :

- (i) 952 lb./ac.  
 (ii) 137.2 lb./ac.  
 (iii) Control vs N and (control+N) vs other treatments are highly significant. Others are not significant.  
 (iv) Av. yield of grain in lb./ac.

Control=518 lb./ac. ; N only=1075 lb./ac.

	S <sub>1</sub>	S <sub>2</sub>	S <sub>3</sub>	Mean	M <sub>1</sub>	M <sub>2</sub>
P <sub>1</sub>	956	998	1025	993	974	1012
P <sub>2</sub>	956	965	969	963	987	940
Mean	956	982	997	978	981	977
M <sub>1</sub>	968	960	1013	981		
M <sub>2</sub>	945	1002	981	977		

S.E. of marginal mean of S	39.61 lb./ac.
S.E. of marginal mean of M or P	=32.34 lb./ac.
S.E. of any mean in the body of table S×P or S×M	=56.02 lb./ac.
S.E. of any mean in the body of table P×M	=45.73 lb./ac.
S.E. of control or "N only" means	=79.22 lb./ac.

Crop :-Wheat.

Ref:-Complex experiments (T.C.M.), 1953.

Centre :-Pura (Kanpur).

Type :-'M'.

Object :-I' (a)-To study the effect of types and levels of N and P on non-acidic soils.

## 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Loam in texture—Grey in colour. (b) pH. 7.5. (iii) 1 and 2.11.1953. (iv) N.A. (v) N.A. (vi) Co. 13. (vii) Irrigated. (viii) N.A. (ix) 38.18". (x) 10.4.1954.

## 2. TREATMENTS :

All combinations of (1), (2) and (3)

(1) 3 levels of N : N<sub>0</sub>=0, N<sub>1</sub>=20 and N<sub>2</sub>=40 lb./ac.

(2) 2 sources of N : S<sub>1</sub>=A/S and S<sub>2</sub>=Urea.

(3) 3 levels of P<sub>2</sub>O<sub>5</sub> as Triple Super : P<sub>0</sub>=0, P<sub>1</sub>=20 and P<sub>2</sub>=40 lb./ac.

A/S and urea applied by broadcast before sowing and Triple Super placed deep in band behind a plough with the help of fertilizer drill.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 15. (b) N.A. (iii) 3. (iv) (a) N.A. (b) 45.45'×16'. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) Normal, lodging appeared in plots treated with S<sub>2</sub>N<sub>2</sub>P<sub>2</sub> and S<sub>1</sub>N<sub>2</sub>P<sub>2</sub>. (ii) Slight damage by rats and wheat rust. (iii) Grain yield. (iv) (a) 1953—1956. (b) No. (c) N.A. (v) (a) Paliad and Varanasi. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 1436.  
 (ii) 139.1 lb./ac.  
 (iii) Main effects of N, P are highly significant. Other effects are not significant.

(iv) Av. yield of grain in lb./ac.

	N <sub>0</sub>	N <sub>1</sub>	N <sub>2</sub>	Mean	S <sub>1</sub>	S <sub>2</sub>	Mean
	960	1299	1332	1245	1340	1291	1316
P <sub>1</sub>	986	1579	1664	1494	1753	1489	1621
P <sub>2</sub>	1194	1638	1692	1571	1623	1707	1665
Mean	1047	1505	1562	1436	1572	1496	1534
S <sub>1</sub>	—	1534	1610	1572			
S <sub>2</sub>	—	1477	1515	1496			
Mean	—	1505	1562	1534			

For table N×P

S.E. of marginal mean of N <sub>0</sub> Column	=69.5 lb./ac.
S.E. of marginal mean of N <sub>1</sub> , N <sub>2</sub> Column	=49.1 lb./ac.
S.E. of body of table (N <sub>1</sub> , N <sub>2</sub> Col.)	=85.1 lb./ac.
S.E. of marginal mean of P	=53.8 lb./ac.

For table S×N

S.E. of body of table	=69.5 lb./ac.
S.E. of any marginal mean	=49.1 lb./ac.

For table S×P

S.E. of body of table	=85.1 lb./ac.
S.E. of marginal mean of P	=60.1 lb./ac.
S.E. of marginal mean of S	=49.1 lb./ac.

Crop :-Wheat.

Ref :-Complex experiments (T.C.M.), 1953.

Centre :-Pura (Kanpur).

Type :-'M'.

Object :-II-To study the best time of application of N.

## 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Loam in texture—Grey in colour. (b) pH. 7.5. (iii) 30.10.1953. (iv) N.A. (v) N.A. (vi) C-13. (vii) Irrigated. (viii) N.A. (ix) 38.18". (x) 8.4.1954.

## 2. TREATMENTS :

A:1 combinations of (1) and (2) +One control

(1) 2 sources of N (20 lb./ac.) : S<sub>1</sub>=A/S and S<sub>2</sub>=Urea.(2) 2 times of application : T<sub>1</sub>=At sowing and T<sub>2</sub>=At first irrigation.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 5. (iv) (a) N.A. (b) 14.2'×51'. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) Normal, no lodging. (ii) Nil. (iii) Grain yield. (iv) (a) 1953—1956. (b) No. (c) N.A. (v) (a) Kotah, Varanasi, Niphad, Satna and Paliad. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 1035 lb./ac.  
(ii) 141.1 lb./ac.  
(iii) Only control vs others is highly significant.

(iv) Av. yield of grain in lb./ac.

	Control = 789 lb./ac.		Mean
	T <sub>1</sub>	T <sub>2</sub>	
S <sub>1</sub>	1123	1058	1090
S <sub>2</sub>	1089	1117	1103
Mean	1106	1088	1097

S.E. of any marginal mean = 44.7 lb./ac.  
 S.E. of body of table = 63.1 lb./ac.

Crop :-Wheat.

Ref:-Complex experiments (T.C.M.) 1953.

Centre :-Pura (Kanpur). (U.P.)

Type :-'M'.

Object :-IV., To study the effect of types, levels and method of application of P.

## 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Loam in texture—Grey in colour. (b) pH.7.5. (iii) 17.11.1953. (iv) N.A. (v) N.A. (vi) C-13. (vii) Irrigated (viii) N.A. (ix) 33.18°. (x) 11.4.1954.

## 2. TREATMENTS :

All combinations of (1), (2) and (3)+2 extra treatments.

(1) 2 levels of P<sub>2</sub>O<sub>5</sub> : P<sub>1</sub>=15 lb./ac. and P<sub>2</sub>=30 lb./ac.(2) 2 methods of application : M<sub>1</sub>=Broadcast before final cultivation and M<sub>2</sub>=2½" below seed.(3) 3 sources of P<sub>2</sub>O<sub>5</sub> : S<sub>1</sub>=Super, S<sub>2</sub>=Nitro. phos. and S<sub>3</sub>=Ammono. Phos.

One control (no manure)/block and one plot receiving 30 lb./ac. of N as A/S broadcast at sowing.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 14. (b) N.A. (iii) 3. (iv) (a) N.A. (b) 44'×16.5'. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) Normal ; lodging was observed in plots treated with higher doses of manures. (ii) Appreciable damage by rats, controlled by rat poison baits. (iii) Grain yield. (iv) (a) 1953—1956. (b) No. (c) N.A. (v) (a) Kotah, Varanasi and Paliad. (b) N.A. (vi) Nil. (vii) Nil.

## 5. RESULTS :

(i) 1414 lb./ac.

(ii) 2200 lb./ac.

(iii) (Control+N) vs others effect is highly significant. Other effects are not significant.

(iv) Av. yield of grain in lb./ac.

Control (no manure)=931 lb./ac.

Control (receiving N only)=1111 lb./ac.

Source	Method			Mean	Method	
	S <sub>1</sub>	S <sub>2</sub>	S <sub>3</sub>		M <sub>1</sub>	M <sub>2</sub>
P <sub>1</sub>	1568	1497	1499	1521	1500	1543
P <sub>2</sub>	1497	1353	1465	1438	1409	1467
Mean	1533	1424	1482	1480	1455	1505
M <sub>1</sub>	1414	1465	1484			
M <sub>2</sub>	1651	1383	1481			

S.E. of marginal mean of S = 63.5 lb./ac.  
 S.E. of marginal mean of P or M = 51.8 lb./ac.  
 S.E. of any mean in the body of table S×P or S×M = 89.8 lb./ac.  
 S.E. of body of S×M table = 73.3 lb./ac.  
 S.E. of control mean = 127.0 lb./ac.

Crop :-Wheat (*Rabi*).

Ref :-U.P. 48(124).

Site :- B.R. College Farm, (Bichpuri) Agra.

Type :-'MV'.

Object :-To study the effect of N, P and K on different varieties of Wheat.

**1. BASAL CONDITIONS :**

(i) (a) Nil. (b) Maize—*chari*. (c) Nil. (ii) Typical Gangetic alluvial light loam moderate fertility and neutral in reaction with a free drainage and a good water holding capacity. (b) Refer soil analysis, B.R. College, Bichpuri. (iii) 29.10.48. (iv) (a) 1 ploughing with soil turning plough, followed by *pata*, 4 ploughings with *desi* followed by *pata* clearing, and 4 ploughing. (b) By means of the plough by Nai method (2.5" to 3" depth). (c) 50 srs./ac. (d) rows 9" apart. (e) — (v) Nil. (vi) As per treatments. (vii) Irrigated. (viii) One Liver harrowing, one harrowing and roguing. (ix) N.A. (x) 6, 7.4.1949.

**2. TREATMENTS :**

All combinations of (1), (2), (3) and (4)

(1) 3 varieties :  $V_1$ =Local,  $V_2$ =C13 (early) and  $V_3$ =P591 (late).(2) 3 levels of N as A/S :  $N_0=0$ ,  $N_1=30$  and  $N_2=60$  lb./ac.(3) 3 levels of  $P_2O_5$  as Super :  $P_0=0$ ,  $P_1=8$  and  $P_2=16$  lb./ac.(4) 3 levels of  $K_2O$  as Pot. Sul. :  $K_0=0$ ,  $K_1=15$  and  $K_2=30$  lb./ac.

All combinations of manures mixed seperately for each treatment and then mixed with the soil of the plot in which treatment has to be applied and evenly spread on 28.10.1948.

**3. DESIGN :**

(i) 3<sup>3</sup> partially confounded in quasi L. sq. (ii) (a) 9 cols×9 rows. (b) column 395'×18' and row 175'×40'. (iii) 1. (iv) (a) 18'×42'. (b) 13×06'. (v) 1.5'×3'. (vi) Yes.

**4. GENERAL :**

(i) N.A. (ii) White ant attack at all stages of the life cycle. (iii) Grain and *bhusa* yield. (iv) (a) No. (b) N.A. (c) Nil. (v) (a), (b) Nil. (vi) Nil. (vii) The experiment was conducted by B.R.C.

**5. RESULTS :**

(i) 1653 lb./ac.

(ii) 347.2 lb./ac.

(iii) N.A.

(iv) Av. yield of grain in lb./ac.

	$V_1$	$V_2$	$V_3$	$N_0$	$N_1$	$N_2$	$P_0$	$P_1$	$P_2$	Mean
$K_0$	1596	1428	1729	1481	1597	1674	1524	1553	1675	1584
$K_1$	1824	1593	1671	1364	1952	1772	1697	1763	1626	1696
$K_2$	1771	1545	1719	1546	1744	1744	1758	1567	1713	1678
Mean	1730	1522	1706	1464	1764	1730	1660	1628	1671	1653
$P_0$	1711	1556	1713	1486	1703	1791				
$P_1$	1618	1495	1771	1442	1738	1703				
$P_2$	1862	1515	1635	1464	1852	1696				
$N_0$	1620	1281	1490							
$N_1$	2006	1597	1690							
$N_2$	1564	1688	1938							

S.E. of any marginal mean = 66.82 lb./ac.

S.E. of body of table = 115.78 lb./ac.

Crop :- Wheat (*Rabi*).  
Site :- Govt. Res. Farm, Kanpur.

Ref :- U.P. 50(300).  
Type :- 'MV'.

Object :- To compare the effect of two varieties of Wheat under different levels of N.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Jowar* fodder. (c) Nil. (ii) (a) Loam. (b) N.A. (iii) 5.11.1950. (iv) (a) 1 ploughing with victory plough 2 ploughings by *desi* plough. (b) Line sowing. (c) 100 lb./ac. (d) rows 9" apart. (e) —. (v) Nil. (vi) As per treatments. (vii) Irrigated. (viii) Weeding on 28.2.1951. (ix) N.A. (x) 16.4.1951.

2. TREATMENTS :

All combinations of (1) and (2).

(1) 2 varieties :  $V_1=C-13$ , (early)  $V_2=N.P. 125$  (medium).

(2) 3 levels of N as A/S :  $N_0=0$ ,  $N_1=25$ ,  $N_2=50$  lb./ac.

3. DESIGN :

(i)  $3 \times 2$  Fact. in R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a)  $24' \times 12'-9"$ . (b)  $20' \times 11'-3"$  (v) One row on either side and 2' at each end of the plot. (vi) Yes.

4. GENERAL :

(i) Good. (ii) N.A. (iii) Germination and yield of grain. (iv) (a) 1950 to 1952. (b) No. (c) Nil. (v) (a) No. (b) No. (vi) Nil. (vii) The experiment was conducted by the Economist Botanist (*Rabi* cereals and Potato) to Govt. of U.P., Kanpur.

5. RESULTS :

- (i) 1086 lb./ac.  
(ii) 141.6 lb./ac.  
(iii) Only N effect is highly significant.  
(iv) Av. yield of grain in lb./ac.

	$N_0$	$N_1$	$N_2$	Mean
$V_1$	597	1077	1581	1085
$V_2$	622	1114	1525	1087
Mean	610	1096	1553	1086

S.E. of marginal mean of N = 50.05 lb./ac.  
S.E. of marginal mean of V = 40.86 lb./ac.  
S.E. of the body of table = 70.78 lb./ac.

Crop :- Wheat (*Rabi*).  
Site :- Govt. Res. Farm, Kanpur.

Ref :- U.P. 51(282).  
Type :- 'MV'.

Object :- To compare the effect of two varieties of Wheat under different levels of N.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Charl*. (c) Nil. (ii) (a) Loam. (b) N.A. (iii) 12.11.1951. (iv) (a) One ploughing each by victory plough, *desi* plough and cultivator. (b) Line Sowing (c) 100 lb./ac. (d) 9" apart. (e) —. (v) Nil. (vi) As per treatments. (vii) Irrigated. (viii) Two weedings. (ix) N.A. (x) 1,2,4.1952.

2. TREATMENTS :

All combinations of (1) and (2).

(1) 2 varieties :  $V_1=C-13$  (early) and  $V_2=N.P.125$  (medium).

(2) 3 levels of N as A/S :  $N_0=0$ ,  $N_1=25$ ,  $N_2=50$  lb./ac.

3. DESIGN :

(i)  $3 \times 2$  Fact. in R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv)  $28' \times 12'-9"$ . (b)  $19' \times 11'-3"$ . (v) One row on either side and 2' at each end of the plot. (vi) Yes.

4. GENERAL :

(i) Good. (ii) No. (iii) Germination and grain yield. (iv) (a) 1950 to 1952. (b) No. (c) Nil. (v) (a) and (b) Nil. (vi) Nil. (vii) The experiment was conducted by the Economic Botanist (*Rabi* cereals and Potato) to Govt. of U.P., Kanpur.



## 5. RESULTS :

- (i) 1655 lb./ac.  
(ii) 315.39 lb./ac.  
(iii) Only N effect is highly significant.  
(iv) Av. yield of grain in lb./ac.

	N <sub>0</sub>	N <sub>1</sub>	N <sub>2</sub>	Mean
V <sub>1</sub>	1042	1749	2050	1614
V <sub>2</sub>	1520	1657	1913	1697
Mean	1281	1703	1982	1655

S.E. of marginal mean of N = 111.51 lb./ac.  
S.E. of marginal mean of V = 74.34 lb./ac.  
S.E. of body of table = 157.70 lb./ac.

Crop :- Wheat (*Rabi*).

Ref :- U.P. 52(323).

Site :- Govt. Res. Farm, Kanpur.

Type :- 'MV'.

Object :—To compare the effect of two Wheat varieties under different levels of N.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Charl.* (c) Nil. (ii) (a) Loam. (b) N.A. (iii) 3.11.1952. (iv) (a) Ploughings and harrowing by victory plough on 10.8.1952, 1 by cultivator and 3 by *desi* plough. (b) Line sowing. (c) 80 lb./ac. (d) rows 9' apart. (e) —. (v) Nil. (vi) As per treatments. (vii) Irrigated. (viii) Nil. (ix) N.A. (x) 27.3.1953.

## 2. TREATMENTS :

All combinations of (1) and (2)

- (1) 2 varieties : V<sub>1</sub>=C-13 (early) and V<sub>2</sub>=NP-125 (medium).  
(2) 3 levels of N as A/S : N<sub>0</sub>=0, N<sub>1</sub>=25 and N<sub>2</sub>=50 lb./ac.

## 3. DESIGN :

(i) 3×2 Fact. in R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) 23'×12½'. (b) 19'×10.75'. (v) One row on each side and 2' at each of the plots ; distance between plots 2½' distance between blocks 4'. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) N.A. (iii) Germination and yield of grain. (iv) (a) 1950—1952. (b) No. (c) Nil. (v) (a) No. (b) No. (vi) The object was to compare the yield of wheat and barley under similar conditions of manuring. In that experiment along with the 3 levels of manuring, two varieties each of wheat and barley were tested giving 12 treatments (in each replication). This proforma is for wheat and another has been filled in for barley. (vii) The experiment was conducted by Economic Botanist to Govt. of U.P., Kanpur.

## 5. RESULTS :

- (i) 2256 lb./ac.  
(ii) 242.77 lb./ac.  
(iii) Only N effect is highly significant.  
(iv) Av. yield of grain in lb./ac.

	N <sub>0</sub>	N <sub>1</sub>	N <sub>2</sub>	Mean
V <sub>1</sub>	1899	2365	2248	2171
V <sub>2</sub>	1851	2386	2790	2342
Mean	1875	2375	2519	2256

S.E. of marginal mean of N = 85.83 lb./ac.  
S.E. of marginal mean of V = 70.08 lb./ac.  
S.E. of body of table = 121.38 lb./ac.

Crop :- Wheat (*Rabi*).

Ref :- U.P. 53(93).

Site :- Govt. Res. Farm, Kanpur.

Type :- 'MV'.

Object :- To study the effect of  $P_2O_5$  application on earliness, disease resistance, stand, maturity and final yield of Wheat varieties.

## 1. BASAL CONDITIONS :

- (i) (a) *Sanai*—wheat. (b) *Sanai* for green manuring. (c) Nil. (ii) (a) Loam. (b) N.A. (iii) 2.11.1953.  
 (iv) (a) Turning of *sanai* on 2.9.1953 with victory plough, 2 *desi* ploughings and *pata*. (b) N.A. (c) 80 lb./ac.  
 (d) 9' apart. (e) N.A. (v) Nil. (vi) As per treatments. (vii) Irrigated. (viii) Weeding on 18.1.1954 with *khurpi*. (ix) N.A. (x) 6.4.1954.

## 2. TREATMENTS :

All combinations of (1) and (2)

- (1) 2 varieties :  $V_1$ =NP-125 (medium) and  $V_2$ =Pb. 591 (late).  
 (2) 5 applications of  $P_2O_5$  as Super :  $P_0$ =No  $P_2O_5$   $P_1$ =50 lb./ac. of  $P_2O_5$  applied in furrows,  $P_2$ =50 lb./ac. of  $P_2O_5$  applied broadcast,  $P_3$ =100 lb./ac. of  $P_2O_5$  applied in furrows and  $P_4$ =100 lb./ac. of  $P_2O_5$  applied broadcast.

## 3. DESIGN :

- (i) 5×2 Fact. in R.B.D. (ii) (a) 10. (b) N.A. (iii) 4. (iv) (a) 16'×9'. (b) 12'×7.5'. (v) 2'× $\frac{1}{2}$ '. (vi) Yes.

## 4. GENERAL :

- (i) Growth good in general. No lodging. (ii) Slight attack of rust. (iii) Germination, grain and straw yield. (iv) (a) 1953—contd. (b) No. (c) N.A. (v) (a) No. (b) N.A. (vi) Nil. (vii) The experiment was conducted by E.B. (R).

## 5. RESULTS :

- (i) 1648 lb./ac.  
 (ii) 341.8 lb./ac.  
 (iii) None of the effects is significant.  
 (iv) Av. yield of grain in lb./ac.

	$P_0$	$P_1$	$P_2$	$P_3$	$P_4$	Mean
$V_1$	1540	1571	1447	1929	1649	1627
$V_2$	1447	1711	1540	1602	2038	1668
Mean	1494	1641	1494	1766	1844	1648

S.E. of marginal mean of P = 120.8 lb./ac.  
 S.E. of marginal mean of V = 76.4 lb./ac.  
 S.E. of body of table = 170.9 lb./ac.

Crop :- Wheat.

Ref :- Complex experiments (T.C.M.), 1953.

Centre :- Varanasi (U.P.)

Type :- 'MV'.

Object :- VII To study the effect of N and P on different varieties of Wheat.

## 1. BASAL CONDITIONS :

- (i) (a) N.A. (b) N.A. (c) N.A. (ii) (a) Loam in texture, brownish in colour. (b) Neutral in reaction. (iii) 27.11.1953. (iv) N.A. (v) N.A. (vi) As under treatments. (vii) Irrigated. (viii) N.A. (ix) 39.75". (x) 7.4.1954.

## 2. TREATMENTS :

All combinations of (1), (2) and (3)

- (1) 3 levels of N as A/S :  $N_0$ =0,  $N_1$ =20 and  $N_2$ =40 lb./ac.  
 (2) 3 levels of  $P_2O_5$  as Triple Super :  $P_0$ =0,  $P_1$ =20 and  $P_2$ =40 lb./ac.  
 (3) 3 varieties :  $V_1$ =Desi,  $V_2$ =P-52 and  $V_3$ =NP-750.

A/S broadcast before sowing and Triple Super placed deep in bands behind a plough with the help of fertilizer drill.

## 3. DESIGN :

(i)  $3^3$  Fact. in R.B.D. (confounded). (ii) (a) 9 plots/block, 3 blocks/replication. (b) N.A. (iii) 1. (iv) (a) N.A. (b)  $20' \times 37'$ . (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) Normal, no lodging. (ii) Nil. (iii) Grain yield. (iv) (a) 1953—1956. (b) No. (c) N.A. (v) (a) Kotah, Pura, Niphad and Paliad. (b) N.A. (vi) Nil. (vii) Nil.

## 5. RESULTS :

(i) 542 lb./ac.

(ii) 58.87 lb./ac.

(iii) Main effects of N and V are highly significant. Interaction VN is significant. Other effects are not significant.

(iv) Av. yield of grain in lb./ac.

	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>	Mean	V <sub>1</sub>	V <sub>2</sub>	V <sub>3</sub>
N <sub>0</sub>	260	285	260	268	147	363	294
N <sub>1</sub>	574	648	603	608	392	667	765
N <sub>2</sub>	746	760	746	751	422	878	952
Mean	527	564	536	542	320	636	670
V <sub>1</sub>	270	343	348				
V <sub>2</sub>	662	652	594				
V <sub>3</sub>	648	697	667				

S.E. of any marginal mean = 19.62 lb./ac.

S.E. of body of table = 33.98 lb./ac.

Crop :- Wheat.

Ref. :- Complex experiments (T.C.M.), 1953.

Centre :- Pura (Kanpur—U.P.). Type :- 'MV'.

Object :- VIII, To study the effect of N and P on different varieties of Wheat.

## 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Loam in texture—Grey in colour. (b) pH-7.5. (iii) 3.11.1953. (iv) N.A. (v) N.A. (vi) As under treatments. (vii) Irrigated. (viii) N.A. (ix) 38.18". (x) 9.4.1954.

## 2. TREATMENTS :

All combinations of (1), (2) and (3).

(1) 3 levels of N as A/S : N<sub>0</sub>=0, N<sub>1</sub>=20 and N<sub>2</sub>=40 lb./ac.

(2) 3 levels of P<sub>2</sub>O<sub>5</sub> as triple Super : P<sub>0</sub>=0, P<sub>1</sub>=20 and P<sub>2</sub>=40 lb./ac.

(3) 3 varieties :- V<sub>1</sub>=Desi, V<sub>2</sub>=NP-125 and V<sub>3</sub>=C-13.

A/S applied by broadcast before sowing and Triple super placed deep in bands behind a plough with the help of fertilizer drill.

## 3. DESIGN :

(i)  $3^3$  Fact. in R.B.D. (ii) (a) 3 blocks/replication ; 9 plots/block. (b) N.A. (iii) 1. (iv) (a) N.A. (b)  $36.25' \times 20'$ . (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) Normal. Slight lodging was observed in plots treated with higher doses of N and P along with C-13 and Desi (ii) Attack of wheat rust and slight damage by rats. (iii) Grain yield. (iv) (a) 1953-1956 (b) No. (c) N.A. (v) (a) Kotah, Banaras, Niphad and Paliad. (b) N.A. (vi) Nil. (vii) Nil.

## 5. RESULTS :

- (i) 1390 lb./ac.  
 (ii) 168.6 lb./ac.  
 (iii) Main effect of V is highly significant while that of P is significant. Other effects and interactions are not significant.  
 (iv) Av. yield of grain in lb./ac.

	N <sub>0</sub>	N <sub>1</sub>	N <sub>2</sub>	Mean	V <sub>1</sub>	V <sub>2</sub>	V <sub>3</sub>
P <sub>0</sub>	1049	1255	1367	1224	905	1347	1419
P <sub>1</sub>	1296	1476	1651	1474	1265	1573	1584
P <sub>2</sub>	1579	1425	1410	1471	1255	1461	1697
Mean	1308	1385	1476	1390	1142	1460	1567
V <sub>1</sub>	1198	1070	1158				
V <sub>2</sub>	1296	1466	1620				
V <sub>3</sub>	1430	1620	1651				

S E. any marginal mean  
 S.E. of body of table

=56.2 lb./ac.  
 =97.4 lb./ac.

Crop :-Wheat (*Rabi*).

Ref :-U.P. 53(370).

Site :-Allahabad Agricultural Institute, Allahabad.

Type :-'C'.

Object :-To study the effect of seed rate and spacing between lines on Wheat.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) Sunnhemp. (c) N.A. (ii) (a) Loam. (b) Refer soil analysis, Allahabad. (iii) 13 and 14.10.1953. (iv) (a) and (b) N.A. (c) and (d) As per treatments. (e) —. (v) Good green manure crop of Sunnhemp ploughed in. (vi) C-13 (early). (vii) Irrigated. (viii) N.A. (ix) 1.00°. (x) N.A.

## 2. TREATMENTS :

Main-plot treatments :

4 spacings between rows : S<sub>1</sub>=6", S<sub>2</sub>=9", S<sub>3</sub>=12" and S<sub>4</sub>=15".

Sub-plot treatments :

4 seed rates : R<sub>1</sub>=20, R<sub>2</sub>=30, R<sub>3</sub>=40 and R<sub>4</sub>=50 seers/ac.

## 3. DESIGN :

(i) Split-plot (L. Sq.) (ii) (a) 4 main-plots/row or col. and 4 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) N.A. (b) Main-plot : 16½' × 16½', Sub 4½' × 16½'. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) N.A. (iii) Grain and straw yield, height of plants etc. (iv) (a) and (b) No. (c) Nil. (v) (a) and (b) No. (vi) Nil. (vii) Nil.

## 5. RESULTS :

- (i) 2478 lb./ac.  
 (ii) (a) 205.6 lb./ac.  
 (b) 304.2 lb./ac.  
 (iii) Only S effect is highly significant.

(iv) Av. yield of grain in lb./ac.

	R <sub>1</sub>	R <sub>2</sub>	R <sub>3</sub>	R <sub>4</sub>	Mean
S <sub>1</sub>	2635	2627	2880	2699	2710
S <sub>2</sub>	2781	2672	2399	2485	2584
S <sub>3</sub>	2551	2187	2748	2633	2530
S <sub>4</sub>	2337	2129	1981	1905	2088
Mean	2576	2404	2502	2430	2478

S.E. of difference of two

1. marginal means of S = 72.67 lb./ac.
2. marginal means of R = 107.56 lb./ac.
3. R means at the same level of S = 215.12 lb./ac.
4. S means at the same level of R = 200.04 lb./ac.

Crop :-Wheat (*Rabi*).

Ref :-U.P. 51(68).

Site :-Govt. Agri. Farm, Etawah.

Type :-'C'.

Object :-To study the effect of different seed rates on the yield of Wheat.

## 1. BASAL CONDITIONS:

(i) (a) Nil. (b) Paddy. (c) N.A. (ii) (a) Loam. (b) N.A. (iii) N.A. (iv) (a) N.A. (b) Sown by seed drill. (c) As per treatments. (d) and (e) N.A. (v) Green manured at 40 lb./ac. of N. (vi) Pb. 591. (vii) N.A. (viii) N.A. (ix) 1.10°. (x) N.A.

## 2. TREATMENTS :

6 seed rates : R<sub>1</sub>=10, R<sub>2</sub>=20, R<sub>3</sub>=30, R<sub>4</sub>=40, R<sub>5</sub>=50 and R<sub>6</sub>=60 srs./ac.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) 32'×54'. (b) 29'×51'. (v) 1.5'×1.5'. (vi) Yes.

## 4. GENERAL :

(i) Good, no lodging. (ii) Nil. (iii) Grain yield. (iv) (a) No. (b) and (c) No. (v) (a) and (b) No. (vi) Nil. (vii) Conducted by C.P.

## 5. RESULTS :

- (i) 1139 lb./ac.
- (ii) 268.05 lb./ac.
- (iii) Treatment differences are not significant.
- (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
R <sub>1</sub>	1041
R <sub>2</sub>	1198
R <sub>3</sub>	1005
R <sub>4</sub>	1093
R <sub>5</sub>	1053
R <sub>6</sub>	1441
S.E./mean	= 134.02 lb./ac.

Crop :-Wheat (*Rabi*).  
Site :-Regional Training Institute, Gazipur.

Ref :-U.P. 53(328).

Type :-'C'.

Object :-To study the effect of fallow with or without hot weather cultivation as compared to having legume, green manure or a non-legume crop during *kharif* on the yield of the subsequent Wheat crop.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) As per treatments. (c) 20 lb./ac. of N as A/S applied to Maize. (ii) (a) Sandy loam. (b) N.A. (iii) 30, 31.10.1953. (iv) (a) 6 ploughings. (b) Line system-behind plough-east to west. (c) N.A. (d) —. (e) —. (v) Nil. (vi) N.A. (vii) Irrigated. (viii) Nil. (ix) 1.93". (x) 16, 17.3.1954.

## 2. TREATMENTS :

1. Fallow—Wheat.
2. Hot weather cultivation—wheat.
3. Maize—Wheat.
4. *Guar* for fodder—wheat.
5. *Sanai* for green manuring—wheat.
6. *Moong T<sub>1</sub>*—wheat.

Maize crop very poor due to water logging and it failed to bear cobs. It was harvested for fodder. After picking of *moong*, the green matter was turned in.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 8. (iv) (a) N.A. (b) 30'×48.5'. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) N.A. (iii) Grain and straw yield. (iv) (a) 1953—1954. (b) N.A. (c) Nil. (v) (a) Kalai, Kalyanpur, Banaras and Raya. (b) N.A. (vi) *Sanai* failed in 3 plots. This had its consequent effect on the succeeding wheat crop. (vii) Experiment conducted by A.C.

## 5. RESULTS :

- (i) 1062 lb./ac.  
(ii) 207.65 lb./ac.  
(iii) Treatment differences are significant.  
(iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	1078
2.	1018
3.	915
4.	962
5.	1104
6.	1297
S.E./mean	=73.42 lb./ac.

Crop :-Wheat (*Rabi*).  
Site :-Govt. Agri. Farm, Kalai (Aligarh).

Ref :-U.P. 49(26).

Type :-'C'.

Object :-To study the effect of fallow as compared to having a legume, non legume or green manure crops in *kharif* on the yield of Wheat in *rabi*.

## 1. BASAL CONDITIONS :

(i) (a) and (b) As per treatments. (c) N.A. (ii) (a) [Light loam (Aligarh T-2). (b) N.A. (iii) [5.11.1949. (iv) (a) Sown in rectangular strips, ploughed and levelling done. (b) to (e) N.A. (v) Nil. (vi) N.A. (vii) N.A. (viii) One weeding. (ix) N.A. (x) N.A.

## 2. TREATMENTS :

1. Fallow—wheat.
2. Hot weather cultivation-fallow—wheat.
3. *Bhadian sawan*—wheat.
4. *Juar* fodder—wheat.
5. *Sanai* for G.M.—wheat.
6. Early *Moong* and early *Udid*—wheat.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 8. (iv) (a) N.A. (b) 1/30 ac. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) Lodging due to heavy rains ; crop satisfactory. (ii) No. (iii) Grain and straw yield. (iv) (a) 1949 to N.A. (b) and (c) N.A. (v) (a) Partapgarh and Kalyanpur. (b) N.A. (vi) Nil. (vii) The experiment was conducted by A.C. Experiment not conducted during the year 1950.

## 5. RESULTS:

(i) 989 lb./ac.

(ii) 220.88 lb./ac.

(iii) Treatment differences are not significant..

(iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	1042
2.	1084
3.	859
4.	1076
5.	892
6.	979
S.E./mean	=78.09 lb./ac.

Crop :- Wheat. (*Rabi*).

Site :- Govt. Agri. Farm, Kalai.

Ref :-U.P. 51(100).

Type :- 'C'.

Object :—To study the effect of fallow with or without hot weather cultivation as compared to having legume for green manure or a non legume crop in *kharif* on the yield of subsequent Wheat crop.

## 1. BASAL CONDITIONS :

(i) (a) and (b) As per treatments. (c) 50 lb./ac. of N as A/S was broadcast to maize crop. (ii) (a) Loam (Aligarh Type 2). (b) N.A. (iii) 24.10.1951. (iv) (a) 4 ploughings by *dest* plough. (b) to (e) N.A. (v) Nil. (vi) N.A. (vii) Irrigated. (viii) N.A. (ix) N.A. (x) 2 and 3.4.1952.

## 2. TREATMENTS

1. Fallow-wheat.
2. Hot weather cultivation-wheat.
3. Maize-wheat.
4. *Guar* fodder-wheat.
5. *Sanai* for green manuring-wheat.
6. Early *moong*-wheat.

In hot weather cultivation plots, 2 ploughings were given during pre-monsoon period. *Kharif* crop sown in 2nd week of June with irrigation. *Moong* completely failed and was subsequently resown on July 19, *kharif* crops were poor due to late rainfall. 3 pickings of *Moong* pods were taken on Aug. 7, 20 and Sept. 7, 1951. *Sanai* turned in on Aug. 12. *Guar* harvested from 8 to 12 Aug. *Moong* plants turned in on Sep. 7; Maize harvested on Sept. 15, 1951.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 8. (iv) (a) N.A. (b) 50'x29'. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) Fair. (ii) No. (iii) Grain yield. (iv) (a) 1949 to N.A. (b) Yes. (c) N.A. (v) (a) Kanpur, Partapgarh, Banaras and Raya. (b) N.A. (vi) Nil. (vii) The experiment was conducted by A.C.

## 5. RESULTS :

(i) 1418 lb./ac.

(ii) 196.05 lb /ac.

—(iii) Treatment differences are highly significant.

(v) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	1622
2.	1765
3.	969
4.	1329
5.	1818
6.	1006
S.E./mean	= 69.31 lb./ac.

Crop :- Wheat (*Rabi*).

Ref :- U.P. 52(11).

Site :- Govt. Agri. Farm, Kalai.

Type :- 'C'.

Object :- To study the effect of fallow with or without hot weather cultivation as compared to having legume green manure or non legume crop during *kharif* on the yield of subsequent Wheat crop.

#### 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Loam (Aligarh type 3). (b) N.A. (iii) 21/22.10.1952. (iv) (a) Only hot weather plots were ploughed, *Palewa* and plough thrice, once with *Watts* plough and twice with *desi* plough 5 ploughings with *desi* plough and 1 harrowing for wheat. (b) Sown behind the plough in lines. (c) to (e) N.A. (v) Only maize was top dressed with 50 lb./ac. of N on 8.7.1952. (vi) N.A. (vii) Irrigated. (viii) N.A. (ix) N.A. (x) 4.4.1953.

#### 2. TREATMENTS :

1. Fallow (monsoon cultivated)-wheat.
2. Hot weather cultivation-wheat.
3. Maize (harvested on 9/10.9.1952 and used as fodder)-wheat.
4. *Guar* (harvested on 3/4.9.1952 and used as fodder)-wheat.
5. *Sanai* (turned in as green manure)-wheat.
6. Early *moong* (poor growth, buried on 3.9. 1952)—wheat.

#### 3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 8. (iv) (a) and (b) 50' x 29'. (v) Nil. (vi) Yes.

#### 4. GENERAL :

(i) Persistent rains adversely effected *kharif* crops. Fallow plots infested with weeds. Growth of wheat is very poor. (ii) Nil. (iii) Grain and straw yield. (iv) (a) 1949-50. (b) Yes. (c) N.A. (v) (a) Kalyanpur, Partapgarh, Banaras, Raya and Matkota. (b) N.A. (vi) Nil. (vii) The experiment was conducted by A.C.

#### 5. RESULTS :

- (i) 763 lb./ac.
- (ii) 137.7 lb./ac.
- (iii) Treatments do not differ significantly.
- (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield.
1.	690
2.	746
3.	765
4.	776
5.	848
6.	754
S E./mean	= 48.6 lb./ac.



Crop :- Wheat (*Rabi*).

Ref :- U.P. 53(351).

Site :- Govt. Agri. Farm, Kalai.

Type :- 'C'.

Object:—To study the effect of fallow with or without hot weather cultivation as compared to having legume green manure or a non-legume crop during *kharif* on the yield of subsequent Wheat crop.

## 1. BASAL CONDITIONS :

(i) (a) As per treatments. (b) As per treatments. (c) A/S applied only to maize plots at 50 lb./ac. of N on 30.7.1953. (ii) (a) Aligarh type 2. (b) N.A. (iii) 27.10.1953. (iv) (a) 5 ploughings each followed by *pata*, 1 harrowing and 1 *palwa*. (b) Drilling. (c) N.A. (d) N.A. (e) N.A. (v) Nil. (vi) N.A. (vii) Irrigated. (viii) N.A. (ix) 4.57". (x) 7.4.1954.

## 2. TREATMENTS :

1. Fallow—wheat.
2. Hot weather cultivation—fallow—wheat.
3. Maize—wheat.
4. *Guar* fodder—wheat.
5. *Sanai* for green manure—wheat.
6. Early *moong* T<sub>1</sub>—wheat.

*Guar* and *moong* failed to develop because of continuous rains during the early part of the monsoon. Maize crop also failed and was harvested for fodder.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 8. (iv) (a) N.A. (b) 50'×29'. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) Crop progressed well but in the month of February and March 1954 heavy showers accompanied with strong winds caused partial lodging of the crop. (ii) Attack of fungus diseases like rust which caused shrivelling of the grain. (iii) Grain and *bhusa* yield. (iv) (a) 1949—N.A. (b) Yes. (c) Nil. (v) (a) Kalyanpur, Gazipur, Banaras and Raya. (b) Nil. (vi) Nil. (vii) Experiment conducted by A.C.

## 5. RESULTS.

- (i) 940.0 lb./ac.  
 (ii) 167.92 lb /ac.  
 (iii) Treatment differences are highly significant.  
 (iv) Av. yield of grain in lb /ac.

Treatment	Av. yield
1.	958
2.	873
3.	1038
4.	766
5.	1155
6.	851
S.E./mean	=59.37 lb./ac.

Crop :- Wheat (*Rabi*).

Ref :- U.P. 49(20).

Site :- Govt. Agri. Res. Farm, Kalyanpur.

Type :- 'C'.

Object:—To study the effect of fallow as compared to having a legume, non legume or green manure crop in *kharif* on the yield of Wheat in *rabi*.

## 1. BASAL CONDITIONS :

(i) (a) and (b) As per treatments. (c) N.A. (ii) (a) Loam (Kanpur type 2). (b) N.A. (iii) 18.10.1949 and re-sown on 9.11.1949 due to poor germination and due to rains. (iv) (a) Ploughing and levelling done on 29.9.1949. (b) Sown in rectangular strips. (c) to (c) N.A. (v) Nil. (vi) N.A. (vii) Irrigated. (viii) Weedings. (ix) N.A. (x) 5.4.1950.

## 2. TREATMENTS :

1. Fallow—wheat.
2. Hot weather cultivation—fallow—wheat.
3. *Bhadian Sawan*—wheat.
4. *Jowar* fodder—wheat.
5. *Sanai* for G.M.—wheat.
6. Early *moong* and early *Udid*—wheat.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 8. (iv) (a) N.A. (b) 1/40 ac. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) No. (iii) Grain and straw yield. (iv) (a) 1949—1953. (b) N.A. (c) N.A. (v) (a) Kalai and Pratapgarh. (b) N.A. (vi) A severe hail storm on 24.3.1950 damaged the standing crop, but some of the fallen ears were picked up and added to the harvested crop. (vii) The experiment was conducted by A.C.

## 5. RESULTS :

(i) 1934 lb./ac.  
 (ii) 185.7 lb./ac.  
 (iii) Treatment differences are highly significant.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	2020
2.	1985
3.	1365
4.	1950
5.	2265
6.	2020
S.E./mean	=65.64 lb./ac.

Crop :-Wheat (*Rabi*).

Ref :-U.P. 50(64).

Site :-Govt. Agri. Res. Farm, Kalyanpur.

Type :-'C'.

Object :-To study the effect of fallow with or without hot wheather cultivation as compared to having a non legume, legume or green manure in *kharif* on the yield of subsequent Wheat crop in *rabi*.

## 1. BASAL CONDITIONS :

(i) (a) and (b) As per treatments. (c) 50 lb./ac. of N to maize on 16.6.1950. (ii) (a) Loam (Kanpur Type 2). (b) N.A. (iii) 30.10.1950. (iv) (a) Hot weather cultivation was commenced from 9.6.1950 in the field having this treatment. Final preparation on 19.6.1950 with one ploughing by iron watts plough and cultivation by cultivator and finally levelled. Plots were ploughed with a victory plough after *kharif* and given one cultivation and finally prepared after *rabi*. (b) to (c) N.A. (v) No. (vi) N.A. (vii) N.A. (viii) N.A. (ix) N.A. (x) 4.4.1951.

## 2. TREATMENTS :

1. Fallow—wheat.
2. Hot weather cultivation—fallow—wheat
3. Maize—wheat.
4. *Guar* fodder—wheat.
5. *Sanai* for green manuring —wheat.
6. Early *moong*—wheat.

Sowing in *kharif* was done on 19.6.1950. *Sanai* turned in after 6 weeks of sowing. *Moong* pods were picked up 4 times and the plants turned into the soil. Maize crop was poor and was harvested as fodder after removing the green cobs. *Sanai* and *Moong* were average.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 8. (iv) (a) N.A. (b) 27' x 40'-4". (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) Poor germination. (ii) No. (iii) Grain yield. (iv) (a) 1949 to 1953. (b) Yes. (c) N.A. (v) (a) Pratapgarh and Banaras. (b) N.A. (vi) Nil. (vii) The expt. was conducted by A.C.

## 5. RESULTS :

(i) 1543 lb./ac.  
 (ii) 237.7 lb./ac.  
 (iii) Treatment differences are highly significant.

(iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	1280
2.	1465
3.	1375
4.	1175
5.	2310
6.	1650
S.E./mean	=84.05 lb./ac.

Crop :-Wheat (*Rabi*).

Ref :-U.P. 51(101).

Site :-Govt. Agri. Res. Farm, Kalyanpur.

Type :-'C'.

Object :-To study the effect of fallow with or without hot weather cultivation as compared to having legume green manure or a non legume crop in *kharif* on the yield of subsequent crop of Wheat.

1. BASAL CONDITIONS :

(i) (a) and (b) As per treatments. (c) 50 lb./ac. of N as A/S was broadcast to maize crop. (ii) (a) Loam (Kanpur type 2). (b) N.A. (iii) 26.10.1951. (iv) (a) 2 ploughings and harrowing. (b) to (e) N.A. (v) Nil. (vi) N.A. (vii) Irrigated. (viii) N.A. (ix) N.A. (x) 8 and 9.11.1952.

2. TREATMENTS :

1. Fallow—wheat.
2. Hot weather cultivation—wheat.
3. Maize—wheat.
4. *Guar* fodder—wheat.
5. *Sanai* for green manuring—wheat.
6. Early *moong*—wheat.

Hot weather cultivation was done on 19.4.1951. Crop sown on 13.7.1951. *Moong* pods were picked up 3 times before turning in on 18.9.1951. *Sanai* was turned in on 3.9.1951. *Guar* was harvested on 3.10.1951 and maize was harvested on 8.9.1951.

3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 8. (iv) (a) N.A. (b) 27'×40'-4". (v) N.A. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Grain yield. (iv) (a) 1949 to 1953. (b) Yes. (c) N.A. (v) (a) Pratapgarh, Banaras, Kalai and Raya. (b) N.A. (vi) Nil. (vii) The expt. was conducted by A.C.

5. RESULTS :

- (i) 1271 lb./ac.  
(ii) 192.6 lb./ac.  
(iii) Treatment differences are not significant.  
(iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	1190
2.	1455
3.	1185
4.	1295
5.	1290
6.	1210
S.E./mean	=68.09 lb./ac.

Crop :-Wheat (*Rabi*).

Ref :-U.P. 52(12).

Site :-Govt. Agri. Res. Farm, Kalyanpur.

Type :-'C'.

Object :-To study the effect of fallow with or without hot weather cultivation as compared to having legume green manure or non-legume crop during *kharif* on the yield of subsequent Wheat crop.

## 1. BASAL CONDITIONS :

(i) (a) and (b) As per treatments. (c) N.A. (ii) (a) Loam (Kanpur-type 2). (b) N.A. (iii) 24, 25.10.1952. (iv) (a) Only hot weather cultivated plots were tilled with victory plough. Irrigation followed by Punjab soil turning plough. Watts plough followed by cultivation on 3.7.1952. *Kharif* crops sown on 5.7.1952. 4 ploughings before sowing wheat. (b) to (e) N.A. (v) Maize top dressed with 50 lb./ac. of N on 3.8.1952. (vi) N.A. (vii) Irrigated. (viii) 1 weeding. (ix) N.A. (x) 28.3.1953.

## 2. TREATMENTS :

1. Fallow (monsoon cultivated)—wheat.
2. Hot weather cultivation—wheat.
3. Maize (harvested and used as green fodder)—wheat.
4. *Guar* (harvested and used as fodder)—wheat.
5. *Sanai* (turned in as green manure on 2.9.1952)—wheat.
6. Early *moong* (harvested on 7.9. 1952 and then buried)—wheat.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 8. (iv) (a) and (b) 27'×40.4'. (v) Nil. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) Nil. (iii) Grain and straw yield. (iv) (a) 1949 to 1953. (b) Yes. (c) N.A. (v) (a) Kalai, Raya, Matkota, Pratapgarh and Banaras. (b) N.A. (vi) Nil. (vii) The experiment was conducted by A.C.

## 5. RESULTS :

- (i) 1143 lb./ac.
- (ii) 217.2 lb./ac.
- (iii) Treatments are highly significantly different.
- (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	580
2.	1060
3.	850
4.	1510
5.	1685
6.	1175
S.E./mean	=76.72 lb./ac.

Crop :-Wheat (*Rabi*).

Ref :-U.P. 53(361).

Site :-Govt. Agri. Farm, Kalyanpur.

Type :-'C'.

Object :-To study the effect of fallow with or without hot weather cultivation as compared to having legume green manure or a non-legume crop during *kharif* on the yield of the subsequent Wheat crop.

## 1. BASAL CONDITIONS :

(i) (a) and (b) As per treatments. (c) 20 lb./ac. of N as A/S to maize only. (ii) (a) Kanpur (Type 2). (b) N.A. (iii) 23, 24.12.1953. (iv) (a) Hot weather cultivation fields ploughed on 20.7.1953, 1 victory plough, and 1 watts plough. The field was cultivated and *Pata* done on 15th, 18th Sept. and 8th Oct. Two ploughings by *desi*. (b) Behind the plough. (c) to (e) N.A. (v) Nil. (vi) N.A. (vii) Irrigated. (viii) N.A. (ix) N.A. (x) 3.4.1954.

## 2. TREATMENTS :

1. Fallow followed by wheat.
2. Hot weather cultivation followed by wheat.
3. Early maize followed by wheat.
4. *Guar* for fodder followed by wheat.
5. *Sanai* for green manuring followed by wheat.
6. *Moong* T-1 followed by wheat.

*Kharif* sowing on 20.6.1953. Maize harvested on 5.9.1953 and *Guar* on 19.8.1953. *Sanai* turned in on 12.8.1953. *Moong* picked up and plants turned in for green manuring.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 8. (iv) (a) N.A. (b) 27'×40'4". (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) Germination was uniform. Growth good. (ii) N.A. (iii) Grain and straw yield. (iv) (a) 1949-N.A. (b) N.A. (c) Yes. (v) (a) Kalai, Gazipur, Banaras and Raya. (b) N.A. (vi) Rats damaged the wheat crop. (vii) Experiment conducted by A.C.

## 5. RESULTS :

- (i) 581.8 lb./ac.  
 (ii) 93.10 lb./ac.  
 (iii) Treatment differences are highly significant.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	386.5
2.	410.0
3.	607.5
4.	502.0
5.	1036.5
6.	548.5
S.E./mean	=32.92 lb./ac.

Crop :- Wheat. (*Rabi*)

Ref :- U.P. 50(151).

Site :- Govt. Res. Farm, Kanpur.

Type :- 'C'.

Object :- To study the effect of spacing and seedlings per hill on yield of Wheat.

## 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Loam. (b) N.A. (iii) 14 and 15.11.1950. (iv) (a) One ploughing with victory plough and six with *desi* plough. (b) Dibbling. (c) N.A. (d) and (e) As per treatments. (v) 4 cart loads of F.Y.M. (vi) C-13 (early). (vii) Irrigated. (viii) Nil. (ix) N.A. (x) 8 and 9.5.1951.

## 2. TREATMENTS :

All combinations of (1) and (2).

- (1) Seedling/hill :  $H_1=1$ ,  $H_2=2$  and  $H_3=3$  seedlings/hill.  
 (2) 4 spacings between plants :  $S_1=3''$ ,  $S_2=6''$ ,  $S_3=9''$  and  $S_4=12''$ .

## 3. DESIGN :

(i) 3×4 Fact. in R.B.D. (ii) (a) 12. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 9'×6'. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) N.A. (iii) Yield of grain. (iv) (a) 1950 to 1953. (b) No. (c) N.A. (v) (a) No. (b) N.A. (vi) Nil. (vii) The experiment was conducted by E.B.R.

## 5. RESULTS :

- (i) 1977 lb./ac.  
 (ii) 314.25 lb./ac.  
 (iii) Both H and S effects are highly significant while interaction is not significant.  
 (iv) Av. yield of grain in lb./ac.

	$S_1$	$S_2$	$S_3$	$S_4$	Mean
$H_1$	2152	1893	1322	1037	1601
$H_2$	2645	2308	2048	1659	2165
$H_3$	2437	2152	2074	1997	2165
Mean	2411	2118	1815	1564	1977

S.E. of marginal mean of H = 78.56 lb./ac.  
 S.E. of marginal mean of S = 90.72 lb./ac.  
 S.E. of body of table = 157.12 lb./ac.

Crop :- Wheat (*Rabi*).

Ref :- U.P. 51(34).

Site :- Govt. Res. Farm, Kanpur.

Type :- 'C'.

Object :- To study the effects of spacing and seedlings per hill on yield of Wheat.

## 1. BASAL CONDITIONS :

(i) (a) No. (b) *Sanal* (G.M.). (c) Nil. (ii) (a) Light loam. (b) N.A. (iii) 14 and 15.11.1951. (iv) (a) 3 *desi*, 1 victory and 1 cultivator ploughing. (b) and (c) N.A. (d) and (e) As per treatments. (v) Nil. (vi) C-13 (early). (vii) Irrigated. (viii) Nil. (ix) N.A. (x) 19.4.1952.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) Seedlings/hill :  $H_1=1$ ,  $H_2=2$  and  $H_3=3$ .(2) 4 spacings between plants :  $S_1=3''$ ,  $S_2=6''$ ,  $S_3=9''$  and  $S_4=12''$ .

## 3. DESIGN :

(i)  $3 \times 4$  Fact. in R.B.D. (ii) (a) 12 in two flanks. (b) N.A. (iii) 4. (iv) (a) and (b)  $9' \times 6'$ . (v) Nil. (vi) Yes.

## 4. GENERAL :

(i) No lodging. (ii) At the later stage the leaves and stems of all the plots were attacked by orange rust. (iii) Germination and yield of grain. (iv) (a) 1950 to 1953. (b) No. (c) N.A. (v) (a) No. (b) N.A. (vi) Nil. (vii) The expt. was conducted by E.B. (R).

## 5. RESULTS :

(i) 1673 lb./ac.

(ii) 433.53 lb./ac.

(iii) S and H effects are highly significant while interaction is not significant.

(iv) Av. yield of grain in lb/ac.

	$S_1$	$S_2$	$S_3$	$S_4$	Mean
$H_1$	1698	1296	1089	1050	1283
$H_2$	2411	1634	1672	1361	1770
$H_3$	2774	1906	1724	1465	1967
Mean	2294	1612	1495	1292	1673

S.E. of H marginal mean = 108.38 lb./ac.

S.E. of S marginal mean = 125.15 lb./ac.

S.E. of body of table. = 216.76 lb./ac.

Crop :- Wheat (*Rabi*).

Ref :- U.P. 52(51).

Site :- Govt. Res. Farm, Kanpur.

Type :- 'C'.

Object :- To study the effect of spacing and seedlings per hill on yield of Wheat.

## 1. BASAL CONDITIONS :

(i) (a) No. (b) *Sanal* (G.M.). (c) Nil. (ii) (a) Loam. (b) N.A. (iii) 4, 5.11.1952. (iv) (a) ploughings-2 with victory plough, 3 with *desi* plough and 2 with cultivator. (b) Dibbling. (c) N.A. (d) and (e) As per treatments. (v) Nil. (vi) C-13. (vii) Irrigated. (viii) Nil. (ix) N.A. (x) 11.4.1953.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) Seedlings/hill :  $H_1=1$ ,  $H_2=2$  and  $H_3=3$  seedlings/hill.(2) 4 spacings between plants :  $S_1=3''$ ,  $S_2=6''$ ,  $S_3=9''$  and  $S_4=12''$ .

## 3. DESIGN :

(i)  $3 \times 4$  Fact. in R.B.D. (ii) (a) 12 in two flanks. (b) N.A. (iii) 4. (iv) (a) and (b)  $9' \times 6'$ . (v) Nil. (vi) Yes.

## 4. GENERAL :

- (i) Good. No lodging. (ii) Traces of brown rust. (iii) Germination and grain yield. (iv) (a) 1950 to 1953. (b) No. (c) N.A. (v) (a) No. (b) N.A. (vi) Nil. (vii) The expt. was conducted by E.B. (R).

## 5. RESULTS :

- (i) 2852 lb./ac.  
 (ii) 328.0 lb./ac.  
 (iii) H and S effects are highly significant while their interaction is significant.  
 (iv) Av. yield of grain in lb./ac.

	S <sub>1</sub>	S <sub>2</sub>	S <sub>3</sub>	S <sub>4</sub>	Mean
H <sub>1</sub>	3189	2723	2126	1763	2450
H <sub>2</sub>	3189	2852	2774	2800	2904
H <sub>3</sub>	3474	3163	3267	2904	3202
Mean	3284	2913	2722	2489	2852

S.E. of H marginal mean = 82.00 lb./ac.  
 S.E. of S marginal mean = 94.68 lb./ac.  
 S.E. of body of table = 163.99 lb./ac.

Crop :- Wheat (*Rabi*).

Ref :- U.P. 53(90).

Site :- Govt. Res. Farm, Kanpur.

Type :- 'C'.

Object :- To study the effect of spacing and seedlings per hill on yield of Wheat.

## 1. BASAL CONDITIONS :

- (i) (a) *Sanai*—wheat. (b) *Sanai* for green manuring. (c) Nil. (ii) (a) Loam. (b) N.A. (iii) 1.11.1953. (iv) (a) Light *Palewa*, 1 watts ploughing and *pata*, 3 *desi* ploughing and *pata*. (b) Dibbling. (c) N.A. (d) and (e) As per treatment. (v) Nil. (vi) C-13 (medium). (vii) Irrigated. (viii) Nil. (ix) N.A. (x) 10.4.1954.

## 2. TREATMENTS :

All combinations of (1) and (2)

- (1) Seedlings/hill : H<sub>1</sub>=1, H<sub>2</sub>=2 and H<sub>3</sub>=3 seedlings/hill.  
 (2) 4 spacings between plants : S<sub>1</sub>=3", S<sub>2</sub>=6", S<sub>3</sub>=9" and S<sub>4</sub>=12".

## 3. DESIGN :

- (i) 4×3 Fact. in R.B.D. (ii) (a) 12. (b) N.A. (iii) 4. (iv) (a) and (b) 9'×6'. (v) Nil. (vi) Yes.

## 4. GENERAL :

- (i) Good. No lodging. (ii) Nil. (iii) Germination, flowering, tillering, grain and straw yield. (iv) (a) 1950 to 1953. (b) No. (c) N.A. (v) (a) No. (b) N.A. (vi) Nil. (vii) The expt. was conducted by E.B.(R).

## 5. RESULTS :

- (i) 3490 lb./ac.  
 (ii) 240.51 lb./ac.  
 (iii) H and S effects are highly significant while interaction is not significant.  
 (iv) Av. yield of grain in lb./ac.

	S <sub>1</sub>	S <sub>2</sub>	S <sub>3</sub>	S <sub>4</sub>	Mean
H <sub>1</sub>	3500	3397	3008	2930	3209
H <sub>2</sub>	3708	3630	3397	3526	3565
H <sub>3</sub>	3889	3630	3656	3604	3695
Mean	3699	3552	3354	3353	3490

S.E. of H marginal mean = 60.13 lb./ac.  
 S.E. of S marginal mean = 69.43 lb./ac.  
 S.E. of body of table = 120.26 lb./ac.

Crop :- Wheat (*Rabi*).  
Site :- Govt. Res. Farm, Kanpur.

Ref :- U.P. 48(19).  
Type :- 'C'.

Object :- To study the effect of depth of sowing and seed rates on the yield of Wheat.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Loam. (b) N.A. (iii) 6.11.1948. (iv) (a) N.A. (b) Seeds drilled. (c) As per treatments. (d) N.A. (e) N.A. (v) Nil. (vi) C-13 (early). (vii) Unirrigated. (viii) N.A. (ix) N.A. (x) 22, 23 4.1949.

2. TREATMENTS :

All combinations of (1) and (2)

(1) 2 seed rates :  $R_1=38$  scers/ac. and  $R_2=60$  scers/ac.

(2) 2 depths to which the seed is sown :  $D_1=1\frac{1}{2}"$  and  $D_2=2\frac{1}{2}"$ .

3. DESIGN :

(i)  $2 \times 2$  Fact. in R.B.D. (ii) (a) 4. (b) N.A. (iii) 4. (iv) (a)  $33' \times 22.5'$ . (b)  $30' \times 22.5'$ . (v) 1.5' along both sides of breadth. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Attack of rust was not severe except that it was found in traces, but later on, it developed. (iii) Yield of fresh and dry grain. (iv) (a) 1948—1950. (b) No. (c) N.A. (v) (a) No. (b) N.A. (vi) Nil. (vii) The experiment was conducted by E.B.(R).

5. RESULTS :

(i) 1974 lb./ac.

(ii) 136.8 lb./ac.

(iii) None of the effects is significant.

(iv) Av. yield of grain in lb./ac.

	$D_1$	$D_2$	Mean
$R_1$	1948	2109	2028
$R_2$	1940	1900	1920
Mean	1944	2004	1974

S.E. of any marginal mean = 48.35 lb./ac.

S.E. of body of table = 68.38 lb./ac.

Crop :- Wheat (*Rabi*).  
Site :- Govt. Res. Farm, Kanpur.

Ref :- U.P. 49(35).  
Type :- 'C'.

Object :- To study the effect of depth of sowing and seed rates on the yield of Wheat.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Loam. (b) N.A. (iii) 27.10.1949. (iv) (a) 1 ploughing with victory plough, 3 ploughing with cultivator and 1 ploughing with *desi* plough. (b) Drilling. (c) As per treatments. (d) N.A. (e) N.A. (v) No. (vi) C-13 (early). (vii) Irrigated. (viii) 2 hoeings with man power. (ix) N.A. (x) 5, 6.4.1950.

2. TREATMENTS :

All combinations of (1) and (2)

(1) 4 seed rates :  $R_1=34$ ,  $R_2=27$ ,  $R_3=17$  and  $R_4=11$  scers/ac.

(2) 2 depths to which the seed is sown :  $D_1=1\frac{1}{2}"$ , and  $D_2=2\frac{1}{2}"$ .

3. DESIGN :

(i)  $4 \times 2$  Fact. in R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a)  $42' \times 15'$ . (b)  $38' \times 13\frac{1}{2}'$ . (v)  $2' \times \frac{1}{2}'$ . (vi) Yes.

4. GENERAL :

(i) Good. (ii) Negligible - only traces of orange rust (small pustules) appeared late in the season i.e. during 1st. week of February. (iii) Grain and *bhusa* yield. (iv) (a) 1948—1950. (b) No. (c) N.A. (v) (a) No. (b) N.A. (vi) Nil. (vii) The experiment was conducted by E.B.(R).



## 5. RESULTS :

- (i) 1560 lb./ac.  
 (ii) 236.4 lb./ac.  
 (iii) None of the effects is significant.  
 (iv) Av. yield of grain in lb./ac.

	R <sub>1</sub>	R <sub>2</sub>	R <sub>3</sub>	R <sub>4</sub>	Mean
D <sub>1</sub>	1681	1670	1517	1474	1586
D <sub>2</sub>	1594	1528	1594	1419	1534
Mean	1638	1599	1556	1446	1560

S.E. of marginal mean of R = 83.56 lb./ac.  
 S.E. of marginal mean of D = 59.09 lb./ac.  
 S.E. of body of table = 118.17 lb./ac.

Crop :-Wheat (*Rabi*).

Ref :-U.P. 50(136).

Site :-Govt. Res. Farm, Kanpur.

Type :-'C'.

Object :-To study the effect of depth of sowing and seed rate on yield of Wheat.

## 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Loam. (b) N.A. (iii) 30.10.1950. (iv) (a) 2 ploughings with victory plough and 5 ploughings by *desi* plough. (b) Behind the plough. (c) As per treatments. (d) Rows 9" apart. (e) N.A. (v) 8 cart loads of F.Y.M. (vi) C-13 (early). (vii) Irrigated. (viii) Nil. (ix) N.A. (x) 25 and 26.4.1951.

## 2. TREATMENTS :

All combinations of (1) and (2)

- (1) 4 seed rates : R<sub>1</sub>=20, R<sub>2</sub>=40, R<sub>3</sub>=60 and R<sub>4</sub>=80 lb./ac.  
 (2) 2 depths to which the seed is sown : D<sub>1</sub>=1½", and D<sub>2</sub>=2½".

## 3. DESIGN :

(i) 4×2 Fact. in R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a) 23'×17'-3". (b) 19'×15'-9". (v) 2'×½'. (vi) Yes.

## 4. GENERAL :

(i) Good growth. (ii) No disease except brown rust in traces only. (iii) Grain yield. (iv) (a) 1948—1950. (b) No. (c) N.A. (v) (a) No. (b) N.A. (vi) Nil. (vii) The expt. was conducted by E.B. (R).

## 5. RESULTS :

- (i) 1363 lb./ac.  
 (ii) 181.1 lb./ac.  
 (iii) None of the effects is significant.  
 (iv) Av. yield of grain in lb./ac.

	R <sub>1</sub>	R <sub>2</sub>	R <sub>3</sub>	R <sub>4</sub>	Mean
D <sub>1</sub>	1408	1450	1268	1188	1328
D <sub>2</sub>	1385	1329	1469	1404	1397
Mean	1396	1390	1368	1296	1363

S.E. of marginal mean of D = 45.27 lb./ac.  
 S.E. of marginal mean of R = 64.03 lb./ac.  
 S.E. of body of table = 90.55 lb./ac.

Crop :-Wheat (*Rabi*).  
Site :-Govt. Res. Farm, Kanpur.

Ref :-U.P.52(46).  
Type :-'C'.

Object :-To study the effect of seed rate and spacing on the growth and yield of Wheat.

1. BASAL CONDITIONS :

(i) (a) No. (b) *Sanai* (G.M.). (c) Nil. (ii) (a) Loam. (b) N.A. (iii) 28.10.1952. (iv) (a) 2 victory, 3 *desi* and 1 cultivator ploughing. (b) Sown behind the plough. (c) and (d) As per treatments. (e) N.A. (v) Nil. (vi) N.P. 710. (vii) Irrigated. (viii) Nil. (ix) N.A. (x) 10.4.1953.

TREATMENTS :

All combinations of (1) and (2)

(1) 3 row spacings :  $S_1=9''$ ,  $S_2=12''$  and  $S_3=15''$ .

(2) 3 seedrates :  $R_1=40$ ,  $R_2=60$  and  $R_3=80$  lb./ac.

3. DESIGN :

(i)  $3 \times 3$  Fact. in R.B.D. (ii) (a) 9 in 3 flanks. (b) N.A. (iii) 2. (iv) (a)  $22' \times 15'$ . (b)  $18' \times 15'$ . (v) 2' at each end of the plot. (vi) Yes.

4. GENERAL :

(i) Good. (ii) No. (iii) Germination and grain yield. (iv) (a) 1952—continued. (b) No. (c) N.A. (v) (a) No. (b) N.A. (vi) Nil. (vii) The expt. was conducted by E.B. (R).

5. RESULTS :

(i) 2934 lb./ac.

(ii) 310.1 lb./ac.

(iii) None of the effects is significant.

(iv) Av. yield of grain in lb./ac.

	$S_1$	$S_2$	$S_3$	Mean
$R_1$	3194	2738	2676	2869
$R_2$	2925	3153	2551	2876
$R_3$	3174	2862	3132	3056
Mean	3098	2918	2786	2934

S.E. of any marginal mean

=126.6 lb./ac.

S.E. of body of table

=219.3 lb./ac.

Crop :-Wheat (*Rabi*).  
Site :-Govt. Res. Farm, Kanpur.

Ref :-U.P. 53(88).  
Type :-'C'.

Object :-To study the effect of seed rates and spacings on growth and yield of Wheat.

1. BASAL CONDITIONS :

(i) (a) *Sanai*-Wheat rotation followed. (b) *Sanai* for green manuring. (c) Nil. (ii) (a) Loam. (b) N.A. (iii) 28.10.1953. (iv) (a) Light *palewa* on 12.10.1953. Turning in of *Sanai* on 31.8.1953 with victory plough. Victory plough and *pata* on 28.9.1953. *Desi* plough and *pata* on 10, 23 and 27.10.1953. Spring harrow and *pata* on 20.10.1953. (b) N.A. (c) and (d) As per treatments. (e) N.A. (v) Nil. (vi) N.P. 710 (vii) Irrigated. (viii) 2 weedings with *khurpi*. (ix) N.A. (x) 10.4.1954.

2. TREATMENTS :

All combinations of (1) and (2)

(1) 3 spacings :  $S_1=9''$ ,  $S_2=12''$  and  $S_3=15''$ .

(2) 3 seed rates :  $R_1=40$ ,  $R_2=60$  and  $R_3=80$  lb./ac.

3. DESIGN :

(i)  $3 \times 3$  Fact. in R.B.D. (ii) (a) 9. (b) N.A. (iii) 4. (iv) (a)  $22' \times 15'$ . (b)  $18' \times 15'$ . (v) 2' at each end of plot. (vi) Yes.

## 4. GENERAL :

(i) Fair. No lodging. (ii) Slight incidence of rust disease. (iii) Germination, grain and straw yield. (iv) (a) 1952 1953 (*Rabi*) continued with modification. (b) No. (c) N.A. (v) (a) No. (b) N.A. (vi) Nil. (vii) The experiment was conducted by E.B.(R).

## 5. RESULTS :

- (i) 1121 lb./ac.  
 (ii) 166.0 lb./ac.  
 (iii) None of the effects is significant.  
 (iv) Av. yield of grain in lb./ac.

	S <sub>1</sub>	S <sub>2</sub>	S <sub>3</sub>	Mean
R <sub>1</sub>	1104	1151	1094	1116
R <sub>2</sub>	1099	1156	1099	1118
R <sub>3</sub>	1120	1104	1162	1129
Mean	1108	1137	1118	1121

S.E. of any marginal mean = 47.93 lb./ac.  
 S.E. of body of table = 83.02 lb./ac.

Crop :-Wheat (*Rabi*).

Site :-Govt. Res. Farm, Kanpur.

Ref :-U.P. 51(23).

Type :-'C'.

Object :-To study the effect of pruning and top dressing on Wheat.

## 1. BASAL CONDITIONS :

(i) (a) No. (b) *Chari* for fodder. (c) Nil. (ii) (a) Loam. (b) N.A. (iii) 25.10.1951. (iv) (a) 2 ploughings and harrowings with *desi* plough and 1 with victory plough. (b) N.A. (c) 100 lb./ac. (d) 9" apart. (e) N.A. (v) 24 seers of A/S i.e. 1 sr./plot applied with first irrigation on 22.11.1951. (vi) N.P. 125. (vii) Irrigated. (viii) 2 weedings. (ix) N.A. (x) 7.4.1952.

## 2. TREATMENTS :

1. Control.
2. Pruned and top dressed.
3. Unpruned and top dressed.

A/S at  $\frac{1}{4}$  srs./plot top dressed on 10.10.1952. Date of pruning on 29.12. 1951 at the height of 9"—10".

## 3. DESIGN :

(i) R.B.D. (ii) (a) 3. (b) N.A. (iii) 8. (iv) (a) 30' x 12' 9". (b) 26' x 11' 3". (v) 2' x  $\frac{1}{2}$ '. (vi) Yes.

## 4. GENERAL :

(i) Good. No lodging. (ii) At a later stage the leaves and stem of all the plants of every treatment were affected by orange rust. (iii) Germination and grain yield. (iv) (a) No. (b) No. (c) N.A. (v) (a) No. (b) N.A. (vi) Nil. (vii) The experiment was conducted by E.B.(R).

## 5. RESULTS :

- (i) 1144 lb./ac.  
 (ii) 169.51 lb./ac.  
 (iii) Treatments are not significantly different.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	1122
2.	1130
3.	1180
S.E./mean	= 59.93 lb./ac.

Crop :-Wheat (*Rabi*).  
Site :- Govt. Res. Farm, Kanpur.

Ref :- U.P. 48(16).  
Type :- 'C'.

Object :- To find out the best seed rate for Wheat.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Sanai* for G.M. (c) Nil. (ii) (a) Loam. (b) N.A. (iii) 27.10.1948. (iv) (a) and (b) N.A. (c) As per treatments. (d) Rows 9" apart. (e) N.A. (v) Nil. (vi) C-13 (early). (vii) N.A. (viii) N.A. (ix) N.A. (x) 26.4.1949.

2. TREATMENTS :

4 seed rates :  $R_1=40$  lb./ac.,  $R_2=60$  lb./ac.,  $R_3=80$  lb./ac. and  $R_4=100$  lb./ac.

3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 4. (iv) (a) 45'×12'-9". (b) 41'×12'-9". (v) N.A. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of fresh and dry grain. (iv) (a) 1947 to 1948. (b) No. (c) N.A. (v) (a) No. (b) N.A. (vi) Nil. (vii) The experiment was conducted by E.B. (R).

5. RESULTS :

- (i) 1983 lb./ac.  
(ii) 105.21 lb./ac.  
(iii) Treatments are not significantly different.  
(iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
$R_1$	1948
$R_2$	1948
$R_3$	1948
$R_4$	2088
S.E./mean	= 52.60 lb./ac.

Crop :-Wheat (*Rabi*).  
Site :-Govt. Res. Farm, Kanpur.

Ref :- U.P. 49(38).  
Type :- 'C'.

Object :- To study the effect of the dibbling on Wheat.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Sanai* for G.M. (c) Nil. (ii) (a) Loam. (b) N.A. (iii) 15, 16.11.1949. (iv) (a) 3 ploughings with victory plough, 2 with cultivator and 5 with *dest* plough. (b) to (e) As per treatments. (v) *Sanai* for G.M. (vi) C-13 (early). (vii) Irrigated. (viii) One hoeing with manpower. (ix) N.A. (x) 26.4.1950.

2. TREATMENTS :

All combinations of (1) and (2).

(1) 4 levels of seedlings :  $H_1=1$ ,  $H_2=2$ ,  $H_3=3$  seedlings/hill and  $H_4=As$  usual behind the plough (80 lb./ac. of seed).

(2) 2 depths at which the seeds are sown :  $D_1=1\frac{1}{2}"$  and  $D_2=2\frac{1}{2}"$

Method of sowing : For  $D_1H_4$ —with *kudali* ;  $D_2H_4$ —sown behind the plough and rest with dibbling sticks.

3. DESIGN

(i) 4×2 Fact. in R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a) 35'×12'. (b) 32'×10 $\frac{1}{2}'$  (v) 1 $\frac{1}{2}'$ × $\frac{3}{4}'$  (vi) Yes.

4. GENERAL :

(i) The field was watered on 8th and 10th March with the result crop lodged. (ii) N.A. (iii) Yield of grain and *bhusa*. (iv) (a) 1949 to 1954. (b) No. (c) N.A. (v) (a) No. (b) N.A. (vi) Nil. (vii) The experiment was conducted by E.B. (R).

5. RESULTS :

- (i) 1757 lb./ac.  
(ii) 163.98 lb./ac.  
(iii) H and D effects are highly significant but interaction is not significant.

(iv) Av. yield of grain in lb./ac.

	H <sub>1</sub>	H <sub>2</sub>	H <sub>3</sub>	H <sub>4</sub>	Mean
D <sub>1</sub>	1387	1679	1770	1783	1655
D <sub>2</sub>	1637	1906	1938	1958	1860
Mean	1512	1792	1854	1870	1757

S.E. of marginal mean of H = 57.98 lb./ac.  
 S.E. of marginal mean of D = 41.00 lb./ac.  
 S.E. of body of table = 81.99 lb./ac.

Crop :- Wheat (*Rabi*).  
 Site :- Govt. Res. Farm, Kanpur.

Ref :- U.P. 50(143).  
 Type :- 'C'.

Object :- To study the effect of dibbling on Wheat.

#### 1. BASAL CONDITIONS :

(i) (a) Nil. (b) N.A. (c) N.A. (ii) (a) Loam. (b) N.A. (iii) 14 and 15.11.1950. (iv) (a) One ploughing with victory plough and six with *desi* plough. (b) N.A. (c) N.A. (d) Between rows 9" (no. of rows 14); distance between seeds 6". (v) 4 C.L. of F.Y.M. (vi) C-13 (early). (vii) Irrigated. (viii) Nil. (ix) N.A. (x) 8, 9.5.1951.

#### 2. TREATMENTS :

All combinations of (1) and (2)

(1) 4 levels of seedlings : H<sub>1</sub>=1, H<sub>2</sub>=2, H<sub>3</sub>=3 seedlings/hill and H<sub>4</sub>=seed sown behind the plough (seed rate 80 lb./ac).

(2) 2 depths at which the seed is sown : D<sub>1</sub>=1½" and D<sub>2</sub>=2¼".

#### 3. DESIGN :

(i) 4×2 Fact. in R.B.D. (ii) (a) 8. (b) N.A. (iii) 3. (iv) (a) 20'×10'-6". (b) 16'×9'. (v) 2'×½'. (vi) Yes.

#### 4. GENERAL :

(i) N.A. (ii) Nil. (iii) Grain yield. (iv) (a) 1949-1950 to 1954-1955. (b) No. (c) N.A. (v) (a) No. (b) N.A. (vi) Nil. (vii) The experiment was conducted by E.B.(R).

#### 5. RESULTS :

(i) 1393 lb./ac.

(ii) 215.14 lb./ac.

(iii) Only H effect is highly significant.

(iv) Av. yield of grain in lb./ac.

	H <sub>1</sub>	H <sub>2</sub>	H <sub>3</sub>	H <sub>4</sub>	Mean
D <sub>1</sub>	1103	1303	1449	1556	1354
D <sub>2</sub>	1196	1478	1468	1585	1432
Mean	1152	1390	1458	1570	1393

S.E. of marginal mean of H = 76.06 lb./ac.  
 S.E. of marginal mean of D = 53.79 lb./ac.  
 S.E. of body of table = 107.57 lb./ac.

Crop :- Wheat (*Rabi*).  
Site :- Govt. Res. Farm Kanpur.

Ref :- U.P. 51(33).  
Type :- 'C'.

Object :- To study the effect of dibbling on Wheat.

1. BASAL CONDITIONS :

(i) (a) No. (b) *Sanal* (green manuring). (c) Nil. (ii) (a) Light loam. (b) N.A. (iii) 15.11.1951. (iv) (a) Ploughings by *dest*-3; victory-2; cultivator-1. (b) and (c) As per treatments. (d) 9"×6". (e) As per treatments. (v) Nil. (vi) C-13 (early). (vii) Irrigated. (viii) Nil. (ix) N.A. (x) 19.4.1952.

2. TREATMENTS :

All combinations of (1) and (2)

- (1) 4 levels of seedlings :  $H_1=1$ ,  $H_2=2$ ,  $H_3=3$  and  $H_4$ =seed sown behind the plough at 80 lb./ac. as seed rate.  
(2) 2 depths to which the seed is sown :  $D_1=1\frac{1}{2}"$  and  $D_2=2\frac{1}{2}"$ .

3. DESIGN :

(i) 4×2 Fact. in R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a) 21'×10½'. (b) 17'×9'. (v) 2'×½'. (vi) Yes.

4. GENERAL :

(i) Very good. Lodging in 3 plots. (ii) At a later stage the leaves and stem of every plant were affected by orange rust, ears were not affected (6.3.1952). (iii) Germination and grain [yield. (iv) (a) 1949-1954. (b) No. (c) N.A. (v) (a) No. (b) N.A. (vi) Nil. (vii) The experiment was conducted by E.B. (R).

5. RESULTS :

- (i) 1504 lb./ac.  
(ii) 179.0 lb./ac.  
(iii) H and D effects are highly significant while interaction is not significant.  
(iv) Av. yield of grain in lb./ac.

	$H_1$	$H_2$	$H_3$	$H_4$	Mean
$D_1$	1089	1382	1519	1620	1402
$D_2$	1364	1492	1647	1922	1606
Mean	1226	1437	1583	1771	1504

S.E. of marginal mean of H =63.30 lb./ac.  
S.E. of marginal mean of D =44.76 lb./ac.  
S.E. of body of table =89.52 lb./ac.

Crop :-Wheat (*Rabi*).  
Site :-Govt. Res. Farm, Kanpur.

Ref :-U.P. 52(52).  
Type :-'C'.

Object :-To study the effect of dibbling on Wheat.

1. BASAL CONDITIONS :

(i) (a) No. (b) *Sanai* (G.M.). (c) Nil. (ii) (a) Loam. (b) N.A. (iii) 4 and 5.11.1952. (iv) (a) Ploughings-victory 2, *dest* 3 and cultivator 2. (b) and (c) As per treatments. (d) 9"×6". (e) As per treatments. (v) Nil. (vi) C. 13. (vii) Irrigated. (viii) Nil. (ix) N.A. (x) 11.4.1953.

2. TREATMENTS :

- $S_1$ =One seed/hole (1/3 ch. per plot) by dibbling.  
 $S_2$ =Two seeds/hole (11/12 ch. per plot) by dibbling.  
 $S_3$ =Three seeds/hole (7/6 ch. per plot) by dibbling.  
 $S_4$ =Seed sown behind the plough (6 ozs. or 3 chh. per plot).

3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 6. (iv) (a) 21'×10½'. (b) 17'×9'. (v) 2'×½'. (vi) Yes.

4. GENERAL :

(i) Good. (ii) On leaves and stem 15% attack of brown rust. (iii) Grain yield and germination. (iv) (a) 1949 to 1954. (b) No. (c) N.A. (v) (a) No. (b) N.A. (vi) Nil. (vii) The expt. was conducted by E.B.(R).

## 5. RESULTS :

- (i) 2294 lb./ac.  
 (ii) 199.8 lb./ac.  
 (iii) Treatments are not significantly different.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
S <sub>1</sub>	2159
S <sub>2</sub>	2422
S <sub>3</sub>	2410
S <sub>4</sub>	2184
S.E./mean	=81.55 lb./ac.

Crop :-Wheat (*Rabi*).

Ref :-U.P. 53(89).

Site :-Govt. Agri. Res. Farm, Kanpur.

Type :-'C'.

Object : To study the effect of dibbling on Wheat.

## 1. BASAL CONDITIONS :

- (i) (a) *Sanai*-wheat. (b) *Sanai* green manure. (c) Nil. (ii) (a) Loam. (b) N.A. (iii) 1.11.1953. (iv) (a) 1 light *palewa*, 1 watts plough and *pata*, 3 *desi* plough and *pata*. (b) and (c) As per treatments. (d) 9'×6'. (e) As per treatments. (v) Nil. (vi) C. 13 (medium). (vii) Irrigated. (viii) N.A. (ix) N.A. (x) 7.4.1954.

## 2. TREATMENTS :

- S<sub>1</sub>=1 seed/hole at 8.45 lb./ac. as seedrate.  
 S<sub>2</sub>=2 seeds/hole at 23.26 lb./ac. as seedrate.  
 S<sub>3</sub>=3 seeds/hole at 29.62 lb./ac. as seedrate.  
 S<sub>4</sub>=Sown behind plough at 82.28 lb./ac. as seedrate.

## 3. DESIGN :

- (i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 6. (iv) (a) 21'×10.4'. (b) 17'×9'. (v) 2'× $\frac{1}{2}$ '. (vi) Yes.

## 4. GENERAL :

- (i) Good, lodged on 21.2.1954. (ii) Rust incidence took place on 26.2.1954 after rains. Before rains rust was negligible, medium for S<sub>1</sub>, S<sub>2</sub>, S<sub>3</sub> and heavy for S<sub>4</sub>. (iii) Germination%, flowering, sheaf, grain and straw yield. (iv) (a) 1949 to 1952. (b) No. (c) N.A. (v) (a) No. (b) N.A. (vi) Nil. (vii) The expt. was conducted by E.B.(R).

## 5. RESULTS :

- (i) 2250 lb./ac.  
 (ii) 214.5 lb./ac.  
 (iii) Treatment differences are not significant.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
S <sub>1</sub>	2361
S <sub>2</sub>	2276
S <sub>3</sub>	2239
S <sub>4</sub>	2123
S.E./mean	=87.55 lb./ac.

Crop :-Wheat (*Rabi*).

Ref :-U.P. 51(191).

Site :-Students, Instructional Farm, Kanpur.

Type :-'C'.

Object : - To study the effect of on the yield of Wheat different rotational and cultural practices.

## 1. BASAL CONDITIONS :

- (i) (a) and (b) As per treatments. (a) No. (ii) (a) Sandy loam. (b) N.A. (iii) Last week of October and first week of November. (iv) (a) Ploughing of *moong* after two pluckings. (b) N.A. (c) 40 seer./ac. (d) and (e) N.A. (v) N.A. (vi) C-13 (Early). (vii) Irrigated. (viii) As per treatments. (ix) N.A. (x) N.A.

## 2. TREATMENTS :

## Main-plot treatments :

4 previous crops :  $C_0$ =Fallow,  $C_1$ =Green manure,  $C_2$ =Guar and  $C_3$ =Moong  $T_1$ .

## Sub-plot treatments :

2 weedings :  $W_0$ =No weeding and  $W_1$ =Weeding.

## 3. DESIGN :

(i) Split-plot. (ii) (a) 4 main-plots/block and 2 sub-plots/main-plot. (b) N.A. (iii) 6. (iv) (a) 30' x 24'. (b) 28' x 22'. (v) 1' around sub-plot. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) N.A. (iii) Grain yield. (iv) (a) 1951 to 1955 (Modified in 1952—1953). (b) Yes. (c) Nil. (v) (a) and (b) No. (vi) Nil. (vii) The experiment was conducted by P.A.C.(K).

## 5. RESULTS :

(i) 1407 lb./ac.

(ii) 181.1 lb./ac.

(iii) C and W effects are highly significant, while interaction is not significant.

(iv) Av. yield of grain in lb./ac.

	$C_0$	$C_1$	$C_2$	$C_3$	Mean
$W_0$	1445	1396	1055	1074	1242
$W_1$	1607	1787	1539	1353	1572
Mean	1526	1592	1297	1214	1407

## S.E. of difference of two

1. Marginal means of C = 73.93 lb./ac.

2. marginal means of W = 73.45 lb./ac.

3. W means at the same level of C = 127.5 lb./ac.

4. C means at the same level of W = 146.9 lb./ac.

Crop :-Wheat (*Rabi*).

Ref :-U.P. 52(245).

Site :-Students' Instructional Farm, Kanpur.

Type :-'C'.

Object :-To study the effect of different rotational and cultural practices on the yield of Wheat.

## 1. BASAL CONDITIONS :

(i) (a) and (b) As per treatments. (c) No. (ii) (a) Sand loam. (b) N.A. (iii) N.A. (iv) (a), (b) N.A. (c) 40 srs./ac. (d) and (e) N.A. (v) N.A. (vi) C-13 (early). (vii) Irrigated. (viii) As per treatments. (ix) N.A. (v) N.A.

## 2. TREATMENTS :

## Main-plot treatments :

2 ploughings :  $S_0$ =No ploughing and  $S_1$ =Summer ploughing.

## Sub-plot treatments :

4 previous crops :  $R_1$ =Fallow,  $R_2$ =G.M. (*Sanal*),  $R_3$ =Guar and  $R_4$ =Moong.

## Sub-sub-plot treatments :

2 weedings :  $W_0$ =No weeding and  $W_1$ =Weeding.

## 3. DESIGN :

(i) Split-plot. (ii) (a) 2 main-plots/block, 3 sub-plots/main-plot and 2 sub-sub-plots/sub-plot. (b) N.A. (iii) 3. (iv) (a) 30' x 24'. (b) 28' x 22'. (v) 1' around. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) N.A. (iii) Grain yield. (iv) (a) 1951 to 1955 (modified in 1952-1953). (b) Yes. (c) N.A. (v) (a) No. (b) N.A. (vi) Nil. (vii) The experiment was conducted by P.A.C.



## 5. RESULTS :

- (i) 1647 lb./ac.  
 (ii) (a) 148.2 lb./ac.  
 (b) 213.4 lb./ac.  
 (c) 237.8 lb./ac.  
 (iii) R effect is highly significant. W effect is significant others are not significant.  
 (iv) Av. yield of grain in lb./ac.

	R <sub>1</sub>	R <sub>2</sub>	R <sub>3</sub>	R <sub>4</sub>	Mean	W <sub>0</sub>	W <sub>1</sub>
S <sub>0</sub>	1487	1708	1481	1915	1648	1596	1700
S <sub>2</sub>	1615	1894	1438	1638	1646	1534	1759
Mean	1551	1801	1460	1777	1647	1565	1729
W <sub>0</sub>	1450	1755	1288	1767			
W <sub>1</sub>	1652	1847	1631	1787			

## S.E. of difference of two

1. S marginal means = 42.77 lb./ac.
2. R marginal means = 87.09 lb./ac.
3. W marginal means = 68.64 lb./ac.
4. R means at the same level of S = 123.19 lb./ac.
5. S means at the same level of R = 114.95 lb./ac.
6. W means at the same level of S = 97.07 lb./ac.
7. S means at the same level of W = 80.89 lb./ac.
8. W means at the same level of R = 137.29 lb./ac.
9. R means at the same level of W = 130.44 lb./ac.

Crop :- Wheat (*Rabi*).

Ref :- U.P. 53(127).

Site :- Students' Instructional Farm, Kanpur.

Type :- 'C'.

Object :- To study the effect of different rotational and cultural practices on the yield of Wheat.

## 1. BASAL CONDITIONS :

- (i) (a) and (b) As per treatments. (c) No manuring. (ii) (a) Sandy loam. (b) N.A. (iii) 31.10.1953. (iv) (a) The fallow plots were ploughed twice during rains. *Moong* was ploughed in the first week of September in the plots concerned. Four ploughings followed by *patta*. (b) Sowing behind the plough. (c) 40 seers/ac. (d) N.A. (e) N.A. (v) Nil. (vi) C-13 (early). (vii) Irrigated. (viii) Weeding on 3.1.1954. (ix) N.A. (x) 4, 5.4.1954.

## 2. TREATMENTS :

## Main-plot treatments :

2 ploughings : S<sub>0</sub>=No ploughing and S<sub>1</sub>=Summer ploughing.

## Sub-plot treatments :

4 previous crops : R<sub>1</sub>=Fallow, R<sub>2</sub>=G.M. (*sanai*), R<sub>3</sub>=*Guar* and R<sub>4</sub>=*Moong*.

## Sub-Sub-plot treatments :

2 weedings : W<sub>0</sub>=No weeding and W<sub>1</sub>=Weeding.

## 3. DESIGN :

- (i) Split-plot. (ii) (a) 2 main-plots/block, 4 sub-plots/main-plot and 2 sub-sub plots/sub-plot. (b) N.A. (iii) 3. (iv) (a) 30' × 24'. (b) 28' × 22'. (v) 1' around sub-plot. (vi) Yes.

## 4. GENERAL :

- (i) Normal. (ii) Nil. (iii) Wheat grain and *bhusa* yield separately. (iv) (a) 1951 to 1955. (b) Yes. (c) N.A. (v) (a) No. (b) N.A. (vi) Nil. (vii) The experiment was conducted by P.A.C.

## 5. RESULTS :

- (i) 1264 lb./ac.  
 (ii) (a) 603.3 lb./ac.  
 (b) 176.6 lb./ac.  
 (c) 150.9 lb./ac.  
 (iii) R effect is highly significant, W effect is significant while other effects are not significant.

(iv) Av. yield of grain in lb./ac.

	R <sub>1</sub>	R <sub>2</sub>	R <sub>3</sub>	R <sub>4</sub>	Mean	W <sub>0</sub>	W <sub>1</sub>
S <sub>0</sub>	1120	1583	1253	1450	1352	1432	1271
S <sub>1</sub>	929	1224	1296	1255	1176	1193	1158
Mean	1024	1404	1274	1353	1264		
W <sub>0</sub>	988	1473	1385	1405	1313		
W <sub>1</sub>	1061	1335	1164	1300	1215		

## S.E. of difference of two

1. S marginal means = 174.15 lb./ac.
2. R marginal means = 72.09 lb./ac.
3. W marginal means = 43.57 lb./ac.
4. R means at the same level of S = 101.95 lb./ac.
5. S means at the same level of R = 195.26 lb./ac.
6. W means at the same level of S = 61.61 lb./ac.
7. S means at the same level of W = 179.52 lb./ac.
8. W means at the same level of R = 87.13 lb./ac.
9. R means at the same level of W = 94.83 lb./ac.

Crop :- Wheat (*Rabi*).

Ref :- U.P. 50(135).

Site :- Students' Instructional Farm, Kanpur.

Type :- 'C'.

Object :- To study the effect of short duration legume in the Fallow—Wheat rotation as judged by the yield of Wheat.

## 1. BASAL CONDITIONS :

(i) (a) to (c) As per treatments. (ii) (a) Sandy loam. (b) N.A. (iii) N.A. (iv) (a) N.A. (b) Sown behind the plough. (c) 40 scers/ac. (d) N.A. (e) N.A. (v) Nil. (vi) C-13 (early). (vii) Irrigated. (viii) N.A. (ix) N.A. (x) N.A.

## 2. TREATMENTS:

1. Fallow wheat.
2. Moong with 80 lb./ac. of P<sub>2</sub>O<sub>5</sub>—wheat.
3. Moong without P<sub>2</sub>O<sub>5</sub>—wheat.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 3. (b) N.A. (iii) 6. (iv) (a) N.A. (b) 130' × 19'. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) N.A. (iii) Grain yield. (iv) (a) 1950—1955. (b) Yes. (c) N.A. (v) (a) No. (b) N.A. (vi) Nil. (vii) The experiment was conducted by P.A.C.

## 5. RESULTS :

- (i) 819 lb./ac.
- (ii) 115.2 lb./ac.
- (iii) The treatments differ highly significantly.
- (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	992
2.	738
3.	728
S.E./mean	= 47.05 lb./ac.

Crop :-Wheat (*Rabi*).

Ref :- U.P. 51(140)/50(135).

Site :-Students' Instructional Farm, Kanpur. Type :-'C'.

Object :-To study the effect of a short duration legume in the Fallow-Wheat rotation as judged by the yield of Wheat.

## 1. BASAL CONDITIONS :

(i) (a) to (c) As per treatments. (ii) (a) Sandy loam. (b) N.A. (iii) N.A. (iv) (a) N.A. (b) Sown behind the plough. (c) 40 seers/ac. (d) and (e) N.A. (v) Nil. (vi) C-13 (early). (vii) Irrigated. (viii) N.A. (ix) N.A. (x) N.A.

## 2. TREATMENTS :

1. Fallow-wheat.
2. *Moong* with 80 lb./ac. of  $P_2O_5$ -wheat.
3. *Moong* without  $P_2O_5$ -wheat.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 3. (b) N.A. (iii) 6. (iv) (a) N.A. (b) 130'x19'. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) Nil. (iii) Grain yield. (iv) (a) 1950 to 1955. (b) Yes. (c) N.A. (v) (a) No. (b) N.A. (vi) Nil. (vii) The expt. was conducted by P.A.C.

## 5. RESULTS :

- (i) 881 lb./ac.  
 (ii) 151.5 lb./ac.  
 (iii) The treatments do not differ significantly.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	932
2.	909
3.	802
S.E./mean	=61.8 lb./ac.

Crop :-Wheat (*Rabi*).

Ref :-U.P. 52(190)/51(140)/50(135).

Site :-Students' Instructional Farm, Kanpur. Type :-'C'.

Object :-To study the effect of a short duration legume in the Fallow-Wheat rotation as judged by the yield of Wheat.

## 1. BASAL CONDITIONS :

(i) (a) to (c) As per treatments. (ii) (a) Sandy loam. (b) N.A. (iii) 11.9.1952. (iv) (a) N.A. (b) Sown behind the plough. (c) to (e) N.A. (v) Nil. (vi) C-13 (early). (vii) Irrigated. (viii) N.A. (ix) N.A. (x) N.A.

## 2. TREATMENTS :

1. Fallow-wheat.
2. *Moong* with 80 lb./ac. of  $P_2O_5$ -wheat.
3. *Moong* without  $P_2O_5$ -wheat.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 3. (b) N.A. (iii) N.A. (iv) (a) N.A. (b) 130'x19'. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) N.A. (iii) Grain yield. (iv) (a) 1950 to 1955. (b) Yes. (c) N.A. (v) (a) No. (b) N.A. (vi) Nil. (vii) The experiment was conducted by P.A.C.

## 5. RESULTS :

- (i) 1207 lb./ac.  
 (ii) 166.7 lb./ac.  
 (iii) The treatments do not differ significantly.

(iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	1288
2.	1232
3.	1100
S.E./mean	=68.1 lb./ac.

Crop :- Wheat (*Rabi*).

Ref :- U.P. 53(126)/52(190)/51(140)/50(135).

Site :- Students' Instructional Farm, Kanpur. Type :- 'C'.

Object :- To study the effect of a short duration legume in the Fallow-Wheat rotation as judged by the yield of Wheat.

## 1. BASAL CONDITIONS :

(i) (a) and (b) As per treatments. (c) Nil. (ii) (a) Sandy loam. (b) N.A. (iii) 30.10.1953. (iv) (a) 5 to 7 ploughings. (b) Sown behind the plough. (c) 40 seers/ac. (d) and (e) N.A. (v) Nil. (vi) C-13. (vii) Irrigated. (viii) One weeding and roguing. (ix) N.A. (x) 31.3.1954.

## 2. TREATMENTS :

1. Fallow-wheat.
2. Moong with 80 lb./ac. of  $P_2O_5$ -wheat.
3. Moong without  $P_2O_5$ -wheat.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 3. (b) N.A. (iii) 6. (iv) (a) 132'x21'. (b) 130'x19'. (v) 1' around. (vi) Yes.

## 4. GENERAL :

(i) Normal. (ii) Nil. (iii) Grain and *bhusa* yield. (iv) (a) 1950 to 1955. (b) Yes. (c) N.A. (v) (a) No. (b) N.A. (vi) Nil. (vii) The experiment was conducted by P.A.C.

## 5. RESULTS :

- (i) 890.5 lb./ac.
- (ii) 98.51 lb./ac.
- (iii) Treatment differences are highly significant.
- (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	852.0
2.	1024.8
3.	794.6
S.E./mean	= 40.22 lb./ac.

Crop :-Wheat.

Ref :- U.P. 49(69).

Site :-Crop Physiological Res. Stn., Lucknow.

Type :- 'C'.

Object :- To study the effect of varying seed rates of Wheat on growth and yield.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) Uncultivated land. (c) Nil. (ii) (a) Sandy loam. (iii) 8.11.1949. (iv) (a) 2 ploughings by mould board plough, 1 crosswise ploughing by tractor. 2 ploughings by *desi* plough and planking. (b) dibbling. (c) As per treatments. (d) Rows 9" apart. (e) 1. (v) 40 lb/ac. of N as T.C. on 8.12.1949 +20 lb./ac. of N of A/S top dressed on 29.12.1949. (iv) Pb. 591 (mid late). (vii) Irrigated. (viii) 3 hoeings and weedings. (ix) N.A. (x) 5.4. 1950.

## 2. TREATMENTS :

7 seed rates :  $R_1=5$ ,  $R_2=7.5$ ,  $R_3=10$ ,  $R_4=12.5$ ,  $R_5=15$ ,  $R_6=17.5$  and  $R_7=20$  seers/ac.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 3. (iv) (a) N.A. (b) 16'x10'. (v) N.A. (vi) Yes.

## 4. GENERAL :

- (i) N.A. (ii) N.A. (iii) Grain yield. (iv) (a) No. (b) and (c) No. (v) (a) and (b) No. (vi) Nil. (vii) Conducted by C.P.

## 5. RESULTS :

- (i) 2322 lb./ac.  
 (ii) 265.0 lb./ac.  
 (iii) Treatment differences are not significant.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
R <sub>1</sub>	2042
R <sub>2</sub>	2439
R <sub>3</sub>	2609
R <sub>4</sub>	2405
R <sub>5</sub>	2359
R <sub>6</sub>	2246
R <sub>7</sub>	2155
S.E./mean	= 153.0 lb./ac.

Crop :-Wheat.

Ref :-U.P. 50(118).

Site :-Crop Physiological Res. Stn., Lucknow.

Type :-'C'.

Object :—To study the effect of different seed rates on yield and growth of Wheat crop.

## 1. BASAL CONDITIONS :

- (i) (a) Nil. (b) Paddy. (c) Nil. (ii) (a) Sandy loam. (b) N.A. (iii) 24.10.1950. (iv) (a) Two ploughings by mould board plough and two by *desi* plough with cultivator and planking etc. (b) Dibbling. (c) According to treatments. (d) Line to line 9" apart. (e) N.A. (v) 40 mds. stable manure on 15.10.1950. (vi) C-13. (vii) Irrigated. (viii) 3 interculturings. (ix) N.A. (x) 12 and 16.4.1951.

## 2. TREATMENTS :

6 seed rates : R<sub>1</sub>=3, R<sub>2</sub>=6, R<sub>3</sub>=9, R<sub>4</sub>=12, R<sub>5</sub>=15 and R<sub>6</sub>=18 lb./ac.

## 3. DESIGN :

- (i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 3. (iv) (a) 20'×21'. (b) 16'×17'. (v) 2' around. (vi) Yes.

## 4. GENERAL :

- (i) Below normal. (ii) N.A. (iii) Grain and fodder yield. (iv) (a) No. (b) and (c) No. (v) (a) and (b) No. (vi) Nil. (vii) Conducted by C.P.

## 5. RESULTS :

- (i) 938 lb./ac.  
 (ii) 123.8 lb./ac.  
 (iii) Treatment differences are highly significant.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
R <sub>1</sub>	727
R <sub>2</sub>	809
R <sub>3</sub>	878
R <sub>4</sub>	933
R <sub>5</sub>	1235
R <sub>6</sub>	1043
S.E./mean	=71.50 lb./ac.

Crop :-Wheat.

Ref :-U.P. 50(121).

Site :-Crop Physiological Res. Stn., Lucknow.

Type :-'C'.

Object :—To study the effect of varying seed rates of Wheat on its yield.

## 1. BASAL CONDITIONS :

- (i) (a) N.A. (b) Paddy. (c) N.A. (ii) (a) Sandy loam. (b) N.A. (iii) 9.11.1950. (iv) (a) Two ploughings by mould board plough, ploughing by *desi* plough, planking. (b) Behind the plough. (c) to (e) N.A. (v) Stable manure on 15.10.1950. (vi) Pb-591. (vii) Irrigated. (viii) 1 interculturings. (ix) N.A. (x) 12.4.1951.

## 2. TREATMENTS:

12 seed rates :  $R_1=20$ ,  $R_2=25$ ,  $R_3=30$ ,  $R_4=35$ ,  $R_5=40$ ,  $R_6=45$ ,  $R_7=50$ ,  $R_8=55$ ,  $R_9=60$ ,  $R_{10}=70$ ,  $R_{11}=80$   
and  $R_{12}=90$  seers/ac.

## 3. DESIGN:

(i) R.B.D. (ii) (a) 12. (b) N.A. (iii) 3. (iv) (a)  $14' \times 11'$ . (b)  $12' \times 9'$ . (v) 1' around. (vi) Yes.

## 4. GENERAL:

(i) Below normal. (ii) N.A. (iii) Grain and fodder yield. (iv) (a) No. (b) and (c) No. (v) (a), (b) No.  
(vi) Nil. (vii) Conducted by C.P.

## 5. RESULTS:

- (i) 979 lb./ac.  
(ii) 244.0 lb./ac.  
(iii) The treatments do not differ significantly.  
(iv) Av. yield of grain in lb./ac.

Treatment	Av. yield	Treatment	Av. yield
$R_1$	760	$R_7$	1278
$R_2$	795	$R_8$	1071
$R_3$	864	$R_9$	1037
$R_4$	933	$R_{10}$	795
$R_5$	1140	$R_{11}$	967
$R_6$	1175	$R_{12}$	933
	S.E./mean		=140.9 lb./ac.

Crop :- Wheat.

Site :- Crop Physiological Res. Stn., Lucknow.

Ref. :- U.P. 50(87)

Type :- 'C'.

Object :- To study the effect of rotating *Moong* T<sub>1</sub> with Wheat.

## 1. BASAL CONDITIONS:

(i) (a) Nil. (b) and (c) As per treatments. (ii) (a) Sandy loam. (b) N.A. (iii) 17.10.1950. (iv) (a) Two ploughings by mould board plough and 3 by *desi* plough and planking. (b) Sown behind the plough. (c) 50 seers/ac. (d) and (e) N.A. (v) Nil. (vi) NP-52 (medium early). (vii) Irrigated. (viii) 2 inter-cultures. (ix) N.A. (x) 14 to 16.4.1951.

## 2. TREATMENTS:

1. Fallow.
2. *Moong* once.
3. *Moong* two times.
4. *Moong* three times.
5. *Sanai*-G.M.

One time :- *Moong* sown on 30.4.1950. Harvested from 30.5.1950 to 12.6.1950.

Two times :- As above + *Moong* sown on 8.6.1950. Harvested from 10.8.1950 to 18.8.1950.

Three times :- As above + sowing on 24.8.50. and harvested on 15.10.1950.

## 3. DESIGN:

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 4. (iv) (a)  $16' \times 42'$ . (b)  $12' \times 38'$  (v) 2' around. (vi) Yes.

## 4. GENERAL:

(i) Good. (ii) Nil. (iii) Grain yield. (iv) (a) No. (b) and (c) No. (v) (a) and (b) No. (vi) Nil. (vii) Conducted by C.P.

## 5. RESULTS:

- (i) 633.7 lb./ac.  
(ii) 128.8 lb./ac.  
(iii) Treatments are significantly different.  
(iv) Av. yield of grain in lb./ac.

Treatments	Av. yield
1.	564.5
2.	405.4
3.	516.3
4.	700.0
5.	982.2
S.E./mean	=64.4 lb./ac.

Crop :- Wheat.

Ref. :- U.P. 49(27).

Site :- Govt. Agri. Farm, Pratapgarh.

Type :- 'C'.

Object :- To study the effect of fallow as compared to having a legume, a non-legume or green manure crop in *kharif* on the yield of Wheat.

## 1. BASAL CONDITIONS :

(i) (a) and (b) As under treatments. (c) N.A. (ii) (a) *Domat* (unclassified). (b) N.A. (iii) 11.11.1939. (iv) (a) Ploughed and levelling done. (b) Sown in rectangular strip. (c) to (e) N.A. (v) No. (vi) N.A. (vii) Irrigated. (viii) 1 weeding. (ix) N.A. (x) 18, 23.4.1950.

## 2. TREATMENTS :

1. Fallow—Wheat.
2. Hot weather cultivation—fallow—wheat.
3. *Bhadian Sawan*—wheat.
4. *Juar* fodder—wheat.
5. *Sanai* for G.M.—wheat.
6. Early *moong* and Early *Udid*—wheat.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 8. (iv) (a) N.A. (b) 1/29.50 th ac. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) Good growth in 3 replicates and poor in other 5. (ii) No. (iii) Yield of grain and straw. (iv) (a) 1949 to 1952. (b) N.A. (c) N.A. (v) (a) Kalai and Kalyanpur. (b) N.A. (vi) Nil. (vii) Conducted by A.C.

## 5. RESULTS :

- (i) 739.9 lb./ac.  
 (ii) 286.3 lb./ac.  
 (iii) Treatments are not significantly different.  
 (iv) Av. yield of grain in lb./ac.

Treatments	Av. yield.
1.	785.4
2.	877.6
3.	800.2
4.	682.2
5.	674.8
6.	623.2
S.E./mean	= 101.2 lb./ac.

Crop :-Wheat.

Ref :-U.P. 50(60).

Site :-Govt. Agri. Farm, Pratapgarh.

Type :-'C'.

Object :- To study the effect of fallow with or without hot weather cultivation as compared to having a non-legume, a legume or green manure crop in *kharif* on the yield of subsequent Wheat crop.

## 1. BASAL CONDITIONS :

(i) (a) and (b) As per treatments. (c) Maize plots at 50 lb./ac. of N as compost top dressed. (ii) (a) Loam. (b) N.A. (iii) 20.10.1950. (iv) (a) 3 ploughings and 2 harrowings. (b) to (e) N.A. (v) No. (vi) N.A. (vii) Irrigated. (viii) N.A. (ix) N.A. (x) N.A.

## 2. TREATMENTS :

1. Fallow—wheat.
2. Hot weather cultivation—fallow—wheat.
3. Maize—wheat.
4. *Guar* fodder—wheat.
5. *Sanai* for green manuring—wheat.
6. Early *moong*—wheat.

*Sanai* and *guar* were sown on 5.7.1950, *moong* on 7.7.1950 and maize on 8.7.1950. *Sanai* was turned in on 20.8.1950. *Guar* harvested as fodder on 23.8.1950; *moong* pods were picked and plants turned in 1st week of September. Maize completely failed due to excessive rains.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 8. (iv) (a) N.A. (b) 31'×48'. (v) 1' between plots and 3' between blocks. (vi) Yes.

## 4. GENERAL :

(i) Satisfactory. (ii) Nil. (iii) Grain yield. (iv) (a) 1949 to 1952. (b) Yes. (c) N.A. (v) (a) Kalyanpur and Banaras. (b) N.A. (vi) Nil. (vii) Experiment conducted by A.C.

## 5. RESULTS :

(i) 876.4 lb./ac.  
 (ii) 298.3 lb./ac.  
 (iii) Treatments are significantly different.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	662.4
2.	918.5
3.	655.0
4.	962.4
5.	1101.4
6.	958.7
S.E./mean	=105.4 lb./ac.

Crop :-Wheat.

Ref :-U.P. 51(107).

Site :-Govt. Agri. Farm, Pratapgarh.

Type :-'C'.

Object :-To study the effect of fallow with or without hot weather cultivation as compared to having legume, green manure in *Kharif* or a non-legume crop on the yield of subsequent crop of Wheat.

## 1. BASAL CONDITIONS :

(i) (a) and (b) As per treatments. (c) Maize plots at 50 lb./ac. of N as A/S broadcast. (ii) (a) Loam. (b) N.A. (iii) 11.11.1951. (iv) (a) 6 ploughings and *palewa*. (b) to (e) N.A. (v) No. (vi) N.A. (vii) Irrigated. (viii) N.A. (ix) N.A. (x) 12.4.1952.

## 2. TREATMENTS :

1. Fallow—wheat.
2. Hot weather cultivation—wheat.
3. Maize—wheat.
4. *Guar* fodder—wheat.
5. *Sanai* for green manuring—wheat.
6. Early *moong*—wheat.

Hot weather cultivation was done on 26 and 27.5.1951. *Sanai* and *guar* seeds were sown as broadcast on 7.7.1951, while *moong* and maize were sown in lines on 8.7.1951. *Sanai* was ploughed in on 27.8.1951 and *moong* on 13.9.1951. *Guar* and maize harvested on 26.8.1951 and 22.9.1951 respectively. Maize crop failed due to droughty condition.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 8. (iv) (a) N.A. (b) 30'×35.5'. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) Satisfactory. (ii) Crop affected by white ants and in the late stage by rats also. (iii) Grain yield. (iv) (a) 1949 to 1952. (b) Yes. (c) N.A. (v) (a) Kanpur, Banaras, Kalai and Raya. (b) N.A. (vi) The damage due to rats was maximum in the *sanai* and hot weather cultivated plots. (vii) Conducted by A.C.

## 5. RESULTS :

(i) 1121 lb./ac.  
 (ii) 345.6 lb./ac.  
 (iii) Treatments are not significantly different.



(iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	1150
2.	1084
3.	976
4.	1063
5.	1391
6.	1063
S.E./mean	=122.2 lb./ac.

Crop :-Wheat (*Rabi*).

Ref :- U.P. 52(17).

Site :-Govt. Agri. Farm, Pratapgarh.

Type :-'C'.

Object:—To study the effect of fallow with or without hot weather cultivation] as compared to having legume, green manure or a non-legume crop during *kharif* on the yield of subsequent Wheat crop.

## 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Loam (unclassified). (b) N.A. (iii) 5.11.1952. (iv) Only hot weather plots ploughed in summer, one ploughing before *kharif* crop was sown, seven ploughings for wheat. (v) A/S at 50 lb/ac. of N as top dressing to maize crop on 19.7.1952. (vi) N.A. (vii) N.A. (viii) Nil. (ix) N.A. (x) 27, 28.3.1953.

## 2. TREATMENTS :

1. Fallow (monsoon cultivated)—wheat.
2. Hot weather cultivation (*potato*)—wheat.
3. Maize (harvested on 10, 11.9.1952 and used as green fodder)—wheat.
4. *Guar* (harvested and used as G.M. 10.9.1952)—wheat.
5. *Sanai* (turned in on 10.9.1952)—wheat.
6. *Early moong* (two pickings of pods on 25.8.1952 and 10.9.1952 and then buried after broadcasting)—wheat.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 8. (iv) (a) and (b) 43'×27'.3". (v) Between plots 1' and between blocks 3'. (vi) Yes.

## 4. GENERAL :

(i) Normal. (ii) Cobs of maize damaged by birds before maturity. (iii) Grain and straw yield. (iv) (a) 1949—1952. (b) Yes. (c) N.A. (v) (a) Kalai, Kalyanpur, Banaras, Raya and Matkota. (b) N.A. (vi) Nil. (vii) The experiment was conducted by A.C.

## 5. RESULTS :

- (i) 1172 lb./ac.  
(ii) 166.7 lb./ac.  
(iii) Treatments are not significantly different.  
(iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	1032
2.	1111
3.	1149
4.	1186
5.	1204
6.	1349
S.E./mean	=58.92 lb./ac.

Crop :- Wheat (*Rabi*).

Ref:- U.P. 51(120).

Site :- Govt. Cotton Res. Sub-Stn., Raya.

Type :- 'C'.

Object :- To study the effect of fallow with or without hot weather cultivation as compared to having legume, green manure or a non-legume crop in *kharif* on the yield of subsequent crop of Wheat.

## 1. BASAL CONDITIONS :

(i) (a) and (b) As per treatments. (c) 50 lb./ac. of N as A/S was broadcast to maize plots. (ii) (a) Sandy loam (not classified). (b) Refer soil analysis, Raya. (iii) 23.11.1951. (iv) (a) Ploughing. (b) to (e) N.A. (v) Nil. (vi) N.A. (vii) N.A. (viii) N.A. (ix) N.A. (x) 17 to 22.4.1952.

## 2. TREATMENTS :

1. Fallow—wheat.
2. Hot weather cultivation—wheat.
3. Maize—wheat.
4. *Guar* fodder—wheat.
5. *Sanai* for green manuring—wheat.
6. Early *moong*—wheat.

*Kharif* crops sown on August 2.3.1951, *moong* pods were picked 3 times and after the 3rd picking plants were buried into the soil on 4.10.1951. *Sanai* was turned into the soil on 17 and 18.9.1951, *guar* was harvested on 22 to 24.9.1951 and maize harvested on 16.10.1951.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 8. (iv) (a) N.A. (b) 50' x 29'. (v) 1' between plots and 3' between blocks. (vi) Yes.

## 4. GENERAL :

(i) Germination satisfactory. (ii) No. (iii) Grain yield. (iv) (a) 1951—1953. (b) Yes. (c) N.A. (v) (a) Kanpur, Pratappgarh, Banaras and Kalai. (b) N.A. (vi) Nil. (vii) The experiment was conducted by A.C.

## 5. RESULTS :

- (i) 515.0 lb./ac.  
 (ii) 122.0 lb./ac.  
 (iii) Treatments are highly significantly different.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	371.8
2.	860.2
3.	296.8
4.	281.1
5.	916.2
6.	364.0
S.E./mean	=43.16 lb./ac.

Crop :-Wheat.

Ref :-U.P. 52(169)/51(120).

Site :-Govt. Cotton Res. Stn., Raya.

Type :-'C'.

Object :-To study the effect of fallow with or without hot weather cultivation as compared to having legume, green manure or a non-legume crop during *kharif* on the yield of subsequent Wheat crop.

## 1. BASAL CONDITIONS :

(i) (a) and (b) As per treatments. (c) 50 lb./ac. of N as A/S applied to maize. (ii) (a) Sandy loam (unclassified). (b) Refer soil analysis, Raya. (iii) N.A. (iv) (a) Only hot weather cultivated plots ploughed twice in summer, *palewa* followed by two ploughings, *Sanai* and *Guar* by broadcast and *moong* and maize were sown in lines, *palewa* and ploughing twice, light irrigation and 4 ploughings for Wheat (*Rabi*). (v) No. (vi) N.A. (vii) Irrigated. (viii) 2 hand weedings and 1 harrowing with lever harrow before sowing wheat. (ix) N.A. (x) 4.4.1953.

## 2. TREATMENTS :

1. Fallow (monsoon cultivated)—wheat.
2. Hot weather cultivation—wheat.
3. Maize (harvested on 21.9.1952 and used as G.M.)—wheat.
4. *Guar* (harvested on 7 to 10.9.1952)—wheat.
5. *Sanai* (ploughed in on 5, 6.9.1952)—wheat.
6. Early *moong* (crop ploughed in on 9.9.1952)—wheat.

## 3. DESIGN :

- (i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 8. (iv) (a) N.A. (b) 50'×29'. (v) 3' between blocks. (vi) Yes.

## 4. GENERAL :

- (i) Normal. (ii) Nil. (iii) Grain yield. (iv) (a) 1951 to 1953. (b) Yes. (c) N.A. (v) (a) Kalyanpur, Kalai, Pratapgarh and Banaras. (b) N.A. (vi) Nil. (vii) Experiment conducted by A.C.

## 5. RESULTS :

- (i) 1167.2 lb./ac.  
 (ii) 181.4 lb./ac.  
 (iii) Treatments are highly significantly different.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	938.6
2.	866.9
3.	1145.8
4.	976.6
5.	1678.9
6.	1396.6
S.E./mean	=64.15 lb./ac.

Crop :-Wheat (*Rabi*).

Site :-Govt. Cotton Res. Farm, Raya

Ref :-U.P. 53(347).

Type :-'C'.

Object :-To study the effect of fallow with or without hot weather cultivation as compared to having legume, green manure or a non-legume crop during *kharif* on the yield of subsequent Wheat crop.

## 1. BASAL CONDITIONS :

- (i) (a) and (b) As per treatments. (c) N applied to maize as top dressing. (ii) (a) Light loam. (b) Refer soil analysis, Raya. (iii) 5.11.1953. (iv) (a) 5 ploughings and 2 *palewa*. (b) By drilling. (c) to (e) N.A. (v) Nil. (vi) N.A. (vii) Irrigated. (viii) Interculture and one hoeing. (ix) 1.13". (x) 14.4.1954.

## 2. TREATMENTS :

1. Fallow—wheat.
2. Hot weather cultivation—fallow—wheat.
3. Maize—wheat.
4. *Guar* for fodder—wheat.
5. *Sanai* for green manure—wheat.
6. Early *moong* T 1—wheat.

## 3. DESIGN :

- (i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 8. (iv) (a) N.A. (b) 50'×29'. (v) N.A. (vi) Yes.

## 4. GENERAL :

- (i) Fair crop. (ii) N.A. (iii) Grain and *bhusa* yield. (iv) (a) 1951—1953. (b) Yes. (c) Nil. (v) (a) Banaras, Gazipur, Kalai and Kalyanpur. (b) N.A. (vi) Because of the continuance of the experiment in the same field for the last two years, general fertility of the field has gone down. On the whole the wheat crop was fair considering the low fertility of the field. (vii) Experiment conducted by A.C.

## 5. RESULTS :

- (i) 720.4 lb./ac.  
 (ii) 97.43 lb./ac.  
 (iii) The treatments are highly significantly different.

(iv) Av. yield of grain in lb./ac.	Treatment	Av. yield
	1.	525.7
	2.	475.0
	3.	572.7
	4.	621.5
	5.	1134.1
	6.	993.2
	S.E./mean	=34.45 lb./ac.

Crop :-Wheat.

Ref :-U.P. 50(65).

Site :-Regional Res. Stn., Varanasi.

Type :-'C'.

Object :—To study the effect of fallow with or without hot weather cultivation as compared to having a non-legume or a legume or green manure crop in *kharif* on the yield of subsequent Wheat crop in *Rabi*.

#### 1. BASAL CONDITIONS :

(i) (a) and (b) As per treatments. (c) 50 lb./ac. of N as F.Y.M. to maize crop. (ii) (a) Clayey loam (Banaras Type 2). (b) Refer soil analysis, Varanasi. (iii) 1.11.1950. (iv) (a) Field was prepared for *Rabi*. (b) to (e) N.A. (v) No. (vi) N.A. (vii) N.A. (viii) N.A. (ix) N.A. (x) Middle of April, 1951.

#### 2. TREATMENTS:

1. Fallow—wheat.
2. Hot weather cultivation—fallow—wheat.
3. Maize—wheat.
4. *Guar* fodder—wheat.
5. *Sanai* for green manuring—wheat.
6. Early *Udid*—wheat.

*Kharif* crop sown on July 7, 1950, but due to heavy rains the crop completely failed.

#### 3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 8. (iv) (a) N.A. (b) 29' x 46'. (v) 1' between plots and 3' between blocks. (vi) Yes.

#### 4. GENERAL :

(i) Normal. (ii) No. (iii) Grain yield. (iv) (a) 1950 to 1953. (b) Yes. (c) N.A. (v) (a) Kalyanpur and Pratapgarh. (b) N.A. (vi) Nil. (vii) Experiment conducted by A.C.

#### 5. RESULTS :

- (i) 1039 lb./ac.
- (ii) 150.7 lb./ac.
- (iii) Treatment differences are not significant.
- (iv) Av. yield of grain in lb./ac.

Treatment	Av.yield
1.	976
2.	1065
3.	1016
4.	1049
5.	996
6.	1135
S.E./mean	= 53.28 lb./ac.

Crop :- Wheat (*Rabi*).

Ref :- U.P. 51(103)/50(65).

Site :- Regional Res. Stn., Varanasi.

Type :- 'C'.

Object :—To study the effect of fallow with or without hot weather cultivation as compared to having legumes for grain, fodder or green manuring in *kharif* or a non-legume on the yield of subsequent crop of Wheat.

## 1. BASAL CONDITIONS :

(i) (a) and (b) As per treatments. (c) 50 lb./ac. of N as A/S broadcast to maize crop. (ii) (a) Clayey loam (Varanasi). (b) Refer soil analysis, Varanasi. (iii) 28.10.1951. (iv) (a) 8 ploughings. (b) Sown in lines. (c) to (e) N.A. (v) Nil. (vi) N.A. (vii) Irrigated. (viii) N.A. (ix) N.A. (x) 24.3.1952.

## 2. TREATMENTS :

1. Fallow—wheat.
2. Hot weather cultivation—wheat.
3. Maize—wheat.
4. *Guar* fodder—wheat.
5. *Sanal* for green manuring—wheat.
6. Early *moong*—wheat.

Hot weather cultivation was done on June 1, 1951. *Sanal* and *guar* were broadcast on July 4 and *moong* and maize sown in lines on July 5, 1951. Maize failed due to droughty condition, *Sanal* was turned in on Aug. 1951. *Moong* buried on Sept. 18, 19, *Guar* harvested on Sept. 9, and maize on Aug. 30, 1951.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 8. (iv) (a) N.A. (b) 43'x27'-3" (v) 1' between plots and 8' between blocks. (vi) Yes.

## 4. GENERAL :

(i) Fair but the plants began to face mortality due to droughty conditions. (ii) No. (iii) Grain yield. (iv) (a) 1950 to 1953. (b) Yes. (c) N.A. (v) (a) Kanpur, Pratapgarh, Kalai and Raya. (b) N.A. (vi) Nil. (vii) Experiment conducted by A.C.

## 5. RESULTS :

- (i) 623 lb./ac.  
 (ii) 111.0 lb./ac.  
 (iii) Treatment differences are highly significant.  
 (iv) Av. yield of grain in lb./ac.

Treatments	Av. yield
1.	483
2.	553
3.	586
4.	469
5.	1041
6.	604
S.E./mean	=39.26 lb./ac.

Crop :- Wheat.

Ref :- U.P. 52(14)/51(103)/50(65).

Site :- Regional Res. Stn., Varanasi.

Type :- 'C'.

Object :—To study the effect of fallow with or without hot weather cultivation as compared to having legume, green manure or a non-legume crop during *kharif* on the yield of subsequent Wheat crop.

## 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Loam, Varanasi type (2). (b) Refer soil analysis, Varanasi. (iii) 28.10.1952. (iv) (a) Only hot weather plots were ploughed, field prepared in the last week of June and sowing of *kharif* crop on 4.7.1952. 3 subsequent ploughings for wheat and one *palewa* on 20.10.1952. (b) to (e) N.A. (v) Only maize was top dressed at 50 lb./ac. of N. (vi) N.A. (vii) N.A. (viii) Nil. (ix) N.A. (x) 23.3.1953.

## 2. TREATMENTS :

1. Fallow (monsoon cultivated)—wheat.
2. Hot weather cultivation—wheat.
3. Maize (harvested on 22.8.1952 and used as green fodder—wheat.
4. *Guar* (harvested on 22.8.1952 and used as fodder)—wheat.
5. *Sanal* (turned in on 18—20.8.1952)—wheat.
6. Early *moong* (two pickings, harvested and ploughed in on 9.9.1952)—wheat.

## 3. DESIGN:

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 8. (iv) (a) and (b) 43' x 27.25'. (v) 1' apart and blocks 3' apart. (vi) Yes.

## 4. GENERAL:

(i) Good. No lodging. (ii) Nil. (iii) Grain and straw yield. (iv) (a) 1950 to 1953. (b) Yes. (c) N.A. (v) (a) Kalyanpur, Kalai, Pratappgarh, Matkota and Raya. (b) N.A. (vi) Nil. (vii) Experiment conducted by A.C.

## 5. RESULTS:

(i) 556.1 lb./ac.

(ii) 106.2 lb./ac.

(iii) Treatment differences are highly significant.

(iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	381.0
2.	450.7
3.	543.7
4.	474.0
5.	664.5
6.	822.5
S.E./mean	=37.54 lb./ac.

Crop :- Wheat.

Ref :- U.P. 53(334)/52(14)/51(103)/50(65).

Site :- Regional Res. Stn., Varanasi. Type :- 'C'.

Object :- To study the effect of fallow with or without hot weather cultivation as compared to having legume, green manure or a non-legume crop during *khari* on the yield of subsequent Wheat crop.

## 1. BASAL CONDITIONS:

(i) (a) and (b) As per treatments. (c) N as A/S top dressed to maize on 12.8.1953. (ii) (a) Loam. (b) Refer soil analysis. Varanasi. (iii) 18.11.1953. (iv) (a) Hot weather cultivation was given on 15.6.1953 after irrigating the 8 plots. Field ploughed on 2, 3.7.1953. 7 ploughings and *palewa* on 2.11.1953. (b) Seed drilled. (c) to (e) N.A. (v) Nil. (vi) N.A. (vii) Irrigated. (viii) Nil. (ix) 1.75". (x) 3, 4.4.1954.

## 2. TREATMENTS:

1. Fallow—wheat.

2. Hot weather cultivation—wheat.

3. Maize—wheat.

4. *Guar* for fodder—wheat.

5. *Sanal* green manuring—wheat.

6. *Moong* T<sub>1</sub>—wheat.

*Moong* after harvest turned in on 6.9.1953.

## 3. DESIGN:

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 8. (iv) (a) N.A. (b) 43' x 27'-3". (v) N.A. (vi) Yes.

## 4. GENERAL:

(i) Yield poor. The germination was uniform and good but maize and *guar* could not stand due to water lodging and they were almost completely wiped off. (ii) N.A. (iii) Grain and straw yield. (iv) (a) 1950 to N.A. (b) N.A. (c) Nil. (v) (a) Gazipur, Kalai, Kalyanpur and Raya. (vi) Nil. (vii) Experiment was conducted by A.C.

## 5. RESULTS:

(i) 317.4 lb./ac.

(ii) 60.1 lb./ac.

(iii) The treatment differences are highly significant.

(iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	313.7
2.	259.1
3.	266.0
4.	268.4
5.	425.2
6.	371.1
S.E./mean	=21.25 lb./ac.

Crop :- Wheat (*Rabi*).  
Site :- B.R. College, Bichpuri.

Ref :- 49(250).  
Type :- 'CV'.

Object :- To study the effect of harrowing and weeding on different Wheat varieties.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) (a) Loamy. (b) Refer soil analysis, B.R. College, Bichpuri. (iii) 29.10.1949. (iv) (a) 3 ploughings 5" deep by soil turning plough with no *pata*. *Pata* on 5.9.1949, 4 *desi* ploughings followed by *pata*, 3 ploughings and 1 harrowing. Last ploughing followed by *pata*. (b) By help of *Nai* and plough. (c) 40 seers./ac. (d) Rows 9" apart. (e) —. (v) Nil. (vi) As per treatments. (vii) Irrigated. (viii) As under treatments and 1 harrowing on 5th Dec. and cross harrowing on 6th Dec. (ix) N.A. (x) 6, 7.4.1950.

2. TREATMENTS :

All combinations of (1), (2) and (3)

(1) 3 varieties :-  $V_1$ =Local,  $V_2$ =C.13 and  $V_3$ =Pb 591.

(2) 2 weedings :-  $W_0$ =No weeding and  $W_1$ =Weeding.

(3) 3 harrowings :-  $H_0$ =No harrowing,  $H_1$ =Harrowing and  $H_2$ =Cross harrowing.

3. DESIGN :

(i)  $3 \times 3 \times 2$  Fact. in R.B.D. (ii) (a) 18. (b) N.A. (iii) 3. (iv) (a)  $19' \times 53'$ ,  $21' \times 55'$ ,  $21' \times 53'$  and  $19' \times 55'$ . (b)  $15' \times 45'$  (v) N.A. (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) N.A. (iii) Grain and *bhusa* yield etc. (iv) (a) No. (b) No. (c) Nil. (v) (a) and (b) Nil. (vi) Nil. (vii) The expt. was conducted by B.R. College.

5. RESULTS :

(i) 1550 lb./ac.

(ii) 166.4 lb./ac.

(iii) Only V effect is highly significant. All other effects and interactions are not significant.

(iv) Av. yield of grain in lb./ac.

	$H_0$	$H_1$	$H_2$	Mean	$W_0$	$W_1$
$V_1$	1730	1778	1777	1762	1732	1454
$V_2$	1412	1198	1208	1273	1725	1347
$V_3$	1637	1632	1578	1616	1604	1438
Mean	1593	1536	1521	1550		
$W_0$	1937	1383	1741	1687		
$W_1$	1587	1163	1490	1413		

S.E. of marginal mean of V or H = 32.02 lb./ac.

S.E. of marginal mean of W = 39.22 lb./ac.

S.E. of body of table  $V \times H$  = 67.92 lb./ac.

S.E. of body of table  $V \times W$  or  $H \times W$  = 55.46 lb./ac.

Crop :- Wheat (*Rabi*).  
Site :- Govt. Res. Farm, Kanpur.

Ref :- U.P. 48(17).  
Type :- 'CV'.

Object :- To study the effect of shrivelled and plump seeds on the yield of Wheat varieties.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Sanai* for G. M. (c) Nil. (ii) (a) Loam. (b) N.A. (iii) 28.10.1948. (iv) (a) and (b) N.A. (c) 60 lb./ac. (d) and (c) N.A. (v) Nil. (vi) As per treatments. (vii) Irrigated. (viii) N.A. (ix) N.A. (x) 5, 6.4.1949.

**2. TREATMENTS :**

All combinations of (1) and (2).

- (1) 3 varieties :  $V_1$ =C-13 (early),  $V_2$ =NP-125 (early) and  $V_3$ =Pb 591 (medium),  
 (2) 2 kinds of seeds :  $K_1$ =Plump and  $K_2$ =Shrivelled.

**3. DESIGN :**

(i)  $3 \times 2$  Fact. in R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a)  $36' \times 18'-9"$ . (b)  $32' \times 17'-3"$ . (v)  $2' \times .75'$ .  
 (vi) Yes.

**4. GENERAL :**

(i) Good. (ii) Brown and black rust have attacked all types of varieties. Pb 591 is worst effected—  
 damage is considerable. Helminthosporium also present. (iii) Yield of fresh grain and *bhusa* and weight  
 of dry grain. (iv) (a) 1947 to 1949. (b) No. (c) N.A. (v) (a) No. (b) N.A. (vi) Nil. (vii) The expt.  
 was conducted by E.B. (R).

**5. RESULTS :**

- (i) 1632 lb./ac.  
 (ii) 253.0 lb./ac.  
 (iii) None of the effects is significant.  
 (iv) Av. yield of grain in lb./ac.

	$K_1$	$K_2$	Mean
$V_1$	1647	1480	1564
$V_2$	1637	1706	1672
$V_3$	1554	1761	1658
Mean	1613	1649	1631

S.E. of marginal mean of V = 89.4 lb./ac.

S.E. of marginal mean of K = 73.0 lb./ac.

S.E. of the body of table = 126.5 lb./ac.

Crop :-Wheat (*Rabi*).

Ref :-U.P. 49(37).

Site :-Govt. Res. Farm, Kanpur.

Type :-'CV'.

Object :-To study the effect of shrivelled and plump seeds on the yield of Wheat varieties.

**1. BASAL CONDITIONS :**

(i) (a) Nil. (b) *Sana* for G.M. (c) Nil. (ii) (a) Loam. (b) N.A. (iii) 10.11.1949. (iv) (a) 3 ploughings  
 with victory plough, 2 ploughings with cultivator plough, 1 ploughing with *desi* plough. (b) N.A. (c) 80  
 lb./ac. (d) N.A. (e) N.A. (v) 4 C.L. of F.Y.M. (vi) As per treatments. (vii) Irrigated. (viii) Nil.  
 (ix) N.A. (x) 13.4.1950.

**2. TREATMENTS :**

All combinations of (1) and (2)

- (1) 3 varieties :  $V_1$ =C-13 (early),  $V_2$ =NP. 125 (early) and  $V_3$ =Pb. 591 (medium).  
 (2) 2 kinds of seeds :  $K_1$ =Plump and  $K_2$ =Shrivelled.

**3. DESIGN :**

(i)  $3 \times 2$  Fact. in R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a)  $36' \times 15'-9"$ . (b)  $32' \times 14'-3"$ . (v)  $2' \times .75'$ . (vi) Yes.

**4. GENERAL :**

(i) Good. (ii) Mild rust on stems and leaves. (iii) Grain and *bhusa* yield. (iv) (a) 1947-1949. (b) No.  
 (c) N.A. (v) (a) No. (b) N.A. (vi) Nil. (vii) The experiment was conducted by E.B. (R).

**5. RESULTS :**

- (i) 2285 lb./ac.  
 (ii) 190.6 lb./ac.  
 (iii) Only V effect is significant.



(iv) Av. yield of grain in lb./ac.

	K <sub>1</sub>	K <sub>2</sub>	Mean
V <sub>1</sub>	2412	2223	2318
V <sub>2</sub>	2395	2400	2398
V <sub>3</sub>	2185	2092	2138
Mean	2331	2238	2285

S.E. of marginal mean of V = 67.4 lb./ac.  
 S.E. of marginal mean of K = 55.0 lb./ac.  
 S.E. of body of table = 95.3 lb./ac.

Crop :- Wheat (*Rabi*).

Ref :- U.P. 50(149).

Site :- Govt. Res. Farm, Kanpur.

Type :- 'CV'.

Object :- To study the effect of shrivelled and plump seed on the yield of Wheat varieties.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) *Sanai*. (c) No. (ii) (a) Loam. (b) N.A. (iii) 29.10.1950. (iv) (a) Thorough ploughing with victory plough and 4 ploughings with *desi* plough. (b) N.A. (c) As per treatments. (d) Rows 9' apart. (e) N.A. (v) *Sanai* as G.M. (vi) As per treatments. (vii) As per treatments. (viii) Nil. (ix) N.A. (x) 25 and 26.4.1951.

## 2. TREATMENTS :

All combinations of (1), (2) and (3)

- (1) 3 varieties : V<sub>1</sub>=C-13 (early), V<sub>2</sub>=NP-125 (early) and V<sub>3</sub>=Pb-591 (medium).  
 (2) 2 kinds of seeds : K<sub>1</sub>=Plump and K<sub>2</sub>=Shrivelled.  
 (3) 2 seed rates : R<sub>1</sub>=80 and R<sub>2</sub>=105 lb./ac.

## 3. DESIGN :

(i) 3×2×2 Fact. in R.B.D. (ii) (a) 12. (b) N.A. (iii) 4. (iv) (a) 23'×12'. (b) 19'×10.5'. (v) 2'×.75' (vi) Yes.

## 4. GENERAL :

(i) Normal growth. C-13 lodged more than the other two varieties. (ii) No. (iii) Grain yield. (iv) (a) No. (b) No. (c) N.A. (v) (a) No. (b) N.A. (vi) The weather through out March has been abnormal. In the first half it was quite hot with winds blowing west ward. In the second half it was cloudy throughout. (vii) The experiment was conducted by E.B. (R).

## 5. RESULTS :

- (i) 2188 lb./ac.  
 (ii) 214.1 lb./ac.  
 (iii) Only V effect is highly significant.  
 (iv) Av. yield of grain in lb./ac.

	V <sub>1</sub>	V <sub>2</sub>	V <sub>3</sub>	Mean	R <sub>1</sub>	R <sub>2</sub>
K <sub>1</sub>	1839	2323	2263	2142	2129	2155
K <sub>2</sub>	1909	2534	2260	2234	2239	2230
Mean	1874	2428	2262	2188		
R <sub>1</sub>	1853	2474	2225	2184		
R <sub>2</sub>	1895	2383	2299	2192		

S.E. of marginal mean of V = 53.5 lb./ac.  
 S.E. of marginal mean of K or R = 43.7 lb./ac.  
 S.E. of body of table V×K or V×R = 75.7 lb./ac.  
 S.E. of body of table K×R = 61.8 lb./ac.

Crop :-Wheat (*Rabi*).  
Site :-Govt. Res. Farm, Kanpur.

Ref :-U.P. 49(33).  
Type :-'CV'.

Object :-To study the effect of different varieties of Wheat sown on different dates.

### 1. BASAL CONDITIONS :

(i) (a) N.A. (b) *Sanai*. (c) Nil. (ii) (a) Loam. (b) N.A. (iii) As per treatments. (iv) (a) 3 ploughings with victory plough, 1 ploughing with cultivator plough, 2 ploughings with *desi* plough and 1 with spring harrow. (b) N.A. (c) 2 ozs./plot. (d) 18" x 9". (e) N.A. (v) *Sanai* as G.M. (vi) As per treatments. (vii) Irrigated. (viii) One hoeing with hand hoe. (ix) N.A. (x) 27.4.1950.

### 2. TREATMENTS :

All combinations of (1) and (2)

(1) 2 varieties :  $V_1$ =NP-125 (early) and  $V_2$ =Pb. 591 (late).

(2) 8 sowing dates :  $D_1$ =17.10.1949,  $D_2$ =24.10.1949,  $D_3$ =17.11.1949,  $D_4$ =24.11.1949,  $D_5$ =27.11.1949,  $D_6$ =30.11.1949,  $D_7$ = 3.12.1949 and  $D_8$ =6.12.1949.

### 3. DESIGN :

(i) 8x2 Fact. in R.B.D. (ii) (a) 16. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 12' x 3'-9". (v) N.A. (vi) Yes.

### 4. GENERAL :

(i) Satisfactory. (ii) Severe attack on leaves. Orange rust attacked the leaves and stem in general and to little extent the ears. Black rust symptoms in  $V_1D_3$  plot in one replication. (iii) Grain and straw yield. (iv) (a) 1949 to 1951. (b) No. (c) N.A. (v) (a) No. (b) N.A. (vi) Nil. (vii) The experiment was conducted by E B (R).

### 5. RESULTS :

- (i) 1527 lb./ac.
- (ii) 278.1 lb./ac.
- (iii) Only D effect is significant.
- (iv) Av. yield of grain in lb./ac.

	$D_1$	$D_2$	$D_3$	$D_4$	$D_5$	$D_6$	$D_7$	$D_8$	Mean
$V_1$	1756	1643	1934	1461	1692	1469	1035	1056	1506
$V_2$	1981	1635	1401	1547	1748	1450	1431	1192	1548
Mean	1868	1639	1668	1504	1720	1460	1233	1124	1527

S.E. of marginal mean of V =50.6 lb./ac.  
S.E. of marginal mean of D =101.2 lb./ac.  
S.E. of body of table =139.0 lb./ac.

Crop :-Wheat (*Rabi*).  
Site :-Govt. Res. Farm, Kanpur.

Ref :-U.P. 50(145).  
Type :-'CV'.

Object :-To study the effect of different varieties of Wheat sown on different dates.

### 1. BASAL CONDITIONS :

(i) (a) N.A. (b) *Sanai*. (c) No. (ii) (a) Loam. (b) N.A. (iii) As per treatments. (iv) (a) 3 ploughings with victory plough and 4 with *desi* plough. (b) and (c) N.A. (d) Rows 9" apart. (e) N.A. (v) *Sanai* as G.M. (vi) As per treatments. (vii) Irrigated. (viii) Nil. (ix) N.A. (x) 1.5.1951.

### 2. TREATMENTS :

All combinations of (1) and (2)

(1) 2 varieties :  $V_1$ =NP-125 (early) and  $V_2$ =Pb. 591 (late).

(2) 8 sowing dates :  $D_1$ =10.10.1950,  $D_2$ =17.10.1950,  $D_3$ =25.10.1950,  $D_4$ =31.10.1950,  $D_5$ =7.11.1950,  $D_6$ =14.11.1950,  $D_7$ =21.11.1950 and  $D_8$ =28.11.1950.

### 3. DESIGN :

(i) 8x2 Fact. in R.B.D. (ii) (a) 16. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 9' x 3'-9". (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Rust incidence. (iii) Grain yield. (iv) (a) 1949 to 1951. (b) No. (c) N.A. (v) (a) No. (b) N.A. (vi) Nil. (vii) The experiment was conducted by E.B. (R).

## 5. RESULTS :

(i) 2725 lb./ac.  
 (ii) 865.9 lb./ac.  
 (iii) V and D effects are highly significant. Interaction is not significant.  
 (iv) Av. yield of grain in lb./ac.

	D <sub>1</sub>	D <sub>2</sub>	D <sub>3</sub>	D <sub>4</sub>	D <sub>5</sub>	D <sub>6</sub>	D <sub>7</sub>	D <sub>8</sub>	Mean
V <sub>1</sub>	1991	1867	1784	2821	3319	2821	2780	2572	2494
V <sub>2</sub>	2738	2240	2614	3443	3443	3402	2780	2987	2956
Mean	2364	2054	2199	3132	3381	3112	2780	2780	2725

S.E. of marginal mean of V = 306.1 lb./ac.

S.E. of marginal mean of D = 153.1 lb./ac.

S.E. of body of table = 433.0 lb./ac.

Crop :-Wheat (*Rabi*).

Ref :-U.P. 51(31).

Site :-Govt. Res. Farm, Kanpur.

Type :-'CV'.

Object :-To study the effect of different varieties of Wheat sown on different dates.

## 1. BASAL CONDITIONS :

(i) (a) No. (b) *Chart*. (c) Nil. (ii) (a) Light loam. (b) N.A. (iii) As per treatments. (iv) (a) 2 ploughings with *desi* plough, 1 with warts, plough and 1 with cultivator. (b) N.A. (c) 80 lb./ac. (d) Rows 9' apart. (e) N.A. (v) Nil. (vi) As per treatments. (vii) Irrigated. (viii) Nil. (ix) N.A. (x) 22.4.1952.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 2 varieties : V<sub>1</sub>=NP-125 (early) and V<sub>2</sub>=Pb. 591 (late).

(2) 8 sowing dates :-D<sub>1</sub>=12.10.1951, D<sub>2</sub>=19.10.1951, D<sub>3</sub>=2.11.1951, D<sub>4</sub>=9.11.1951, D<sub>5</sub>=16.11.1951, D<sub>6</sub>=23.11.1951, D<sub>7</sub>=30.11.1951 and D<sub>8</sub>=7.12.1951.

## 3. DESIGN :

(i) 8×2 Fact. in R.B.D. (ii) (a) 16 in two flanks. (b) N.A. (iii) 4. (iv) (a) and (b) 12'×3'9". (v) Nil. (vi) Yes.

## 4. GENERAL :

(i) Good ; no lodging. (ii) The disease incidence was recorded at an advanced stage of plant growth (later in the season). NP. 125 had heavy attack of orange rust on the leaves and stem, mostly on the lower portions of the plant. Pb. 591 had a mild attack of orange rust only on the leaves in the lower portion of the plants. (iii) Germination and grain yield. (iv) (a) 1949 to 1951. (b) No. (c) N.A. (v) (a) No. (b) N.A. (vi) Nil. (vii) The experiment was conducted by E.B (R). The preparation of the field was absolutely neglected. After 2 sowings it was irrigated exactly on the date of 3rd sowing i.e. 26.10.1951 and so the sowing had to be postponed to the next week and during irrigation no care was taken of either the lay out or the sown plots and ridges were formed haphazardly totally injuring the sown plots. The plan was relaid and the experimental area was got levelled with the *khurpi*. It will be better if the 2 sowings are considered to be lost and the plots are sown on appropriate dates following 7.12.1951 sowing. But actually it was not practiced.

## 5. RESULTS :

(i) 834 lb./ac.  
 (ii) 383.2 lb./ac.  
 (iii) D and V effects are highly significant while interaction is not significant.

(iv) Av. yield of grain in lb./ac.

	D <sub>1</sub>	D <sub>2</sub>	D <sub>3</sub>	D <sub>4</sub>	D <sub>5</sub>	D <sub>6</sub>	D <sub>7</sub>	D <sub>8</sub>	Mean
V <sub>1</sub>	187	560	1307	1042	996	871	140	311	677
V <sub>2</sub>	132	1322	1680	1385	1525	1011	459	412	991
Mean	160	941	1494	1214	1260	941	300	362	834

S.E. of marginal mean of V = 67.7 lb./ac.  
 S.E. of marginal mean of D = 135.5 lb./ac.  
 S.E. of body of table = 191.6 lb./ac.

Crop :-Wheat (*Rabi*).

Ref :-U.P. 48(12).

Site :-Govt. Res. Farm, Kanpur.

Type :-'CV'.

Object:—To find out optimum sowing date and seed rate for Wheat varieties.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Sanai* for G.M. (c) No. (ii) (a) Loam. (b) N.A. (iii) As per treatments. (iv) (a), (b) N.A. (c) As per treatments. (d) and (e) N.A. (v) Nil. (vi) As per treatments. (vii) Irrigated. (viii) N.A. (ix) N.A. (x) 18, 19.4.1949.

## 2. TREATMENTS :

All combinations of (1), (2) and (3)

- (1) 2 seed rates : R<sub>1</sub>=80 and R<sub>2</sub>=100 lb./ac.  
 (2) 3 sowing dates : D<sub>1</sub>=15.10.1948, D<sub>2</sub>=22.10.1948 and D<sub>3</sub>=29.10.1948.  
 (3) 2 varieties : V<sub>1</sub>=C-13 (early) and V<sub>2</sub>=Pb. 591 (late).

## 3. DESIGN :

(i) 3×2×2 Fact. in R.B.D. (ii) (a) 12. (b) N.A. (iii) 4. (iv) (a) 28'×18'. (b) 24'×16.5'. (v) 2×.75'. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Nil. (iii) Fresh and dry grain yield. (iv) (a) 1947 to 1951. (b) No. (c) N.A. (v) (a) No. (b) N.A. (vi) Nil. (vii) The experiment was conducted by E.B.(R).

## 5. RESULTS :

- (i) 1678 lb./ac.  
 (ii) 294.4 lb./ac.  
 (iii) None of the effects is significant.  
 (iv) Av. yield of grain in lb./ac.

	D <sub>1</sub>	D <sub>2</sub>	D <sub>3</sub>	Mean	R <sub>1</sub>	R <sub>2</sub>
V <sub>1</sub>	1585	1640	1564	1596	1508	1684
V <sub>2</sub>	1925	1763	1588	1759	1762	1755
Mean	1755	1702	1576	1678		
R <sub>1</sub>	1753	1581	1571	1635		
R <sub>2</sub>	1757	1822	1581	1720		

S.E. of the marginal mean of R or V = 60.1 lb./ac.  
 S.E. of the marginal mean of D = 73.6 lb./ac.  
 S.E. of body of table R×D or V×D = 104.1 lb./ac.  
 S.E. of body of table R×V = 85.0 lb./ac.

Crop :- Wheat (*Rabi*).

Ref :- U.P. 49(34).

Site :- Govt. Res. Farm, Kanpur.

Type :- 'CV'.

Object :- To find out optimum sowing date and seed rate for Wheat varieties.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Sanai*. (c) Nil. (ii) (a) Loam. (b) N.A. (iii) As per treatments. (iv) (a) 5 with victory plough 2 to 3 with cultivator plough, 3 with *desi* plough. (b) N.A. (c) As per treatments. (d) N.A. (e) N.A. (v) *Sanai* as G.M. (vi) As per treatments. (vii) Irrigated. (viii) 1 to 2 hoeings with hand hoe. (ix) N.A. (x) 6 to 8.4.1950.

## 2. TREATMENTS :

All combinations of (1), (2) and (3)

- (1) 2 seed rates :  $R_1=80$  lb./ac. and  $R_2=100$  lb./ac.  
 (2) 3 sowing dates :  $D_1=17.10.1949$ ,  $D_2=24.10.1949$  and  $D_3=9.11.1949$ .  
 (3) 2 varieties :  $V_1=C-13$  (early) and  $V_2=Pb. 591$  (late).

## 3. DESIGN :

(i)  $3 \times 2 \times 2$  Fact. in R.B.D. (ii) (a) 12. (b) N.A. (iii) 4. (iv) (a)  $29'-3'' \times 17'-3''$ . (b)  $25'-3'' \times 15'-9''$ . (v)  $2' \times \frac{1}{2}'$ .  
 (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Postules of orange rust and black rust spots were observed in traces on few plants. (iii) Grain and straw yield. (iv) (a) 1947 to 1951. (b) No. (c) N.A. (v) (a) No. (b) N.A. (vi) Nil. (vii) The experiment was conducted by E.B. (R).

## 5. RESULTS :

- (i) 1831 lb./ac.  
 (ii) 338.7 lb./ac.  
 (iii) Only V effect is significant.  
 (iv) Av. yield of grain in lb./ac.

	D <sub>1</sub>	D <sub>2</sub>	D <sub>3</sub>	Mean	R <sub>1</sub>	R <sub>2</sub>
V <sub>1</sub>	1683	1739	1697	1706	1610	1803
V <sub>2</sub>	2035	2042	1788	1955	1934	1976
Mean	1859	1890	1743	1831		
R <sub>1</sub>	1838	1824	1655	1772		
R <sub>2</sub>	1880	1957	1831	1889		

S.E. of marginal mean of R or V = 69.1 lb./ac.  
 S.E. of marginal mean of D = 84.7 lb./ac.  
 S.E. of body of table R × D or V × D = 119.7 lb./ac.  
 S.E. of body of table R × V = 97.8 lb./ac.

Crop :- Wheat (*Rabi*).

Ref :- U.P. 50(148).

Site :- Govt. Res. Farm, Kanpur.

Type :- 'CV'.

Object :- To find out optimum sowing date and seed rate for Wheat varieties.

## 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Loam. (b) N.A. (iii) 27.10.1950, 2.11.1950 and 8.11.1950. (iv) (a) Ploughing and harrowing—2 with victory plough and 6 with *desi* plough. (b) Sown behind the plough. (c) 80 lb./ac. and 100 lb./ac. (d) Distance between rows 9". (e) N.A. (v) 16 C.L. of F.Y.M. (vi) As per treatments. (vii) Irrigated. (viii) Nil. (ix) N.A. (x) 10.5.1951.

## 2. TREATMENTS :

All combinations of (1), (2) and (3)

- (1) 2 seed rates :  $R_1=80$  and  $R_2=100$  lb./ac.  
 (2) 3 sowing dates :  $D_1=27.10.1950$ ,  $D_2=2.11.1950$  and  $D_3=8.11.1950$ .  
 (3) 2 varieties :  $V_1=C-13$  (early) and  $V_2=Pb. 591$  (late).

## 3. DESIGN :

(i) 3×2×2 Fact. in R.B.D. (ii) (a) 12. (b) N.A. (iii) 4. (iv) (a) 34'×12'-9". (b) 30'×11'-3". (v) 2'×½'. (vi) Yes.

## 4. GENERAL :

(i) Good, about 10% lodging was observed in C-13. (ii) No smut was observed and the rust was also not very prominent. (iii) Yield of dry grain. (iv) (a) 1947-1951. (b) No. (c) N.A. (v) (a) No. (b) N.A. (vi) Nil. (vii) The experiment was conducted by E.B. (R).

## 5. RESULTS :

(i) 1745 lb./ac.  
 (ii) 270.1 lb./ac.  
 (iii) None of the effects is significant.  
 (iv) Av. yield of grain in lb./ac.

	D <sub>1</sub>	D <sub>2</sub>	D <sub>3</sub>	Mean	R <sub>1</sub>	R <sub>2</sub>
V <sub>1</sub>	1657	1902	1711	1757	1730	1784
V <sub>2</sub>	1562	1744	1894	1733	1665	1802
Mean	1610	1823	1803	1745		
R <sub>1</sub>	1610	1678	1805	1698		
R <sub>2</sub>	1610	1969	1801	1793		

S.E. of marginal mean of R or V = 55.1 lb./ac.  
 S.E. of marginal mean of D = 67.3 lb./ac.  
 S.E. of body of table R×D or V×D = 95.5 lb./ac.  
 S.E. of body of table R×V = 77.9 lb./ac.

Crop :-Wheat (*Rabi*).

Site :-Govt. Res. Farm, Kanpur.

Ref :-U.P. 51(32).

Type :-'CV'.

Object :-To find out optimum sowing date and seed rate for Wheat varieties.

## 1. BASAL CONDITIONS :

(i) (a) No. (b) *Moong*. (c) No. (ii) (a) Loam. (b) N.A. (iii) As per treatments. (iv) (a) 4 *desi* plough, 1 spring fine harrow and 1 victory plough. (b) N.A. (c) As per treatments. (d) Rows 9° apart. (e) N.A. (v) Nil. (vi) As per treatments. (vii) Irrigated. (viii) Nil. (ix) Not recorded. (x) 21.4.1952.

## 2. TREATMENTS :

All the combinations of (1), (2) and (3)

- (1) 2 seed rates : R<sub>1</sub>=80 and R<sub>2</sub>=100 lb./ac.  
 (2) 3 sowing dates : D<sub>1</sub>=3.11.1951, D<sub>2</sub>=14.11.1951 and D<sub>3</sub>=25.11.1951.  
 (3) 2 varieties : V<sub>1</sub>=C-13 and V<sub>2</sub>=Pb. 591.

## 3. DESIGN :

(i) (a) 3×2×2 Fact. in R.B.D. (ii) (a) 12 in two flanks. (b) N.A. (iii) 4. (iv) (a) 34'×12'-9". (b) 30'×11'-3". (v) 2'×½'. (vi) Yes.

## 4. GENERAL :

(i) Good. No lodging except in Block IV, on R<sub>1</sub>D<sub>2</sub>V<sub>1</sub> plots ; only 1/3 plants lodged. (ii) In early stage of growth there was no disease but at the later stage the stem and leaves of each plant was mildly affected by orange rust. (iii) Germination and grain yield. (iv) a) 1947 to 1951. (b) No. (c) N.A. (v) (a) No. (b) N.A. (vi) Nil. (vii) The expt. was conducted by E.B. (R). The 12' gap between blocks is to provide enough turning space for bullocks at different dates of sowing. After the last sowings are over, these gaps are to be sown with C-13 as commercial crop, leaving about 3' on each side of the plot.

## 5. RESULTS :

- (i) 779 lb./ac.  
(ii) 360.9 lb./ac.  
(iii) None of the effects is significant.  
(iv) Av. yield of grain in lb./ac.

	D <sub>1</sub>	D <sub>2</sub>	D <sub>3</sub>	Mean	R <sub>1</sub>	R <sub>2</sub>
V <sub>1</sub>	830	983	788	867	885	849
V <sub>2</sub>	734	527	811	691	684	697
Mean	782	755	800	779		
R <sub>1</sub>	811	697	846	785		
R <sub>2</sub>	753	813	753	773		

S.E. of marginal mean of R or V = 73.67 lb./ac.  
S.E. of marginal mean of D = 90.23 lb./ac.  
S.E. of body of table R×D or V×D = 127.61 lb./ac.  
S.E. of body of table R×V = 104.19 lb./ac.

Crop :-Wheat (*Rabi*).

Ref :-U.P. 52(43).

Site :-Govt. Res. Farm, Kanpur.

Type :-'CV'.

Object :-To find out the optimum sowing date for Wheat varieties.

## 1. BASAL CONDITIONS :

- (i) (a) No. (b) *Sanai* (G.M.) (c) Nil. (ii) (a) Loam. (b) N.A. (iii) As per treatments. (iv) (a) N.A. (b) Furrows were made with *kudali*. (c) 80 lb./ac. (d) Row 9' apart. (e) N.A. (v) Nil. (vi) As per treatments. (vii) Irrigated. (viii) One weeding on 18.12.1952. (ix) N.A. (x) 31.3.1953.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 4 varieties : V<sub>1</sub>=C-13, V<sub>2</sub>=NP-125, V<sub>3</sub>=NP-710 and V<sub>4</sub>=Pb. 591.(2) 4 sowing dates : D<sub>1</sub>=23.10.1952, D<sub>2</sub>=30.10.1952, D<sub>3</sub>=6.11.1952 and D<sub>4</sub>=13.11.1952.

## 3. DESIGN :

- (i) 4×4 Fact. in R.B.D. (ii) (a) 16 in two flanks. (b) N.A. (iii) 4. (iv) (a) and (b) 18'×6'. (v) Nil. (vi) Yes,

## 4. GENERAL :

- (i) Unsatisfactory. Lodging in some plots. (ii) Very little traces of smut disease, rust incidence also to the extent of 1 to 20%. (iii) Germination and grain yield. (iv) (a) 1952—continued. (b) No. (c) N.A. (v) (a) No. (b) N.A. (vi) Nil. (vii) The expt. was conducted by E.B. (R).

## 5. RESULTS :

- (i) 2688 lb./ac.  
(ii) 522.82 lb./ac.  
(iii) None of the effects is significant.  
(iv) Av. yield of grain in lb./ac.

	D <sub>1</sub>	D <sub>2</sub>	D <sub>3</sub>	D <sub>4</sub>	Mean
V <sub>1</sub>	3072	2359	2774	2748	2738
V <sub>2</sub>	2956	2489	2606	2619	2668
V <sub>3</sub>	2710	2787	3047	3021	2891
V <sub>4</sub>	2463	2282	2437	2645	2457
Mean	2800	2479	2716	2758	2688

S.E. of any marginal mean = 130.70 lb./ac.  
S.E. of body of table = 261.41 lb./ac.

Crop :- Wheat (*Rabi*).  
Site :- Govt. Res. Farm, Kanpur.

Ref :- U.P. 53(84).  
Type :- 'CV'.

Object :- To find out optimum sowing dates for wheat varieties.

1. BASAL CONDITIONS :

(i) (a) *Sanai*-wheat. (b) *Sanai* green manure. (c) Nil. (ii) (a) Loam. (b) N.A. (iii) As per treatments.  
(iv) (a) 1 ploughing with victory plough and 1 cultivator ; 1 spring harrow and *pata 2 dest* plough and *pata*.  
(b) Behind the plough. (c) 80 lb./ac. (d) 9" apart. (e) N.A. (v) Nil. (vi) As per treatments. (vii) Irrigated. (viii) Nil. (ix) N.A. (x) 12.4.1954.

2. TREATMENTS :

All combinations of (1) and (2)

(1) 4 varieties :  $V_1=C-13$ ,  $V_2=NP-125$ ,  $V_3=NP-710$  and  $V_4=Pb. 591$ .

(2) 4 sowing dates :  $D_1=26.10.1953$ ,  $D_2=2.11.1953$ ,  $D_3=9.11.1953$  and  $D_4=16.11.1953$ .

3. DESIGN :

(i) 4x4 Fact. in R.B.D. (ii) (a) 16 plots (in 2 flanks of 8 plots each). (b) N.A. (iii) 4. (iv) (a) 18'x6'. (b) 18'x6'. (v) Nil. (vi) Yes.

4. GENERAL :

(i) Fair, no lodging was observed at all during the expt. (ii) Nil. (iii) Germination, grain and straw yield. (iv) (a) 1952—continued. (b) No. (c) N.A. (v) (a) No. (b) N.A. (vi) Nil. (vii) The expt, was conducted by E.B. (R).

5. RESULTS :

(i) 1794 lb./ac.

(ii) 418.07 lb./ac.

(iii) None of the effects is significant.

(iv) Av. yield of grain in lb./ac.

	$D_1$	$D_2$	$D_3$	$D_4$	Mean
$V_1$	1996	1621	1802	1491	1728
$V_2$	1984	1815	1996	1958	1938
$V_3$	1893	1569	1906	1556	1731
$V_4$	1854	2009	1802	1452	1779
Mean	1932	1754	1876	1614	1794

S.E. of any marginal mean = 104.52 lb./ac.

S.E. of body of table = 209.04 lb./ac.

Crop :-Wheat (*Rabi*).  
Site :- Govt. Res. Farm, Kanpur.

Ref :-U.P. 48(18).  
Type :- 'CV'.

Object :-To study the effect of seed rate and spacing on the yield of Wheat varieties.

1. BASAL CONDITIONS :

(i) (a) to (e) N.A. (ii) (a) Loam. (b) N.A. (iii) 30.10.1948. (iv) (a), (b) N.A. (c) & (d) As per treatments. (e) N.A. (v) N.A. (vi) As per treatments. (vii) N.A. (viii) N.A. (ix) N.A. (x) 2 and 4. 4.1949.

2. TREATMENTS :

All combinations of (1), (2) & (3).

(1) 2 seed rates :  $R_1=40$  lb./ac. and  $R_2=80$  lb./ac.

(2) 2 spacings between rows :  $S_1=9''$  and  $S_2=18''$ .

(3) 2 varieties :  $V_1=C-13$ , and  $V_2=Pb. 591$ .



**3. DESIGN :**

(i) 2<sup>3</sup> Fact. in R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a) 35'×12'-9". (b) 31'×11'-3" (v) 2'× $\frac{1}{2}$ '. (vi) Yes.

**4. GENERAL :**

(i) Good. (ii) Nil. (iii) Yield of fresh and dry grain. (iv) (a) 1948 to 1949. (b) No. (c) N.A. (v) (a) No. (b) N.A. (vi) Nil. (vii) The expt. was conducted by E.B. (R).

**5. RESULTS :**

- (i) 1366 lb./ac.  
 (ii) 209.60 lb./ac.  
 (iii) Only S effect is significant.  
 (iv) Av. yield of grain in lb./ac.

	S <sub>1</sub>	S <sub>2</sub>	Mean	R <sub>1</sub>	R <sub>2</sub>
V <sub>1</sub>	1397	1233	1315	1370	1261
V <sub>2</sub>	1495	1339	1417	1374	1460
Mean	1446	1286	1366		
R <sub>1</sub>	1464	1280	1372		
R <sub>2</sub>	1428	1292	1360		

S.E. of any marginal mean = 52.40 lb./ac.  
 S.E. of body of any table = 74.10 lb./ac.

Crop :-Wheat (*Rabi*).

Ref :-U.P. 49(36).

Site :-Govt. Res. Farm, Kanpur.

Type :-'CV'.

Object :-To study the effect of seed rate and spacing on the yield of Wheat varieties.

**1. BASAL CONDITIONS :**

(i) (a) No. (b) Maize. (c) N.A. (ii) (a) Loam. (b) N.A. (iii) 10.11.1949. (iv) (a) Ploughings—2 with victory plough, 4 with cultivator and 1 with *dest* plough. (b) N.A. (c) 1 and (d) As per treatments. (e) N.A. (v) Nil. (vi) As per treatments. (vii) Irrigated. (viii) One earthing. (ix) N.A. (x) 12, 13.4.1950.

**2. TREATMENTS :**

All combinations of (1), (2) and (3)

- (1) 2 seed rates : R<sub>1</sub>=40 and R<sub>2</sub>=80 lb./ac.  
 (2) 2 spacings between rows : S<sub>1</sub>=9" and S<sub>2</sub>=18".  
 (3) 2 varieties : V<sub>1</sub>=C-13 and V<sub>2</sub>=Pb. 591.

**3. DESIGN :**

(i) 2<sup>3</sup> Fact. in R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a) 35'×12'.9". (b) 31'×10'.6". (v) 2'×13 $\frac{1}{2}$ ". (vi) Yes.

**4. GENERAL :**

(i) Good. (ii) A very few pustules of orange rust followed by black rust later on. (iii) Grain and *bhusa* yield. (iv) (a) 1948 to 1949. (b) No. (c) N.A. (v) (a) No. (b) N.A. (vi) Nil. (vii) The expt. was conducted by E.B.(R).

**5. RESULTS :**

- (i) 1664 lb./ac.  
 (ii) 298.26 lb./ac.  
 (iii) None of the effects is significant.

(iv) Av. yield of grain in lb./ac.

	S <sub>1</sub>	S <sub>2</sub>	Mean	R <sub>1</sub>	R <sub>2</sub>
V <sub>1</sub>	1785	1729	1757	1794	1721
V <sub>2</sub>	1583	1557	1570	1462	1678
Mean	1684	1643	1664		
R <sub>1</sub>	1596	1660	1628		
R <sub>2</sub>	1772	1626	1699		

S.E. of any marginal mean = 74.56 lb./ac.  
 S.E. of body of table = 105.45 lb./ac.

Crop :-Wheat (*Rabi*).

Ref :-U.P. 50(150).

Site :-Govt. Res. Farm, Kanpur.

Type :-'CV'.

Object :-To study the effect of seed rate, spacing and earthing on lodging and final yield of Wheat varieties.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) *Sanai*. (c) No. (ii) (a) Loam. (b) N.A. (iii) 30.10.1950. (iv) (a) 3 ploughings with victory plough and 5 with *desi* ploughs. (b) Sown behind the plough. (c) and (d) As per treatments. (e) N.A. (v) Green manuring by *Sanai*. (vi) As per treatments. (vii) Irrigated. (viii) 2 earthings. (ix) N.A. (x) 27, 28.4.1951.

## 2. TREATMENTS :

All combinations of (1), (2) and (3)

(1) 2 seedrates: R<sub>1</sub>=40 and R<sub>2</sub>=80 lb./ac.(2) 3 spacings and earthing up: S<sub>1</sub>=9" between rows (unearthed), S<sub>2</sub>=18" between rows (unearthed) and S<sub>3</sub>=18" between rows (earthed).(3) 2 varieties: V<sub>1</sub>=C-13 (early) and V<sub>2</sub>=Pb. 591 (late).

## 3. DESIGN :

(i) 2×2×3 Fact. in R.B.D. (ii) (a) 12. (b) N.A. (iii) 4. (iv) (a) 23'×12'.9". (b) 19'×10'.6". (v) 2'×13½". (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) No. (iii) Grain yield. (iv) (a) No. (b) No. (c) N.A. (v) (a) No. (b) N.A. (vi) Nil. (vii) The expi. was conducted by E.B.(R).

## 5. RESULTS :

(i) 2310 lb./ac.

(ii) 200.90 lb./ac.

(iii) None of the effects is significant.

(iv) Av. yield of grain in lb./ac.

	S <sub>1</sub>	S <sub>2</sub>	S <sub>3</sub>	Mean	R <sub>1</sub>	R <sub>2</sub>
V <sub>1</sub>	2264	2277	2235	2259	2229	2288
V <sub>2</sub>	2488	2320	2273	2360	2382	2339
Mean	2376	2299	2254	2310		
R <sub>1</sub>	2337	2337	2242	2305		
R <sub>2</sub>	2414	2260	2267	2314		

S.E. of marginal mean of V or R = 41.00 lb./ac.  
 S.E. of marginal mean of S = 50.22 lb./ac.  
 S.E. of body of table V×S or R×S = 71.03 lb./ac.  
 S.E. of body of table V×R = 57.99 lb./ac.

Crop :- Wheat.

Ref :- U.P. 48(15).

Site :- Sugarcane Res. Sub-Stn. Kunraghat.

Type :- 'CV'.

Object :-To find out the optimum sowing dates for wheat varieties.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) *Sawan*. (c) N.A. (ii) (a) Light loam. (b) N.A. (iii) As per treatments. (iv) (a) Ploughings by *desi* plough. (b) N.A. (c) 100 lb./ac. (d) and (e) N.A. (v) 6 C.L. of cowdung and 1 md./ac. of A/S. (vi) As per treatments. (vii) Irrigated. (viii) Nil. (ix) N.A. (x) 2.4.1949.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 2 varieties :  $V_1$ =NP-125 (early) and  $V_2$ =NP-52 (early).(2) 4 sowing dates :  $D_1$ =22.10.1948,  $D_2$ =29.10.1948,  $D_3$ =5.11.1948 and  $D_4$ =12.11.1948.

## 3. DESIGN :

(i) 2x4 Fact. in R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a) 40'x21'. (b) 37'x19.5'. (v) One row on either side and 1.5' at each end of the plot. 2' between varieties and 5' between blocks. (vi) Yes.

## 4. GENERAL :

(i) Poor. (ii) Attack of rust—abnormal. (iii) Grain and *bhusa* yield. (iv) (a) 1945—1948. (b) and (c) No. (v) (a) Meerut, Nagina and Raya. (b) N.A. (vi) Feb. rainfall of 1.86" prolonged maturity and the western winds during the flowering time, all combined together shrivelled the grains very much and hence the poor yield was obtained than expected. (vii) Conducted by E.B. (R).

## 5. RESULTS :

(i) 361.9 lb./ac.

(ii) 78.90 lb./ac.

(iii) D and V effects are highly significant and interaction is not significant.

(iv) Av. yield of grain in lb./ac.

	$D_1$	$D_2$	$D_3$	$D_4$	Mean
$V_1$	427.3	270.7	206.6	200.9	276.4
$V_2$	517.0	475.4	477.3	319.8	447.4
Mean	472.2	373.0	342.0	260.4	361.9

S.E. of marginal mean of D

=27.90 lb./ac.

S.E. of marginal mean of V

=19.73 lb./ac.

S.E. of body of table

=39.45 lb./ac.

Crop :- Wheat.

Ref :- U.P. 48(47).

Site :- Regional Res. Stn., Meerut.

Type :- 'CV'.

Object :-To find out the optimum sowing dates for Wheat varieties.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Sanai*. (c) No. (ii) (a) Light loam. (b) N.A. (iii) As per treatments. (iv) (a) 9 ploughings by *desi* plough. (b) Sown behind the plough. (c) 80 lb./ac. (d) Rows 9" apart. (e) N.A. (v) *Sanai* green manuring ploughed in by victory plough on 30.9.1948. (vi) As per treatments. (vii) Irrigated. (viii) Hoeing and weeding on 27.12.1948 by iron tooth bar harrow. (ix) 2.65". (x) 27, 28.4.1949.

## 2. TREATMENTS :

All combination of (1) and (2)

(1) 2 varieties :  $V_1$ =Pb-591 (late) and  $V_2$ =NP-125 (medium).(2) 5 sowing dates :  $D_1$ =20.10.1948,  $D_2$ =27.10.1948,  $D_3$ =5.11.1948,  $D_4$ =12.11.1948 and  $D_5$ =19.11.1948.

## 3. DESIGN :

(i) 2x5 Fact. in R.B.D. (i) (a) 10. (b) N.A. (iii) 4. (iv) (a) 42'x10'-6". (b) 39'x9". (v) One row on either side and 1½' at each end of the plot. Blocks 20' apart and plots 4' apart. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Incidence of rust. (iii) Grain yield. (iv) (a) 1948 to 1950, (b) and (c) No. (v) (a) Gorakhpur, Nagina and Raya. (b) N.A. (vi) Nil. (vi) Conducted by E.B.(R).

## 5. RESULTS :

(i) 2235 lb./ac.

(ii) 146.1 lb./ac.

(iii) V effect is significant, D effect is highly significant while interaction is not significant.

(iv) Av. yield of grain in lb./ac.

	D <sub>1</sub>	D <sub>2</sub>	D <sub>3</sub>	D <sub>4</sub>	D <sub>5</sub>	Mean
V <sub>1</sub>	2234	2505	2417	2210	2090	2291
V <sub>2</sub>	2114	2433	2322	2074	1955	2180
Mean	2174	2469	2370	2142	2022	2235

S.E. of marginal mean of V = 32.66 lb./ac.

S.E. of marginal mean of D = 51.63 lb./ac.

S.E. of body of table = 73.02 lb./ac.

Crop :-Wheat.

Ref :- U.P. 49(109).

Site :- Regional Res. Stn., Meerut.

Type :- 'CV'.

Object :-To find out the optimum sowing dates for Wheat varieties.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Sanal* (G.M.). (c) No. (ii) (a) Loam (light). (b) N.A. (iii) As per treatments. (iv) (a) 9 times *desi* plough ; ridge making on 19.11.1949. (b) Sown behind the plough. (c) 80 lb./ac. (d) Rows 6" apart. (e) N.A. (v) *Sanal* green manuring turning with victory plough on 28.8.1949. (vi) As per treatments. (vii) Irrigated. (viii) No. (ix) N.A. (x) 22.4.1950 to 24.4.1950.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 2 varieties : V<sub>1</sub>=Pb. 591 (late) and V<sub>2</sub>=NP-125 (medium).

(2) 5 sowing dates : D<sub>1</sub>=20.10.1949, D<sub>2</sub>=27.10.1949, D<sub>3</sub>=5.11.1949, D<sub>4</sub>=12.11.1949 and D<sub>5</sub>=19.11.1949.

## 3. DESIGN :

(i) 2×5 Fact. in R.B.D. (ii) (a) 10. (b) N.A. (iii) 4. (iv) (a) 42'×10.5'. (b) 39'×9'. (v) One row on either side and 1½' at each end of the plot. Blocks 22' and plots 4' apart. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Slight attack of rust in all the plots except in both varieties sown on 5.11.1949 and 12.11.1949 where they were very much affected. (iii) Grain yield. (iv) (a) 1948-1950. (b) No. (c) No. (v) (a) Raya and Kanpur. (b) N.A. (vi) Nil. (vii) The experiment was conducted by E.B. (R).

## 5. RESULTS :

(i) 2359 lb./ac.

(ii) 173.99 lb./ac.

(iii) Both V and D effects are highly significant while interaction is not significant.

(iv) Av. yield of grain in lb./ac.

	D <sub>1</sub>	D <sub>2</sub>	D <sub>3</sub>	D <sub>4</sub>	D <sub>5</sub>	Mean
V <sub>1</sub>	2393	2537	2489	2409	2385	2443
V <sub>2</sub>	2170	2533	2421	2114	2142	2276
Mean	2282	2535	2455	2262	2263	2359

S.E. of marginal mean of V = 38.90 lb./ac.

S.E. of marginal mean of D = 61.51 lb./ac.

S.E. of body of table = 87.00 lb./ac.

Crop :- Wheat.

Ref :- U.P. 50(146).

Site :- Regional Res. Stn., Meerut.

Type :- 'CV'.

Object :- To find out optimum sowing dates for Wheat varieties.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Cowpea *guar*. (c) No. (ii) (a) Loam. (b) N.A. (iii) As per treatments. (iv) (a) 2 ploughings by victory plough 6 by *desi* plough, (b) Sown behind the plough. (c) 80 lb./ac. (d) Rows 9' apart. (e) N.A. (v) Nil. (vi) As per treatments. (vii) Irrigated. (viii) Weeding by *khurpi* on 3.1.1951, 7.1.1951. (ix) 4.45". (x) 24, 25.4.1951.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 2 varieties :  $V_1$ =Pb. 591 (late) and  $V_2$ =NP-125 (medium).(2) 5 sowing dates :  $D_1$ =20.10.1950,  $D_2$ =27.10.1950,  $D_3$ =5.11.1950,  $D_4$ =12.11.1950 and  $D_5$ =19.11.1950.

## 3. DESIGN :

(i)  $2 \times 5$  Fact. in R.B.D. (ii) (a) 10. (b) N.A. (iii) 4. (iv) (a)  $32' \times 15'-9"$ . (b)  $28' \times 14'-3"$ . (v) Distance between block 5 ; distance between plots 2'. One row on either side at each end of the plot. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Rust in plots sown on 12.11.1950 and 19.11.1950. (iii) Grain yield. (iv) (a) 1948-1950. (b) No. (c) No. (v) (a) Raya. (b) N.A. (vi) Nil. (vii) The experiment was conducted by E.B.(R).

## 5. RESULTS :

(i) 2698 lb./ac.

(ii) 236.03 lb./ac.

(iii) None of the effects is significant.

(iv) Av.yield of grain in lb./ac.

	$D_1$	$D_2$	$D_3$	$D_4$	$D_5$	Mean
$V_1$	2723	2667	2716	2660	2737	2701
$V_2$	2723	2534	2828	2751	2646	2696
Mean	2723	2600	2772	2706	2691	2698

S.E. of marginal mean of V

= 52.80 lb./ac.

S.E. of marginal mean of D

= 83.45 lb./ac.

S.E. of body of table

= 118.02 lb./ac.

Crop :-Wheat.

Ref :-U.P. 48(13).

Site :-Rice Res. Stn., Nagina.

Type :-'CV'.

Object :- To find out the optimum sowing dates for Wheat varieties.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) Paddy. (c) N.A. (ii) (a) Loam. (b) N.A. (iii) 22, 29.10.1948 and 5, 12.11.1948. (iv) (a) 7 ploughings by *desi* plough and 1 harrowing. (b) N.A. (c) 106 lb./ac. (d) and (e) N.A. (v) 10 md./ac. as castor cake. (vi) As per treatments. (vii) Irrigated. (viii) Nil. (ix) N.A. (x) 9.4.1949.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 2 varieties :  $V_1$ =Pb. 591 (late) and  $V_2$ =NP-125 (early).(2) 4 sowing dates :  $D_1$ =22.10.1948,  $D_2$ =29.10.1948,  $D_3$ =5.11.1948 and  $D_4$ =12.11.1948.

## 3. DESIGN :

(i)  $2 \times 4$  Fact. in R.B.D. (ii) (a) 8. (b) N.A. (iii) 6. (iv) (a)  $37' \times 20.5'$  (b)  $35\frac{1}{2}' \times 19'$ . (v) Distance between blocks 3'. Distance between varieties  $1\frac{1}{2}'$ . One row on either side and one foot at each end of the plot. (vi) Yes.

**GENERAL :**

(i) No lodging. Normal growth. (ii) There was some rust in late sown plots of variety NP-125. (iii) Grain and *bhusa* yield. (iv) (a) 1945 to 1948. (b) and (c) No. (v) (a) Meerut, Gorakhpur and Raya. (b) N.A. (vi) Nil. (vii) Conducted by E.B.(R).

**5. RESULTS :**

- (i) 1427 lb./ac.  
(ii) 136.64 lb./ac.  
(iii) D effect is highly significant while other effects are not significant.  
(iv) Av. yield of grain in lb./ac.

	D <sub>1</sub>	D <sub>2</sub>	D <sub>3</sub>	D <sub>4</sub>	Mean
V <sub>1</sub>	1533	1586	1404	1335	1464
V <sub>2</sub>	1556	1546	1382	1075	1390
Mean	1544	1566	1393	1205	1427

S.E. of marginal mean of V = 27.89 lb./ac.  
S.E. of marginal mean of D = 39.44 lb./ac.  
S.E. of body of table = 55.78 lb./ac.

Crop :-Wheat.

Ref :-U.P. 48(46).

Site :-Govt. Cotton Res. Sub-Strn., Raya.

Type :-'CV'.

Object :-To find out the optimum sowing date for Wheat varieties.

**1. BASAL CONDITIONS :**

(i) (a) Nil. (b) Cotton. (c) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis, Raya. (iii) As per treatments. (iv) (a) 1 ploughing with victory plough ; 6 by *dest* and harrowing on 23.10.1948. (b) Sown behind the plough. (c) 80 lb./ac. (d) Rows 18" apart. (e) N.A. (v) Green manuring with *sanai*. (vi) As per treatments. (vii) Irrigated. (viii) Weeding and hoeing with *khurpi* on 12.4.1948 and weeding with *khurpi* on 22 and 26.1.1949. (ix) N.A. (x) 1, 6 and 11.4.1949.

**2. TREATMENTS :**

All combinations of (1) and (2)

(1) 2 varieties : V<sub>1</sub>=Pb. 591 (late) and V<sub>2</sub>=NP-125 (medium).

(2) 5 sowing dates : D<sub>1</sub>=25.10.1948, D<sub>2</sub>=1.11.1948, D<sub>3</sub>=8.11.1948, D<sub>4</sub>=22.11.1948 and D<sub>5</sub>=24.11.1948.

**3. DESIGN :**

(i) 2x5 Fact. in R.B.D. (ii) (a) 10. (b) N.A. (iii) 4. (iv) (a) 32'x18'-9". (b) 17'-3"x29". (v) One row on either side, 1½' on each side. (vi) Yes.

**4. GENERAL :**

(i) Good. (ii) Nil. (iii) Yield of dry grain. (iv) (a) 1948 to 1950. (b) and (c) No. (v) (a) Gorakhpur, Nagina and Meerut. (b) N.A. (vi) Nil. (vii) Conducted by E.B.(R).

**5. RESULTS :**

- (i) 1213 lb./ac.  
(ii) 196.81 lb./ac.  
(iii) Only V effect is highly significant.  
(iv) Av. yield of grain in lb./ac.

	D <sub>1</sub>	D <sub>2</sub>	D <sub>3</sub>	D <sub>4</sub>	D <sub>5</sub>	Mean
V <sub>1</sub>	1321	1170	1338	1310	1405	1309
V <sub>2</sub>	1019	963	1299	1220	1086	1117
Mean	1170	1066	1318	1265	1246	1213

S.E. of marginal mean of V = 44.06 lb./ac.  
S.E. of marginal mean of D = 69.60 lb./ac.  
S.E. of body of table = 98.40 lb./ac.

Crop :-Wheat.  
Site :-Govt. Cotton Res. Sub-Stn., Raya.

Ref :- U.P. 49(110).  
Type :- 'CV'.

Object :—To find out the optimum sowing dates for Wheat varieties.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Sanai*. (c) No. (ii) (a) Sandy loam. (b) Refer soil analysis, Raya. (iii) As per treatments. (iv) (a) 1 ploughing by victory plough, 4 ploughings by cultivator and 4 *desi* ploughings. (b) Sown behind the plough. (c) 80 lb /ac. (d) 9" apart. (e) N.A. (v) *Sanai* as green manuring. (vi) As per treatments. (vii) Irrigated. (viii) Weeding with *khurpi* on 20, 22.12.1959. Only weeds taken out on 5, 6.2.1950. (ix) N.A. (x) 14.4.1950 and 22.4.1950.

2. TREATMENTS :

All combinations of (1), and (2)

- (1) 2 varieties :  $V_1$ =Pb. 591 (late) and  $V_2$ =NP.-125(medium).  
(2) 5 sowing dates :  $D_1$ =20.10.1949,  $D_2$ =27.10.1949,  $D_3$ =5.11.1949,  $D_4$ =12.11.1949 and  $D_5$ =19.11.1949.

3. DESIGN :

(i) 2x5 Fact. in R.B.D. (ii) (a) 10. (b) N.A. (iii) 4. (iv) (a) 32'x18'.9". (b) 29'x17'.3". (v) One row on either side and 1½' apart at each end of the plot. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Dry grain yield. (iv) (a) 1949 to 1950. (b), (c) No. (v) (a) Meerut, Kanpur (with 8 sowing dates). (b) N.A. (vi) Nil. (vii) Conducted by E.E.(R).

5. RESULTS :

- (i) 1061 lb./ac.  
(ii) 200.01 lb./ac.  
(iii) Only D effect is highly significant.  
(iv) Av. yield of grain in lb./ac.

	$D_1$	$D_2$	$D_3$	$D_4$	$D_5$	Mean
$V_1$	1013	1209	1052	1052	845	1034
$V_2$	1243	1243	1209	1164	582	1088
Mean	1128	1226	1130	1108	714	1061

S.E. of marginal mean of V = 44.72 lb./ac.  
S.E. of marginal mean of D = 70.72 lb./ac.  
S.E. of body of table = 100.00 lb./ac.

Crop :-Wheat.  
Site :-Govt. Cotton Res. Sub-Stn., Raya.

Ref :-U.P. 50(147).  
Type :-'CV'.

Object :—To find out the optimum sowing dates for Wheat varieties.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Sanai*. (c) No. (ii) (a) Sandy loam. (b) Refer soil analysis, Raya. (iii) As per treatments. (iv) (a) 2 victory ploughings and 3 *desi* ploughings. (b) Sown behind *desi* plough. (c) 80 srs./ac. (d) Rows 9" apart. (e) N.A. (v) Green manuring by *Sanai*. (vi) As per treatments. (vii) Irrigated. (viii) Weeding after 25 days of each sowing. (ix) N.A. (x) 21.4.1951.

2. TREATMENTS :

All combinations of (1) and (2)

- (1) 2 varieties :  $V_1$ =Pb. 591 (late) and  $V_2$ =NP.-125 (medium).  
(2) 5 sowing dates :  $D_1$ =20.10.1950,  $D_2$ =27.10.1950,  $D_3$ =5.11.1950,  $D_4$ =12.11.1950 and  $D_5$ =19.11.1950.

## 3. DESIGN :

(i) 2x5 Fact. in R.B.D. (ii) (a) 10. (b) N.A. (iii) 4. (iv) (a) 32'x19'.6". (b) 29'x18'. (v) One row on either side and 1½' at each end of the plot. (vi) Yes.

## 4. GENERAL :

(i) Satisfactory. (ii) Traces of rust. (iii) Dry grain yield. (iv) (a) 1948 to 1950. (b), (c) No. (v) (a) Meerut. (b) N.A. (vi) Nil. (vii) Conducted by E.B.(R).

## 5. RESULTS :

- (i) 1784 lb./ac.  
 (ii) 325.4 lb./ac.  
 (iii) No effect is significant.  
 (iv) Av. yield of grain in lb./ac.

	D <sub>1</sub>	D <sub>2</sub>	D <sub>3</sub>	D <sub>4</sub>	D <sub>5</sub>	Mean
V <sub>1</sub>	2039	1926	1738	1695	1577	1795
V <sub>2</sub>	1706	1878	1695	1996	1588	1773
Mean	1872	1902	1716	1845	1582	1784

S.E. of marginal mean of V = 72.76 lb./ac.  
 S.E. of marginal mean of D = 115.06 lb./ac.  
 S.E. of body of table = 162.7 lb./ac.

Crop :- Wheat.

Ref :- U.P. 52(124).

Site :- Govt. Agri. Farm, Atarra.

Type :- 'CM'.

Object :- To study the effect of seed rate, manure and time of sowing on the yield of Wheat.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) N.A. (ii) (a) Light *kabar*. (b) N.A. (iii) As per treatments. (iv) (a) 5 ploughings with watts plough. (b) N.A. (c) and (d) As per treatments. (e) N.A. (v) Nil. (vi) Pb. 591 (mid-late). (vii) Irrigated. (viii) N.A. (ix) N.A. (x) D<sub>1</sub>=4.4.1953 and D<sub>2</sub>=11.4.1953.

## 2. TREATMENTS :

Main-plot treatments :

All combinations of (1) and (2)

(1) 6 seed rates : S<sub>1</sub>=10, S<sub>2</sub>=20, S<sub>3</sub>=30, S<sub>4</sub>=40, S<sub>5</sub>=50 and S<sub>6</sub>=60 srs./ac.

(2) 2 dates of sowing : D<sub>1</sub>=21.11.1952 and D<sub>2</sub>=5.12.1952.

Sub-plot treatments :

3 manures : N<sub>1</sub>=3 C.L./ac. of F.Y.M. as B.D., N<sub>2</sub>=20 lb./ac. of N+5 lb./ac. of K<sub>2</sub>O+10 lb./ac. of P<sub>2</sub>O<sub>5</sub>+10 lb./ac. of CaO and N<sub>3</sub>=40 lb./ac. of N+10 lb./ac. of K<sub>2</sub>O+20 lb./ac. of P<sub>2</sub>O<sub>5</sub>+20 lb./ac. of CaO.

N applied as A/S, K<sub>2</sub>O as pot. sul., P<sub>2</sub>O<sub>5</sub> as Super and CaO as Gypsum.

## 3. DESIGN :

(i) Split-plot. (ii) (a) 12 main-plots/block ; 3 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 20'x21'. (b) 17'x18' (v) 1½' on all sides. (vi) Yes.

## 4. GENERAL :

(i) Satisfactory. (ii) Nil. (iii) Grain and straw yield. (iv) (a) 1952—1956. (b) and (c) No. (v) (a) Banaras, Etawah, Meerut, Aligarh and Bahraich. (vi) Nil. (vii) Conducted by C.P. (R).

## 5. RESULTS :

- (i) 1224 lb./ac.  
 (ii) (a) 56.44 lb./ac.  
 (b) 61.82 lb./ac.  
 (iii) All the effects are highly significant.



(iv) Av. yield of grain in lb./ac.

	S <sub>1</sub>	S <sub>2</sub>	S <sub>3</sub>	S <sub>4</sub>	S <sub>5</sub>	S <sub>6</sub>	Mean	D <sub>1</sub>	D <sub>2</sub>
N <sub>1</sub>	938	968	1048	929	933	1075	982	1072	891
N <sub>2</sub>	1046	1320	1215	1169	1137	1430	1219	1359	1080
N <sub>3</sub>	1256	1368	1615	1617	1444	1524	1471	1674	1267
Mean	1080	1219	1293	1238	1171	1343	1224	1368	1079
D <sub>1</sub>	1074	1418	1542	1345	1200	1630			
D <sub>2</sub>	1086	1019	1043	1132	1142	1055			

S.E. of difference of two

1. S marginal means = 16.29 lb./ac.
2. D marginal means = 9.41 lb./ac.
3. N marginal means = 12.62 lb./ac.
4. N means at a level of S = 30.91 lb./ac.
5. N means at a level of D = 17.85 lb./ac.
6. S means at a level of N = 30.04 lb./ac.
7. D means at a level of N = 17.34 lb./ac.

S.E. of body of D × S table = 16.29 lb./ac.

Crop :- Wheat.

Ref :- U.P. 53(156).

Site :- Govt. Agri. Farm, Atarra.

Type :- 'CM'.

Object :- To study the effect of seed rate and manure on the yield of Wheat.

## 1. BASAL CONDITIONS :

(i) (a) Cereal—Cereal. (b) Paddy. (c) Nil. (ii) (a) *Parwa*. (b) N.A. (iii) 24.11.1953. (iv) (a) 4 ploughings. (b) Sown by local seed drill. (c), (d) and (e) N.A. (v) Nil. (vi) Pb-591. (vii) Irrigated. (viii) N.A. (ix) N.A. (x) 17.4.1954.

## 2. TREATMENTS :

Main-plot treatments :

4 seed rates : S<sub>1</sub>=10, S<sub>2</sub>=20, S<sub>3</sub>=30 and S<sub>4</sub>=40 srs./ac.

Sub-plot treatments :

3 manures : N<sub>1</sub>=45 md./ac. of F.Y.M. on green manured field applied 2 weeks before sowing as B.D. N<sub>2</sub>=30 lb./ac. of N+20 lb./ac. of P<sub>2</sub>O<sub>5</sub>+15 lb./ac. of K<sub>2</sub>O+15 lb./ac. of CaO and N<sub>3</sub>=60 lb./ac. of N+40 lb./ac. of P<sub>2</sub>O<sub>5</sub>+30 lb./ac. of K<sub>2</sub>O+30 lb./ac. of CaO.

N applied as A/S, P<sub>2</sub>O<sub>5</sub> as Super, K<sub>2</sub>O as Pot Sul and CaO as Gypsum.

## 3. DESIGN :

(i) Split-plot. (ii) (a) 4 main-plots/block ; 3 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) Main : 27' × 84'. Sub : 27' × 28'. (b) Sub—24' × 25'. (v) 1½' on all sides. (vi) Yes.

## 4. GENERAL :

(i) Satisfactory. (ii) Nil. (iii) Grain and straw yield. (iv) (a) 1952—1956. (b) and (c) No. (v) (a) Banaras, Faizabad, Etawah, Kalyanpur, Kalai, Meerut and Lucknow. (b) N.A. (iv) Nil. (vii) Conducted by C.P. (R).

## RESULTS :

- (i) 865 lb./ac.
- (ii) (a) 19.51 lb./ac.
- (b) 15.39 lb./ac.
- (iii) All effects are highly significant.

(iv) Av. yield of grain in lb./ac.

	N <sub>1</sub>	N <sub>2</sub>	N <sub>3</sub>	Mean
S <sub>1</sub>	763	684	954	800
S <sub>2</sub>	861	623	777	754
S <sub>3</sub>	1223	1120	770	1038
S <sub>4</sub>	758	1071	777	869
Mean	901	875	820	865

S.E. of difference of two

1. S marginal means = 7.96 lb./ac.
2. N marginal means = 5.44 lb./ac.
3. N means at a level of S = 10.88 lb./ac.
4. S means at a level of N = 11.44 lb./ac.

Crop :-Wheat (*Rabi*).

Ref :-U P. 52(118).

Site :-Govt. Agri. Farm, Baharaich.

Type :-'CM'.

Object :-To study the effect of seed rate, manure and time of sowing on the yield of Wheat.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Sugarcane. (c) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis, Baharaich. (iii) As per treatments. (iv) (a) 9 ploughings by *desi* and victory plough. (b) N.A. (c) As per treatments. (d) and (e) N.A. (v) Nil. (vi) NP-52 (mid-early). (vii) Irrigated. (viii) N.A. (ix) N.A. (x) 3 and 4.4.1953.

## 2. TREATMENTS :

Main-plot treatments :

All combinations of (1) and (2)

(1) 6 seed rates : S<sub>1</sub>=10, S<sub>2</sub>=20, S<sub>3</sub>=30, S<sub>4</sub>=40, S<sub>5</sub>=50 and S<sub>6</sub>=60 lb./ac.(2) 2 dates of sowing : D<sub>1</sub>=6.11.1952 and D<sub>2</sub>=23.11.1952.

Sub-plot treatments :

3 manures : N<sub>1</sub>=3 C.L./ac. of F.Y.M. as B.D., N<sub>2</sub>=20 lb./ac. of N+5 lb./ac. of K<sub>2</sub>O+10 lb./ac. of P<sub>2</sub>O<sub>5</sub>+10 lb./ac. of CaO and N<sub>3</sub>=40 lb./ac. of N+20 lb./ac. of P<sub>2</sub>O<sub>5</sub>+10 lb./ac. of K<sub>2</sub>O+20 lb./ac. of CaO.

N applied as A/S, K<sub>2</sub>O as Pot. Sul., P<sub>2</sub>O<sub>5</sub> as Super and CaO as Gypsum on 30.10.1952 and 5.11.1952.

## 3. DESIGN :

(i) Split-plot. (ii) (a) 12 main-plots/block and 3 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 38'×13'. (b) 35'×10'. (v) 1½' on either side. (vi) Yes.

## 4. GENERAL :

(i) Normal. (ii) Yellow rust 35%. (iii) Grain and *bhusa* yield. (iv) (a) 1952 to 1953. (b) and (c) N.A. (v) (a) Banaras, Etawah, Banda, Meerut and Aligarh. (b) N.A. (vi) Nil. (vii) Conducted by C.P.

## 5. RESULTS :

- (i) 1129 lb./ac.
- (ii) (a) 339.4 lb./ac.
- (b) 203.8 lb./ac.
- (iii) Only main effect of D is highly significant.

(iv) Av. yield of grain in lb./ac.

	S <sub>1</sub>	S <sub>2</sub>	S <sub>3</sub>	S <sub>4</sub>	S <sub>5</sub>	S <sub>6</sub>	Mean	D <sub>1</sub>	D <sub>2</sub>
N <sub>1</sub>	1130	1284	1162	1206	1046	1270	1183	1235	1131
N <sub>2</sub>	1096	994	1036	1230	1072	1184	1102	1222	982
N <sub>3</sub>	1172	1196	1124	1078	976	1070	1103	1199	1007
Mean	1133	1158	1107	1171	1031	1175	1129	1219	1040
D <sub>1</sub>	1332	1167	1167	1209	1159	1277			
D <sub>2</sub>	933	1149	1048	1133	904	1072			

S.E. of differences of two

- |                            |                  |
|----------------------------|------------------|
| 1. S marginal means        | = 97.99 lb./ac.  |
| 2. D marginal means        | = 56.57 lb./ac.  |
| 3. N marginal means        | = 41.60 lb./ac.  |
| 4. N means at a level of S | = 101.90 lb./ac. |
| 5. N means at a level of D | = 58.83 lb./ac.  |
| 6. S means at a level of N | = 128.55 lb./ac. |
| 7. D means at a level of N | = 74.22 lb./ac.  |
| S.E. of body of D×S table  | = 97.99 lb./ac.  |

Crop :-Wheat.

Ref :-U.P. 53(210).

Site :-Govt. Agri. Farm, Baharaich.

Type :-'CM'.

Object :-To study the effect of seedrate and manure on the yield of Wheat.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Sana*. (c) Nil. (ii) (a) Sandy loam. (b) Refer soil analysis, Baharaich. (iii) 6.11.1953.  
 (iv) (a) 3 ploughings. (b) Sown by seed drill. (c) to (e) N.A. (v) N.A. (vi) NP-52. (vii) Irrigated.  
 (viii) N.A. (ix) N.A. (x) 7.4.1954.

## 2. TREATMENTS :

Main-plot treatments :

4 seed rates : S<sub>1</sub>=10, S<sub>2</sub>=20, S<sub>3</sub>=30 and S<sub>4</sub>=40 srs./ac.

Sub-plot treatments :

3 manures : N<sub>1</sub>=F.Y.M. at 45 mds./ac. on green manured field applied 2 weeks before sowing as B.D.N<sub>2</sub>=30 lb./ac. of N+20 lb./ac. of P<sub>2</sub>O<sub>5</sub>+15 lb./ac. of K<sub>2</sub>O+15 lb./ac. of CaO and N<sub>3</sub>=60lb./ac. of N+40 lb./ac. of P<sub>2</sub>O<sub>5</sub>+30 lb./ac. of K<sub>2</sub>O+30 lb./ac. CaO.N applied as A/S, P<sub>2</sub>O<sub>5</sub> as Super, K<sub>2</sub>O as Pot. Sul. and CaO as Gypsum on 2.11.1953.

## 3. DESIGN :

(i) Split-plot. (ii) 4 main-plots/block and 3 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 27'×28'. (b) 24'×25'. (v) 1½' all round the net plot. (vi) Yes.

## 4. GENERAL :

(i) Normal. (ii) Wheat rust. (iii) Grain and fodder yield. (iv) (a) 1952—1953. (b) and (c) No. (v) (a) Banaras, Etawah, Kalyanpur, Attara, Kalai, Gorakhpur, Meerut, Faizabad and Lucknow. (b) N.A. (vi) Nil. (vii) Conducted by C.P.(R).

## 5. RESULTS :

- (i) 1518 lb./ac.  
 (ii) (a) 402.0 lb./ac.  
 (b) 315.1 lb./ac.  
 (iii) None of the effects is significant.

(iv) Av. yield of grain in lb./ac.

	N <sub>1</sub>	N <sub>2</sub>	N <sub>3</sub>	Mean
S <sub>1</sub>	1551	1518	1318	1462
S <sub>2</sub>	1488	1285	1586	1453
S <sub>3</sub>	1621	1600	1558	1593
S <sub>4</sub>	1605	1525	1563	1564
Mean	1566	1482	1506	1518

S.E. of difference of two

1. S marginal means = 116.05 lb./ac.
2. N marginal means = 78.78 lb./ac.
3. N means at a level of S = 222.85 lb./ac.
4. S means at a level of N = 247.53 lb./ac.

Crop :- Wheat (*Rabi*).

Ref :- U.P. 52(113).

Site :- Govt. Agri. Farm, Etawah.

Type :- 'CM'.

Object :—To study the effect of seed rate, manures and time of sowing on the yield of Wheat.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Sana*. (ii) (a) Loam. (b) N.A. (iii) As per treatments. (iv) (a) 6 ploughings with watts cultivator and *desi* plough and turning of G.M. (b) to (e) N.A. (v) Nil. (vi) Pb. 591 (mid-late). (vii) Irrigated. (viii) N.A. (ix) N.A. (x) '10, 11, 12.4.1953.

## 2. TREATMENTS :

Main-plot treatments :

All combinations of (1) and (2)

- (1) 6 seed rates : S<sub>1</sub>=10, S<sub>2</sub>=20, S<sub>3</sub>=30, S<sub>4</sub>=40, S<sub>5</sub>=50 and S<sub>6</sub>=60 srs/ac.
- (2) 2 dates of sowing : D<sub>1</sub>=31.10.1952 and D<sub>2</sub>=15.11.1952.

Sub-plot treatments :

3 manures : N<sub>1</sub>=3 C.L. ac. of F.Y.M. as B.D., N<sub>2</sub>=20 lb./ac. of N+5 lb./ac. K<sub>2</sub>O+10 lb./ac. of P<sub>2</sub>O<sub>5</sub>+10 lb./ac. of CaO, N<sub>3</sub>=40 lb./ac. of N+20 lb./ac. of P<sub>2</sub>O<sub>5</sub>+10 lb./ac. of K<sub>2</sub>O+20 lb./ac. of CaO.

N applied as A/S, P<sub>2</sub>O<sub>5</sub> as Super, K<sub>2</sub>O as Pot. Sul. and CaO as Gypsum.

## 3. DESIGN :

(i) Split-plot. (ii) (a) 12 main-plots/block ; 3 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 38'×13'. (b) 35'×10'. (v) 1½' on all sides. (vi) Yes.

## 4. GENERAL :

(i) Satisfactory. (ii) Slight attack of wheat rust. (iii) Grain and straw yield. (iv) (a) No. (b) No. (c) No. (v) (a) Banaras, Banda, Meerut, Aligarh, Baharaich. (vi) Nil. (vii) Conducted by C.P. (R).

## 5. RESULTS :

- (i) 1295 lb./ac.
- (ii) (a) 357.7 lb./ac.
- (b) 289.3 lb./ac.
- (iii) Main effects of S, D and N are highly significant. All interactions are not significant.

(iv) Av. yield of grain in lb./ac.

	S <sub>1</sub>	S <sub>2</sub>	S <sub>3</sub>	S <sub>4</sub>	S <sub>5</sub>	S <sub>6</sub>	Mean	D <sub>1</sub>	D <sub>2</sub>
N <sub>1</sub>	620	934	1196	1318	1450	1350	1145	1211	1079
N <sub>2</sub>	616	1154	1384	1693	1444	1644	1323	1456	1190
N <sub>3</sub>	726	1383	1613	1684	1568	1526	1417	1555	1279
Mean	654	1157	1398	1565	1487	1507	1295	1407	1183
D <sub>1</sub>	666	1456	1527	1653	1629	1511			
D <sub>2</sub>	642	858	1269	1478	1346	1503			

S.E. of difference of two

1. S marginal means	= 103.3 lb./ac.
2. D marginal means	= 59.6 lb./ac.
3. N marginal means	= 59.1 lb./ac.
4. N means at a level of S	= 144.7 lb./ac.
5. N means at a level of D	= 83.5 lb./ac.
6. S means at a level of N	= 158.9 lb./ac.
7. D means at a level of N	= 90.6 lb./ac.
S.E. of body of D×S table	= 103.3 lb./ac.

Crop :- Wheat (*Rabi*).

Ref :- U.P. 53(112).

Site :- Govt. Agri. Farm, Etawah.

Type :- 'CM'.

Object :- To study the effect of spacing and manures on the yield of Wheat.

## 1. BASAL CONDITIONS:

(i) (a) Nil. (b) N.A. (c) N.A. (ii) (a) Loam. (b) N.A. (iii) 3.11.1953. (iv) (a) 4 ploughings. (b) Sown by seed drill. (c) N.A. (d) N.A. (e) N.A. (v) F.Y.M. applied two weeks before sowing. (vi) Pb. 591 (late). (vii) Irrigated. (viii) Nil. (ix) N.A. (x) 21.4.1954.

## 2. TREATMENTS:

Main-plot treatments:

4 seed rates : S<sub>1</sub>=10, S<sub>2</sub>=20, S<sub>3</sub>=30 and S<sub>4</sub>=40 srs/ac.

Sub-plot treatments:

3 manures : N<sub>1</sub>=F.Y.M. at 45 mds./ac. on green manured field applied 2 weeks before sowing as B.D.N<sub>2</sub>=30 lb./ac. of N+20 lb./ac. of P<sub>2</sub>O<sub>5</sub>+15 lb./ac. of K<sub>2</sub>O+15 lb./ac. of CaO, N<sub>3</sub>=60 lb./ac.of N+40 lb./ac. of P<sub>2</sub>O<sub>5</sub>+30 lb./ac. of K<sub>2</sub>O+30 lb./ac. of CaO.N applied as A/S, P<sub>2</sub>O<sub>5</sub> as Super, K<sub>2</sub>O as Pot. Sul. and CaO as Gypsum.

## 3. DESIGN:

(i) Split-plot. (ii) (a) 4 main-plots/block ; 3 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 27'×28'. (b) 24'×25'. (v) 1½' on all sides. (vi) Yes.

## 4. GENERAL:

(i) Good. (ii) Nil. (iii) Grain and straw yield. (iv) (a) 1953—1954. (b) No. (c) No. (v) (a) Banaras, Faizabad, Kanpur, Banda, Aligarh, Meerut, Baharaich, Gorakhpur and Lucknow. (b) N.A. (vi) Nil. (vii) Conducted by C.P. (R).

## 5. RESULTS:

(i) 1900 lb./ac.

(ii) (a) 401.0 lb./ac.

(b) 329.8 lb./ac.

(iii) S effect is highly significant, N effect is significant ; interaction is not significant.

(iv) Av. yield of grain in lb./ac.

	N <sub>1</sub>	N <sub>2</sub>	N <sub>3</sub>	Mean
S <sub>1</sub>	1335	1232	1255	1274
S <sub>2</sub>	1928	1923	2268	2040
S <sub>3</sub>	1680	2189	2595	2155
S <sub>4</sub>	1867	2362	2166	2132
Mean	1702	1926	2071	1900

S.E. of difference of two

1. S marginal means = 163.7 lb./ac.
2. N marginal means = 116.6 lb./ac.
3. N means at a level of S = 233.2 lb./ac.
4. S means at a level of N = 251.2 lb./ac.

Crop :-Wheat (*Rabi*).

Ref :-U.P. 53(61).

Site :-Govt. Agri. Farm, Faizabad.

Type :-'CM'.

Object :-To study the effect of seedrate and manures on the yield of Wheat.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Moong* and *Lobia*. (c) Nil. (ii) (a) Clay loam. (b) N.A. (iii) 14.11.1953. (iv) (a) 2 ploughings with *praja* cultivator and *desi* plough. (b) Sown behind the plough. (c), (d) and (e) N.A. (v) N.A. (vi) N.P.-52 (medium early). (vii) Irrigated. (viii) Weeding and hoeing. (ix) N.A. (x) 17.4.1954.

## 2. TREATMENTS :

Main-plot treatments :

4 seed rates : S<sub>1</sub>=10, S<sub>2</sub>=20, S<sub>3</sub>=30 and S<sub>4</sub>=40 srs./ac.

Sub-plot treatments :

3 manures : N<sub>1</sub>=F.Y.M. at 3 C.L./ac. in case the field is green manured, 6 C.L./ac. in case the field is not green manured, N<sub>2</sub>=30 lb./ac. of N+20 lb./ac. of P<sub>2</sub>O<sub>5</sub>+15 lb./ac. of K<sub>2</sub>O+15 lb./ac. of CaO. and N<sub>3</sub>=60 lb./ac. of N+40 lb./ac. of P<sub>2</sub>O<sub>5</sub>+30 lb./ac. of K<sub>2</sub>O+30 lb./ac. of CaO.

N applied as A/S, P<sub>2</sub>O<sub>5</sub> as Super, K<sub>2</sub>O as Pot. Sul. and CaO as Gypsum.

## 3. DESIGN :

(i) Split-plot. (ii) (a) 4 main-plots/block ; 3 sub-plots/main-plot. (b) N.A. (iii) Sub-plot : 27'×28' ; main-plot 27'×84'. (b) Sub-plot : 24'×25'. (v) 1½' on all sides. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) 30% attack by rust. (iii) Grain and straw yield. (iv) (a), (b) and (c) No. (v) (a) Banaras, Etawah, Kanpur, Banda, Aligarh, Meerut, Baharaich, Gorakhpur and Lucknow. (b) N.A. (vi) Nil. (vii) Conducted by C.P.(R).

## 5. RESULTS :

(i) 537.3 lb./ac.

(ii) (a) 106.7 lb./ac.

(b) 86.43 lb./ac.

(iii) S and N effects are highly significant. Interaction is not significant.

(iv) Av. yield of grain in lb./ac.

	N <sub>1</sub>	N <sub>2</sub>	N <sub>3</sub>	Mean
S <sub>1</sub>	261.4	515.7	553.1	443.4
S <sub>2</sub>	345.4	569.4	599.7	504.8
S <sub>3</sub>	396.7	693.1	646.4	578.7
S <sub>4</sub>	387.4	784.1	695.4	622.3
Mean	347.7	640.6	623.6	537.3

S E. of difference of two

1. S marginal means = 43.56 lb./ac.
2. N marginal means = 30.56 lb./ac.
3. N means at a level of S = 61.12 lb./ac.
4. S means at a level of N = 66.23 lb./ac.

Crop :- Wheat.

Ref :- U.P. 53(207).

Site :- Govt. Agri. School Farm, Gorakhpur.

Type :- 'CM'.

Object :- To study the effect of seed rates and manures on the yield of Wheat.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) N.A. (c) N.A. (ii) (a) Sandy loam. (b) N.A. (iii) Last week of October. (iv) (a) N.A. (b) By improved seed drill. (c) to (e) N.A. (v) Nil. (vi) Pb. 592. (vii) N.A. (viii) N.A. (ix) N.A. (x) N.A.

## 2. TREATMENTS :

Main-plot treatments :

4 seed rates :  $S_1=10$ ,  $S_2=20$ ,  $S_3=30$  and  $S_4=40$  srs./ac.

Sub-plot treatments :

3 manures :  $N_1$ =F.Y.M. at 3 C.L./ac. in case the field is green manured, 6 C.L./ac. in case the field is not green manured,  $N_2=30$  lb./ac. of N+20 lb./ac. of  $P_2O_5+15$  lb./ac. of  $K_2O+15$  lb./ac. of CaO. and  $N_3=60$  lb./ac. of N+40 lb./ac. of  $P_2O_5+30$  lb./ac. of  $K_2O+30$  lb./ac. of CaO.

N applied as  $A_1S$ ,  $P_2O_5$  as Super,  $K_2O$  as Pot. Sul. and CaO as Gypsum.

## 3. DESIGN :

(i) Split-plot. (ii) (a) 4 main-plots/block ; 3 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 27'x29' (b) 24'x25'. (v) 1½'x2'. (vi) Yes.

## 4. GENERAL :

(i) Below normal. (ii) N.A. (iii) Grain and fodder yield. (iv) (a) No. (b), (c) No. (v) (a) Banaras, Faizabad, Etawah, Kalyanpur, Atarra, Kalai, Meerut, Lucknow and Bahraich. (vi) Nil. (vii) Conducted by C.P.

## 5. RESULTS :

- (i) 585 lb./ac.  
 (ii) (a) 102.4 lb./ac.  
 (b) 108.1 lb./ac.  
 (iii) N effect alone is highly significant.  
 (iv) Av. yield of grain in lb./ac.

	$N_1$	$N_2$	$N_3$	Mean
$S_1$	595	658	434	562
$S_2$	522	753	553	609
$S_3$	651	618	492	587
$S_4$	609	632	506	582
Mean	594	665	496	585

S.E. of difference of two

1. S marginal means =29.56 lb./ac.  
 2. N marginal means =27.02 lb./ac.  
 3. N means at a level of S =76.42 lb./ac.  
 4. S means at a level of N =75.10 lb./ac.

Crop :- Wheat (Rabi).

Ref :- U.P. 52(121).

Site :- Govt. Agri. Farm, Kalai.

Type :- 'CM'.

Object :- To study the effect of seed rate, manure and date of sowing on the yield of Wheat.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Maize and *Kakun*. (c) N.A. (ii) (a) Loam. (b) N.A. (iii) As per treatments. (iv) (a) 9 ploughings with *Gujar, desi* and cultivator ploughs. (b) to (e) N.A. (v) Nil. (vi) Pb.-591 (mid late). (vii) Irrigated. (viii) N.A. (ix) N.A. (x) 7.4.1953.

**2. TREATMENTS :**

Main-plot treatments :

All combinations of (1) and (2)

(1) 6 seed rates :  $S_1=10, S_2=20, S_3=30, S_4=40, S_5=50$  and  $S_6=60$  ars./ac.(2) 2 dates of sowing :  $D_1=9.11.1952$  and  $D_2=24.11.1952$ .

Sub-plot treatments :

3 manures :  $N_1=3$  C.L./ac. of F.Y.M. as B.D.,  $N_2=20$  lb./ac. of N+10 lb./ac. of  $P_2O_5$ +5 lb./ac. of  $K_2O$ +10 lb./ac. of CaO and  $N_3=40$  lb./ac. of N+20 lb./ac. of  $P_2O_5$ +10 lb./ac. of  $K_2O$ +20 lb./ac. of CaO.N applied as A/S,  $P_2O_5$  as Super,  $K_2O$  as Pot. Sul. and CaO as Gypsum.**3. DESIGN :**(i) Split-plot. (ii) (a) 12 main-plots/block : 3 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a)  $38' \times 13'$ . (b)  $35' \times 10'$ . (v)  $1\frac{1}{2}'$  around the net-plot. (vi) Yes.**4. GENERAL :**

(i) Satisfactory. (ii) Nil. (iii) Grain and straw yield. (iv) (a) and (b) No. (c) N.A. (v) (a) Banarua, Etawah, Banda, Meerut and Bahraich. (b) N.A. (vi) Nil. (vii) The expt. was conducted by C.P.(R).

**5. RESULTS :**

(i) 1379 lb./ac.

(ii) (a) 301.2 lb./ac.

(b) 233.4 lb./ac.

(iii) Main effects of S, N and D are highly significant. Interaction  $N \times D$  is significant.

(iv) Av. yield of grain in lb./ac.

	$S_1$	$S_2$	$S_3$	$S_4$	$S_5$	$S_6$	Mean	$D_1$	$D_2$
$N_1$	784	1032	1136	1072	1168	1176	1061	1081	1041
$N_2$	1080	1496	1296	1712	1628	1632	1474	1599	1350
$N_3$	1360	1512	1504	1772	1676	1792	1603	1759	1447
Mean	1074	1347	1312	1519	1491	1533	1379	1480	1279
$D_1$	1176	1523	1451	1552	1550	1627			
$D_2$	973	1171	1173	1486	1432	1440			

S.E. of difference of two

1. S marginal means = 86.95 lb./ac.

2. D marginal means = 50.20 lb./ac.

3. N marginal means = 47.64 lb./ac.

4. N means at a level of S = 116.70 lb./ac.

5. N means at a level of D = 67.37 lb./ac.

6. S means at a level of N = 128.99 lb./ac.

7. D means at a level of N = 74.47 lb./ac.

S.E. of body of  $D \times S$  table = 96.68 lb./ac.

Crop :- Wheat (Rabi).

Site :- Govt. Agri. Farm, Kalai.

Ref :- U.P. 53(105).

Type :- 'CM'.

Object :- To study the effect of seed rate and manure on the yield of Wheat.

**1. BASAL CONDITIONS :**

(i) (a) Nil. (b) Guar fodder. (c) Nil. (ii) (a) Loam. (b) N.A. (iii) 28.10.1953. (iv) (a) 6 ploughings. (b) Sown behind the plough. (c) to (e) N.A. (v) N.A. (vi) Pb-591. (vii) Irrigated. (viii) Nil. (ix) N.A. (x) 9.4.1954.



**2. TREATMENTS :****Main-plot treatments :**

4 seed rates :  $S_1=10$ ,  $S_2=20$ ,  $S_3=30$  and  $S_4=40$  ars./ac.

**Sub-plot treatments :**

3 manures :  $N_1=3$  C.L./ac. of F.Y.M. in case the field is green manured, 6 C.L./ac. in case the field is not green manured,  $N_2=30$  lb./ac. of N+20 lb./ac. of  $P_2O_5$ +15 lb./ac. of  $K_2O$ +15 lb./ac. of CaO and  $N_3=60$  lb./ac. of N+40 lb./ac. of  $P_2O_5$ +30 lb./ac. of  $K_2O$ +30 lb./ac. of CaO.

N applied as A/S,  $P_2O_5$  as Super,  $K_2O$  as Pot. Sul. and CaO as Gypsum.

**3. DESIGN :**

(i) Split-plot. (ii) (a) 4 main-plots/block ; 3 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 27'×28'. (b) 24'×25'. (v) 1½' around the net-plot. (vi) Yes.

**4. GENERAL :**

(i) Satisfactory. (ii) Nil. (iii) Grain and straw yield. (iv) (a) 1953—1954. (b) and (c) N.A. (v) (a) Banaras, Faizabad, Etawah, Kalyanpur, At-arra, Meerut and Lucknow. (b) N.A. (vi) Nil. (vii) The experiment was conducted by C.P.(R).

**5. RESULTS :**

(i) 1211 lb./ac.

(ii) (a) 286.3 lb./ac.

(b) 215.0 lb./ac.

(iii) Only N effect is highly significant.

(iv) Av. yield of grain in lb./ac.

	$N_1$	$N_2$	$N_3$	Mean
$S_1$	849	1139	1260	1083
$S_2$	952	1167	1521	1213
$S_3$	1059	1465	1400	1308
$S_4$	989	1139	1587	1238
Mean	962	1228	1442	1211

S.E. of difference of two

1. S marginal means = 116.89 lb./ac.
2. N marginal means = 76.01 lb./ac.
3. N means at a level of S = 152.02 lb./ac.
4. S means at a level of N = 170.50 lb./ac.

Crop :-Wheat (*Rabi*).

Ref :-U.P. 52(187).

Site :-Govt. Agri. Res. Farm, Kalyanpur.

Type :-'CM'.

Object :-To study the effect of seed rate, manure and date of sowing on the yield of Wheat.

**1. BASAL CONDITIONS :**

(i) (a) Nil. (b) *Moong*. (c) N.A. (ii) (a) Loam. (b) N.A. (iii) As per treatments. (iv) (a) N.A. (b) N.A. (c) As per treatments. (d) .A. (e) N.A. (v) Nil. (vi) C-13 (early). (vii) N.A. (viii) N.A. (ix) N.A. (x) N.A.

**2. TREATMENTS :****Main-plot treatments :**

All combinations of (1) and (2)

(1) 6 seed rates :  $S_1=10$ ,  $S_2=20$ ,  $S_3=30$ ,  $S_4=40$ ,  $S_5=50$  and  $S_6=60$  seer/ac.

(2) 2 dates of sowing :  $D_1=5.11.1952$  and  $D_2=18.11.1952$ .

**Sub-plot treatments :**

3 manures :  $N_1=3$  C.L./ac. of F.Y.M. as B.D.,  $N_2=20$  lb./ac. of N+10 lb./ac. of  $P_2O_5$ +5 lb./ac. of  $K_2O$ +10 lb./ac. of CaO, and  $N_3=40$  lb./ac. of N+20 lb./ac. of  $P_2O_5$ +10 lb./ac. of  $K_2O$ +20 lb./ac. of CaO.

N applied as A/S,  $P_2O_5$  as Super,  $K_2O$  as Pot. Sul. and CaO as Gypsum.  $N_1$  applied to the entire field,  $N_2$  and  $N_3$  applied 3 days before sowing. Super placed 3"-4" deep in the soil behind the plough. Gypsum and Pot. Sul. applied as surface dressing.

## 3. DESIGN :

(i) Split-plot. (ii) (a) 12 main-plots/block ; 3 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 24'×23'. (b) 21'×20'. (v) 1½' around the net plot. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) N.A. (iii) Grain and *bhusa* yield. (iv) (a) No. (b) No. (c) N.A. (v) (a) Banaras, Faizabad Etawah, Banda, Meerut, Aligarh, Gorakhpur, Bahraich and Lucknow. (b) N.A. (vi) Nil. (vii) The expt. was conducted by C.P.

## 5. RESULTS :

- (i) 1910 lb./ac.  
 (ii) (a) 310.1 lb./ac.  
 (b) 136.7 lb./ac.  
 (iii) Main effect of N is highly significant, S effect is significant while other effect and interactions are not significant.  
 (iv) Av. yield of grain in lb./ac.

	S <sub>1</sub>	S <sub>2</sub>	S <sub>3</sub>	S <sub>4</sub>	S <sub>5</sub>	S <sub>6</sub>	Mean	D <sub>1</sub>	D <sub>2</sub>
N <sub>1</sub>	1543	1597	1627	1830	1778	1693	1678	1623	1733
N <sub>2</sub>	1760	1868	1890	2062	1998	1918	1916	1883	1949
N <sub>3</sub>	1882	2180	2068	2222	2307	2163	2137	2141	2133
Mean	1728	1882	1862	2038	2028	1925	1910	1882	1938
D <sub>1</sub>	1823	1883	1809	1998	1940	1840			
D <sub>2</sub>	1633	1880	1915	2078	2115	2010			

## S.E. of difference of two

1. S marginal means = 89.50 lb./ac.
  2. D marginal means = 51.68 lb./ac.
  3. N marginal means = 27.91 lb./ac.
  4. N means at a level of S = 39.47 lb./ac.
  5. N means at a level of D = 68.37 lb./ac.
  6. S means at a level of N = 60.90 lb./ac.
  7. D means at a level of N = 105.48 lb./ac.
- S.E. of body of D×S table = 89.50 lb./ac.

Crop :- Wheat (*Rabi*).

Ref :- U.P. 53(150).

Site :- Govt. Agri. Res. Farm, Kalyanpur.

Type :- 'CM'.

Object :- To study the effect of seed rate and manure on the yield of Wheat.

## 1. BASAL CONDITIONS :

(i) (a) Legume-Cereal. (b) *Lobia* and *moong*. (c) Nil. (ii) (a) Loam. (b) N.A. (iii) 12.11.1953. (iv) (a) 7 ploughings and *pata*. (b) Sown by seed drill. (c) As per treatments. (d) N.A. (e) N.A. (v) *moong* and *lobia* as G.M. (vi) C-13 (medium). (vii) Irrigated. (viii) Weeding and hoeing after irrigation. (ix) N.A. (x) 17.4.1954.

## 2. TREATMENTS :

Main-plot treatments :

4 seed rates : S<sub>1</sub>=10, S<sub>2</sub>=20, S<sub>3</sub>=30 and S<sub>4</sub>=40 ars./ac.

Sub-plot treatments :

3 manures : N<sub>1</sub>=F.Y.M. at 3 C.L./ac. in case the field is green manured, 6 C.L./ac. in case the field is not green manured, N<sub>2</sub>=30 lb./ac. of N+20 lb./ac. of P<sub>2</sub>O<sub>5</sub>+15 lb./ac. of K<sub>2</sub>O+15 lb./ac. of CaO, N<sub>3</sub>=60 lb./ac. of N+40 lb./ac. of P<sub>2</sub>O<sub>5</sub>+30 lb./ac. of K<sub>2</sub>O+30 lb./ac. of CaO.

N applied as A/S, P<sub>2</sub>O<sub>5</sub> as Super, K<sub>2</sub>O as Pot. Sul. and CaO as Gypsum. Date of manuring—All manures applied on 30.10.1953. P<sub>2</sub>O<sub>5</sub> applied 3" to 4" deep in the soil behind the plough, Gypsum and potash applied as surface dressing.

## 3. DESIGN :

(i) Split-plot. (ii) (a) 4 main-plots/block ; 3 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 27'×28'. (b) 24'×25'. (v) 1½' on all sides of the net plot. (vi) Yes.

## 4. GENERAL :

(i) Satisfactory. (ii) Rat attack. (iii) Grain and straw yield and germination per sq. yd. (iv) (a) 1953—N.A. (b) No. (c) N.A. (v) (a) Banaras, Faizabad, Etawah, Atarra, Kalai, Gorakhpur, Meerut and Lucknow. (b) N.A. (vi) Nil. (vii) The expt., was conducted by C.P. (R).

## 5. RESULTS :

(i) 1289 lb./ac.  
 (ii) (a) 378.5 lb./ac.  
 (b) 191.4 lb./ac.  
 (iii) Only interaction N×S is highly significant.  
 (iv) Av. yield of grain in lb./ac.

	N <sub>1</sub>	N <sub>2</sub>	N <sub>3</sub>	Mean
S <sub>1</sub>	1132	1190	1286	1203
S <sub>2</sub>	1241	1498	1517	1419
S <sub>3</sub>	1300	1377	1220	1299
S <sub>4</sub>	1437	1405	866	1236
Mean	1278	1368	1222	1289

S.E. of difference of two

- |                            |                 |
|----------------------------|-----------------|
| 1. S marginal means        | =154.52 lb./ac. |
| 2. N marginal means        | = 67.65 lb./ac. |
| 3. N means at a level of S | =135.30 lb./ac. |
| 4. S means at a level of N | =189.95 lb./ac. |

Crop :-Wheat (*Rabi*).

Site :-Govt. Res. Farm, Kanpur.

Ref :-U.P. 50(138).

Type :-'CM'.

Object:—To study the effect of N and seed rates on yield of Wheat.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Chari*. (c) No. (ii) (a) Loam. (b) N.A. (iii) 7.11.1950. (iv) (a) 3 ploughings with victor plough and 4 with *desi*. (b) N.A. (c) N.A. (d) Between rows—9". (e) N.A. (v) Nil. (vi) NP-125 (medium). (vii) Irrigated. (viii) One weeding with *khurpi*. (ix) N.A. (x) 3 and 4.5.1951.

## 2. TREATMENTS :

All combinations of (1) and (2)

- (1) 4 levels of N : N<sub>1</sub>=25, N<sub>2</sub>=50, N<sub>3</sub>=75 and N<sub>4</sub>=100 lb./ac.  
 (2) 4 seed rates : S<sub>1</sub>=40, S<sub>2</sub>=50, S<sub>3</sub>=80 and S<sub>4</sub>=100 lb./ac.

## 3. DESIGN :

(i) 4×4 Fact. in R.B.D. (ii) (a) 16. (b) N.A. (iii) 4. (iv) (a) 40'×9'. (b) 36'×7.5'. (v) 2'×9'. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) N.A. (iii) Grain yield. (iv) (a) 1950—1952. (b) No. (c) N.A. (v) (a) No. (b) N.A. (vi) Nil. (vii) The experiment was conducted by E.R. (R).

## 5. RESULTS :

(i) 2276 lb./ac.  
 (ii) 169.9 lb./ac.  
 (iii) Only N effect is highly significant.

(iv) Av. yield of grain in lb./ac.

	S <sub>1</sub>	S <sub>2</sub>	S <sub>3</sub>	S <sub>4</sub>	Mean
N <sub>1</sub>	2052	2032	2011	2182	2069
N <sub>2</sub>	2229	2317	2410	2260	2304
N <sub>3</sub>	2405	2451	2508	2172	2384
N <sub>4</sub>	2358	2358	2400	2275	2348
Mean	2261	2289	2332	2222	2276

S.E. of any marginal mean = 42.48 lb./ac.  
 S.E. of body of table = 84.96 lb./ac.

Crop :-Wheat (*Rabi*).

Ref :-U.P. 51(25).

Site :-Govt. Res. Farm, Kanpur.

Type :-'CM'.

Object :-To study the effect of N and seed rates on yield of Wheat.

## 1. BASAL CONDITIONS :

(i) (a) No. (b) *Chari*. (c) Nil. (ii) (a) Loam. (b) N.A. (iii) 27.10.1951. (iv) (a) 3 *desi*, 1 victory and 1 cultivator ploughing. (b) N.A. (c) As per treatments. (d) 9" apart. (e) N.A. (v) 2 srs./plot of A/S as top dressing. (vi) N.P. 125. (vii) Irrigated. (viii) One weeding. (ix) N.A. (x) 7.4.1952.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 4 levels of N : N<sub>0</sub>=0, N<sub>1</sub>=25, N<sub>2</sub>=50 and N<sub>3</sub>=75 lb./ac.(2) 4 seed rates : S<sub>1</sub>=40, S<sub>2</sub>=60, S<sub>3</sub>=80 and S<sub>4</sub>=100 lb./ac.

## 3. DESIGN :

(i) 4×4 Fact. in R.B.D. (ii) (a) 16. (b) N.A. (iii) 4. (iv) (a) 40'×9'. (b) 36'×7½'. (v) 2'×½'. (vi) Yes.

## 4. GENERAL :

(i) Fair. No lodging. (ii) No. (iii) Grain yield. (iv) (a) 1950-1952. (b) No. (c) N.A. (v) (a) No. (b) N.A. (vi) Nil. (vii) The experiment was conducted by E.B. (R).

## 5. RESULTS :

(i) 654 lb./ac.

(ii) 298.9 lb./ac.

(iii) Only S and N effects are highly significant.

(iv) Av. yield of grain in lb./ac.

	S <sub>1</sub>	S <sub>2</sub>	S <sub>3</sub>	S <sub>4</sub>	Mean
N <sub>0</sub>	301	487	264	462	378
N <sub>1</sub>	446	607	830	882	691
N <sub>2</sub>	322	799	752	965	710
N <sub>3</sub>	690	882	757	1016	836
Mean	440	694	651	831	654

S.E. of any marginal mean = 74.7 lb./ac  
 S.E. of body of table = 149.5 lb./ac.

Crop :-Wheat (*Rabi*).

Ref :-U.P. 52(53).

Site :-Govt. Res. Farm, Kanpur.

Type :-'CM'.

Object :-To study the effect of N and seed rates on yield of Wheat.

## 1. BASAL CONDITIONS :

(i) (a) No. (b) *Chari*. (c) Nil. (ii) (a) Loam. (b) N.A. (iii) 7.11.1952. (iv) (a) 8 *desi*, 1 victory and 1 cultivator ploughing. (b) Sown behind the plough. (c) As per treatments. (d) 9' apart. (e) N.A. (v) Nil. (vi) N.P. 125. (vii) Irrigated. (viii) One weeding. (ix) N.A. (x) 3.4.1953.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 4 levels of N :  $N_0=0$ ,  $N_1=25$ ,  $N_2=50$  and  $N_3=75$  lb./ac. of N.(2) 4 seed rates :  $S_1=40$ ,  $S_2=60$ ,  $S_3=80$  and  $S_4=100$  lb./ac.

## 3. DESIGN :

(i) 4x4 Fact. in R.B.D. (ii) (a) 16. (b) N.A. (iii) 4. (iv) (a) 18'x12'. (b) 14'x10½'. (v) 2'x½'. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Attack of brown rust—8%. (iii) Germination counts and grain yield. (iv) (a) 1950—1952. (b) No. (c) N.A. (v) (a) No. (b) N.A. (vi) Nil. (vii) The expt. was conducted by E.B. (R).

## 5. RESULTS :

(i) 1808 lb./ac.

(ii) 206.4 lb./ac.

(iii) S effect is significant. N effect is highly significant while interaction is not significant.

(iv) Av. yield of grain in lb./ac.

	$S_1$	$S_2$	$S_3$	$S_4$	Mean
$N_0$	933	1438	2038	2433	1712
$N_1$	1048	1714	2143	2353	1814
$N_2$	905	1600	2124	2457	1772
$N_3$	857	1991	2315	2572	1934
Mean	936	1686	2155	2455	1808

S.E. of any marginal mean = 51.6 lb./ac.

S.E. of body of table = 103.2 lb./ac.

Crop :-Wheat.

Ref :-U.P. 52(186).

Site :-Crop Physiological Res. Stn., Lucknow.

Type :-'CM'.

Object :-To study the effect of seed rate, manure and time of sowing on the yield of Wheat.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy—*Moong*. (c) N.A. (ii) (a) Sandy loam. (b) N.A. (iii) As per treatments. (iv) (a) 4 ploughings. (b) to (c) N.A. (v) Nil. (vi) C-13 (early). (vii) N.A. (viii) Nil. (ix) N.A. (x) N.A.

## 2. TREATMENTS :

Main-plot treatments :

All combinations of (1) and (2)

(1) 6 seed rates :  $S_1=10$ ,  $S_2=20$ ,  $S_3=30$ ,  $S_4=40$ ,  $S_5=50$  and  $S_6=60$  seers/ac.(2) 2 dates of sowing :  $D_1=28.10.1952$  and  $D_2=12.11.1952$ .

Sub-plot treatments :

3 manures :  $N_1=3$  C.L./ac. of F.Y.M. as B.D.,  $N_2=20$  lb./ac. of N+5 lb./ac.  $K_2O+10$  lb./ac. of  $P_2O_5$  +10 lb./ac. of CaO and  $N_3=40$  lb./ac. of N+20 lb./ac. of  $P_2O_5$ +10 lb./ac. of  $K_2O$  +20 lb./ac. of CaO.

N applied as A/S,  $K_2O$  as Pot. Sul.,  $P_2O_5$  as Super and CaO as Gypsum.

**3. DESIGN :**

(i) Split-plot. (ii) (a) 12 main-plots/block and 3 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 12½'×14'. (b) 9½'×11'. (v) 1½' on all sides. (vi) Yes.

**4. GENERAL :**

(i) N.A. (ii) N.A. (iii) Grain and *bhusa* yield. (iv) (a) to (c) No. (v) (a) Banaras, Faizabad, Etawah, Banda, Aligarh, Kanpur, Gorakhpur, Baharaich and Meerut. (b) N.A. (vi) Nil. (vii) Conducted by C.P.

**5. RESULTS :**

(i) 955.4 lb./ac.

(ii) (a) 654.7 lb./ac.

(b) 353.0 lb./ac.

(iii) Only the interaction N×D×S is significant. Other effects are not significant.

(iv) Av. yield of grain in lb./ac.

	S <sub>1</sub>	S <sub>2</sub>	S <sub>3</sub>	S <sub>4</sub>	S <sub>5</sub>	S <sub>6</sub>	Mean	D <sub>1</sub>	D <sub>2</sub>
N <sub>1</sub>	870.9	830.7	830.7	864.2	1078.6	1092.0	927.8	960.2	895.5
N <sub>2</sub>	951.3	937.9	917.8	884.3	944.6	1065.2	950.2	1000.4	899.9
N <sub>3</sub>	803.9	1112.1	844.1	1159.0	998.2	1011.6	988.1	1092.0	884.3
Mean	875.4	960.2	864.2	969.2	1007.1	1056.3	955.4	1017.5	893.2
D <sub>1</sub>	906.6	960.2	973.6	911.1	1112.1	1241.6			
D <sub>2</sub>	844.1	960.2	754.8	1027.2	902.2	870.9			

**S.E. of difference of two**

1. S marginal means	=189.0 lb./ac.
2. D marginal means	=109.0 lb./ac.
3. N marginal means	= 72.1 lb./ac.
4. N means at a level of S	=176.7 lb./ac.
5. N means at a level of D	=102.1 lb./ac.
6. S means at a level of N	=237.8 lb./ac.
7. D means at a level of N	=137.3 lb./ac.
S.E. of body of D×S table	=188.9 lb./ac.

**Crop :- Wheat.**

**Site :- Crop Physiological Res. Stn., Lucknow.**

**Ref :- U.P. 53(144).**

**Type :- 'CM'.**

**Object :-** To study the effect of N and seed rates on yield of Wheat.

**1. BASAL CONDITIONS :**

(i) (a) G.M. (b) *Sanai*. (c) 40 lb./ac. of P<sub>2</sub>O<sub>5</sub>. (ii) (a) Loam. (b) N.A. (iii) 30.10.1953. (iv) (a) 7 ploughings. (b) Sown behind the plough. (c) to (e) N.A. (v) N.A. (vi) Pb. 591(late). (vii) Irrigated. (viii) One weeding. (ix) 5.78°. (x) 15.4.1954.

**2. TREATMENTS :**

**Main-plot treatments :**

4 seed rates : S<sub>1</sub>=10, S<sub>2</sub>=20, S<sub>3</sub>=30 and S<sub>4</sub>=40 srs./ac.

**Sub-plot treatments :**

3 manures : N<sub>1</sub>=F.Y.M. at 45 md./ac. on green manured field applied 2 weeks before sowing as B.D., N<sub>2</sub>=30 lb./ac. of N+15 lb./ac. of K<sub>2</sub>O+15 lb./ac. of CaO and N<sub>3</sub>=60 lb./ac. of N+30 lb./ac. of K<sub>2</sub>O+30 lb./ac. of CaO.

N applied as A/S, K<sub>2</sub>O as Pot. Sul. and CaO as Gypsum.

**3. DESIGN :**

(i) Split-plot. (ii) (a) 4 main-plots/block ; 3 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) Main-plot : 81'×17', Sub-plot : 27'×17'. (b) Sub-plot : 23'×13'. (v) 2' a'round the plot. (vi) Yes.

## 4. GENERAL :

(i) Fair. (ii) Nil. (iii) Germination count, physiological aspects of plants, grain and straw yield. (iv) (a) 1953-1955. (b) and (c) No. (v) (a) Varanasi, Faizabad, Etawah, Kalyanpur, Banda, Aligarh, Gorakhpur and Meerut. (b) N.A. (vi) Nil. (vii) Conducted by C.P. (R).

## 5. RESULTS :

- (i) 915.9 lb./ac.  
 (ii) (a) 136.6 lb./ac.  
 (b) 152.6 lb./ac.  
 (iii) Only N effect is highly significant.  
 (iv) Av. yield of grain in lb./ac.

	N <sub>1</sub>	N <sub>2</sub>	N <sub>3</sub>	Mean
S <sub>1</sub>	693.1	842.9	955.3	830.4
S <sub>2</sub>	702.4	861.7	1208.2	924.1
S <sub>3</sub>	725.8	1123.9	1067.7	972.5
S <sub>4</sub>	730.5	1077.1	1002.1	936.6
Mean	713.0	976.4	1058.3	915.9

S.E. of difference of two

1. S marginal means = 55.8 lb./ac.
2. N marginal means = 53.9 lb./ac.
3. N means at a level of S = 107.9 lb./ac.
4. S means at a level of N = 104.3 lb./ac.

Crop :- Wheat.

Ref :- U.P. 52(168).

Site :- Tarai State Farm, (Eastern block), Matkota. Type :- 'CM'.

Object :—To study the effect of different crop rotations along with Super applied to previous crops on the subsequent Wheat crop.

## 1. BASAL CONDITIONS :

(i) (a) to (c) As per treatments. (ii) (a) Matkota loam. (b) N.A. (iii) 28.11.1952. (iv) (a) One tractor ploughing and one country ploughing followed by harrowing. Tractor ploughing for wheat. (b) Wheat sown behind the plough. (c) to (e) N.A. (v) Nil. (vi) to (ix) N.A. (x) 2 to 4.4.1953.

## 2. TREATMENTS :

Main-plot treatments :

2 levels of P<sub>2</sub>O<sub>5</sub> as Super : P<sub>0</sub>=0 and P<sub>1</sub>=30 lb./ac.

Sub-plot treatments :

8 crop rotations: R<sub>1</sub>=Fallow-wheat, R<sub>2</sub>=Lobia-Wheat, R<sub>3</sub>=Maize-Wheat, R<sub>4</sub>=Guar-Wheat, R<sub>5</sub>=Sanaï as G.M.-Wheat, R<sub>6</sub>=Early moong seed (no seed formation)-Wheat, R<sub>7</sub>=Early Moong as G.M.-Wheat and R<sub>8</sub>=Dhaincha-Wheat.

Super applied on 28.6.1952 just before sowing of Kharif crops.

## 3. DESIGN :

(i) Split-plot. (ii) (a) 2 main-plots/block ; 8 sub-plots/main-plot. (iii) 6. (iv) (a) N.A. (b) 22' x 33'. (v) Distance between plots=1' and between blocks=3'. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Rabi crop severely damaged by rats. (iii) Yield of wheat grain. (iv) (a) No. (b) and (c) Yes. (v) (a) and (b) No. (vi) Nil. (vii) Conducted by A.C.

## 5. RESULTS :

- (i) 1642 lb./ac.  
 (ii) (a) 399.4 lb./ac.  
 (b) 285.1 lb./ac.  
 (iii) None of the effects is significant.  
 (iv) Av. yield of grain in lb./ac.

	R <sub>1</sub>	R <sub>2</sub>	R <sub>3</sub>	R <sub>4</sub>	R <sub>5</sub>	R <sub>6</sub>	R <sub>7</sub>	R <sub>8</sub>	Mean
P <sub>0</sub>	1560	1740	1500	1670	1620	1460	1780	1490	1602
P <sub>1</sub>	1510	1600	1620	1690	1710	1710	1850	1770	1682
Mean	1535	1670	1560	1680	1665	1585	1815	1630	1642

## S.E. of difference of two

1. P marginal means = 81.5 lb./ac.  
 2. R marginal means = 116.4 lb./ac.  
 3. R means at a level of P = 164.6 lb./ac.  
 4. P means at a level of R = 174.2 lb./ac.

Crop :- Wheat (*Rabi*).

Ref :- U.P. 52(114).

Site :- Reg. Res. Stn., Meerut.

Type :- 'CM'.

Object :—To study the effect of seed rate, manuring and time of sowing on the yield of Wheat.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Sugarcane. (c) N.A. (ii) (a) Light loam. (b) N.A. (iii) As per treatments. (iv) (a) One ploughing by victory and 17 by *desi* plough. (b) to (c) N.A. (v) Nil. (vi) Pb. 591 (mid-late). (vii) Irrigated. (viii) N.A. (ix) N.A. (x) 10 to 13.4.1953.

## 2. TREATMENTS :

Main-plot treatments :

All combinations of (1) and (2)

- (1) 6 seed rates : S<sub>1</sub>=10, S<sub>2</sub>=20, S<sub>3</sub>=30, S<sub>4</sub>=40, S<sub>5</sub>=50 and S<sub>6</sub>=60 srs./ac.  
 (2) 2 dates of sowing : D<sub>1</sub>=31.10.1952 and D<sub>2</sub>=14.11.1952.

Sub-plot treatments :

3 manures : N<sub>1</sub>=3 C L./ac of F.Y.M as B.D., N<sub>2</sub>=20 lb./ac. of N+5 lb./ac. of K<sub>2</sub>O+10 lb./ac. of P<sub>2</sub>O<sub>5</sub>+10 lb./ac. of CaO and N<sub>3</sub>=40 lb./ac. of N+20 lb./ac. of P<sub>2</sub>O<sub>5</sub>+10 lb./ac. of K<sub>2</sub>O+20 lb./ac. of CaO.

N applied as A/S, K<sub>2</sub>O as Pot. Sul., P<sub>2</sub>O<sub>5</sub> as Super and CaO as Gypsum.

## 3. DESIGN :

(i) Split-plot. (ii) (a) 12 main-plots/block ; 3 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 19'×26'. (b) 16'×23'. (v) 1½' all round the plot. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Nil. (iii) Grain and straw yield. (iv) (a) 1952—1953. (b) No. (c) No. (v) (a) Varanasi, Etawah, Banda, Aligarh and Baharaich. (b) N.A. (vi) Nil. (vii) Conducted by C.P. (R).

## 5. RESULTS :

- (i) 1603 lb./ac.  
 (ii) (a) 43.05 lb./ac.  
 (b) 40.84 lb./ac.  
 (iii) All main effects and interactions are highly significant.



(iv) Av. yield of grain in lb./ac.

	S <sub>1</sub>	S <sub>2</sub>	S <sub>3</sub>	S <sub>4</sub>	S <sub>5</sub>	S <sub>6</sub>	Mean	D <sub>1</sub>	D <sub>2</sub>
N <sub>1</sub>	1720	1564	1427	1720	1389	1743	1594	1743	1445
N <sub>2</sub>	1408	1921	1674	1564	1404	1514	1581	1684	1478
N <sub>3</sub>	1853	1446	1750	1708	1442	1602	1634	1770	1497
Mean	1660	1644	1617	1664	1412	1620	1603	1732	1473
D <sub>1</sub>	1834	1712	1687	1877	1517	1768			
D <sub>2</sub>	1486	1575	1547	1451	1306	1471			

## S.E. of difference of two

- |                           |                 |
|---------------------------|-----------------|
| 1. S marginal means       | = 12.43 lb./ac. |
| 2. D marginal means       | = 7.18 lb./ac.  |
| 3. N marginal means       | = 8.34 lb./ac.  |
| 4. N mean at a level of S | = 20.42 lb./ac. |
| 5. N mean at a level of D | = 11.79 lb./ac. |
| 6. S mean at a level of N | = 20.79 lb./ac. |
| 7. D mean at a level of N | = 12.01 lb./ac. |
| S.E. of body of D×S table | = 12.43 lb./ac. |

Crop :- Wheat (*Rabi*).

Site :- Reg. Res. Stn., Meerut.

Ref :- U.P. 53(109).

Type :- 'CM'.

Object :- To study the effect of N and seed rates on yield of Wheat.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Moong*. (c) Nil. (ii) (a) Loam. (b) N.A. (iii) 31.10.1953. (iv) (a) to (e) N.A. (v) N.A. (vi) Pb. 591 (late). (vii) Irrigated. (viii) Nil. (ix) N.A. (x) 2.4.1954.

## 2. TREATMENTS :

Main-plot treatments :

4 seed rates : S<sub>1</sub>=10, S<sub>2</sub>=20, S<sub>3</sub>=30 and S<sub>4</sub>=40 seers/ac.

Sub-plot treatments :

3 manures : N<sub>1</sub>=F.Y.M. at 45 mds./ac. on green manured field applied 2 weeks before sowing as B.D., N<sub>2</sub>=30 lb./ac. of N+20 lb./ac. of P<sub>2</sub>O<sub>5</sub>+15 lb./ac. of K<sub>2</sub>O+10 lb./ac. of CaO and N<sub>3</sub>=60 lb./ac. of N+40 lb./ac. of P<sub>2</sub>O<sub>5</sub>+20 lb./ac. of K<sub>2</sub>O+20 lb./ac. of CaO.

N applied as A/S, P<sub>2</sub>O<sub>5</sub> as Super, K<sub>2</sub>O as Pot. Sul. and CaO as Gypsum.

## 3. DESIGN :

(i) Split-plot. (ii) (a) 4 main-plots/block ; 3 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 27'×28'. (b) 24'×25'. (v) 1½' on all sides of the plot. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Nil. (iii) Grain yield. (iv) (a) 1952--1953. (b) No. (c) No. (v) (a) Varanasi, Faizabad, Etawah, Kalyanpur, Atarra, Kalai, Gorakhpur and Lucknow. (vi) Nil. (vii) Conducted by C.P.(R).

## 5. RESULTS :

- (i) 1260 lb./ac.  
(ii) (a) 41.64 lb./ac.  
(b) 156.81 lb./ac.  
(iii) S effect is highly significant. N effect is significant and interaction is not significant.

(iv) Av. yield of grain in lb./ac.

	N <sub>1</sub>	N <sub>2</sub>	N <sub>3</sub>	Mean
S <sub>1</sub>	1092	1115	1171	1126
S <sub>2</sub>	1176	1237	1339	1251
S <sub>3</sub>	1223	1265	1428	1305
S <sub>4</sub>	1265	1307	1498	1357
Mean	1189	1231	1359	1260

S.E. of difference of two

1. S marginal means = 17.00 lb./ac.
2. N marginal means = 55.44 lb./ac.
3. N means at a level of S = 110.88 lb./ac.
4. S means at a level of N = 92.11 lb./ac.

Crop :- Wheat (*Rabi*).

Ref :- U.P. 52(109).

Site :- Reg. Res. Stn., Varanasi.

Type :- 'CM'.

Object :- To study the effect of seed rate, manuring and time of sowing on the yield of Wheat.

**1 BASAL CONDITION :**

(1) (a) Nil. (b) Sugarcane. (c) N.A. (ii) (a) Clay loam. (b) Refer soil analysis, Varanasi. (iii) As per treatments. (iv) (a) 2 ploughings by victory and 7 by *desi* plough, (b) to (e) N.A. (v) Nil. (vi) N.P. 52 (mid-early). (vii) Irrigated. (viii) N.A. (ix) N.A. (x) 29, 30, 31.3.1953.

**2. TREATMENTS :**

Main-plot treatments :

All combinations of (1) and (2)

- (1) 6 seed rates : S<sub>1</sub>=10, S<sub>2</sub>=20, S<sub>3</sub>=30, S<sub>4</sub>=40, S<sub>5</sub>=50 and S<sub>6</sub>=60 seers/ac.
- (2) 2 dates of sowing : D<sub>1</sub>=25.10.1952 and D<sub>2</sub>=7.11.1952.

Sub-plot treatments :

3 manures : N<sub>1</sub>=3 C.L. of F.Y.M./ac. as B.D, N<sub>2</sub>=20 lb./ac. of N+5 lb./ac. of K<sub>2</sub>O+10 lb./ac. of P<sub>2</sub>O<sub>5</sub>+10 lb./ac. of CaO. N<sub>3</sub>=40 lb./ac. of N+20 lb./ac. of P<sub>2</sub>O<sub>5</sub>+10 lb./ac. of K<sub>2</sub>O+20 lb./ac. of CaO.

N applied as A/S, K<sub>2</sub>O as Pot. Sul., P<sub>2</sub>O<sub>5</sub> as Super and CaO as Gypsum.**3. DESIGN :**

(i) Split-plot. (ii) 12 main-plots/block and 3 sub-plots/main-plots. (iii) 4. (iv) (a) 24'×23'. (b) 21'×20' (v) 1½' on all sides of the plot. (vi) Yes.

**4. GENERAL :**

(i) Satisfactory. (ii) Slight attack of rats. (iii) Grain and straw yield. (iv) No. (b) and (c) No. (v) Etawah, Banda, Meerut, Aligarh and Baharaich. (b) N.A. (vi) Nil. (vii) Conducted by C.P. (R)

**5. RESULTS :**

- (i) 1468 lb./ac.
- (ii) (a) 288.3 lb./ac.
- (b) 246.5 lb./ac.
- (iii) S effect is highly significant while N effect is significant. Others are not significant.

(iv) Av. yield of grain in lb./ac.

	S <sub>1</sub>	S <sub>2</sub>	S <sub>3</sub>	S <sub>4</sub>	S <sub>5</sub>	S <sub>6</sub>	Mean	D <sub>1</sub>	D <sub>2</sub>
N <sub>1</sub>	1352	1703	1613	1652	1420	1518	1543	1500	1586
N <sub>2</sub>	1290	1560	1638	1510	1277	1495	1462	1413	1510
N <sub>3</sub>	1302	1550	1590	1400	1195	1353	1398	1390	1407
Mean	1315	1604	1614	1521	1297	1455	1468	1434	1501
D <sub>1</sub>	1273	1584	1580	1469	1359	1340			
D <sub>2</sub>	1356	1625	1648	1572	1236	1571			

S.E. of difference of two

1. S marginal means = 83.2 lb./ac.
  2. D marginal means = 48.0 lb./ac.
  3. N marginal means = 50.3 lb./ac.
  4. N means at a level of S = 123.2 lb./ac.
  5. N means at a level of D = 71.1 lb./ac.
  6. S means at a level of N = 130.6 lb./ac.
  7. D means at a level of N = 75.4 lb./ac.
- S.E. of body of D×S table = 83.2 lb./ac.

Crop :- Wheat (*Rabi*).

Ref :- U.P. 53(153)

Site :- Reg. Res. Stn., Varanasi.

Type :- 'CM'.

Object :- To study the effect of seed rate and manuring on the yield of Wheat.

## 1. BASAL CONDITIONS :

(i) (a) Paddy-Sugarcane-Sugarcane—Sugarcane, *Moong*-Wheat. (b) *Moong*. (c) Nil. (ii) (a) Loam. (b) Refer soil analysis, Varanasi. (iii) 16.11.1953. (iv) (a) 8 Ploughings. (b) to (e) N.A. (v) F.Y.M. 3 C.L. if green manured otherwise 6 C.L. (iv) C-13. (vii) Irrigated. (viii) N.A. (ix) N.A. (x) 1.4.1954.

## 2. TREATMENTS :

Main-plot treatments :

4 seed rates : S<sub>1</sub>=10, S<sub>2</sub>=20, S<sub>3</sub>=30 and S<sub>4</sub>=40 srs./ac.

Sub-plot treatments :

3 manures : N<sub>1</sub>=F.Y.M. 45 md/ac. on green manured field applied 2 weeks before sowing as B.D. N<sub>2</sub>=30 lb./ac. of N+20 lb./ac. of P<sub>2</sub>O<sub>5</sub>+15 lb./ac. of K<sub>2</sub>O+15 lb./ac. of CaO; N<sub>3</sub>=60 lb./ac. of N+40 lb./ac. of P<sub>2</sub>O<sub>5</sub>+30 lb./ac. of K<sub>2</sub>O+30 lb./ac. of CaO.

N applied as A/S, P<sub>2</sub>O<sub>5</sub> as Super, K<sub>2</sub>O as Pot. Sul. and CaO as Gypsum.

## 3. DESIGN :

(i) Split-plot. (ii) (a) 4 main-plots/block ; 3 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 27'×28' (b) 24'×25'. (v) 1½' on all sides of the plot. (vi) Yes.

## 4. GENERAL :

(i) Satisfactory. (ii) Attack of rust and damage by hail storm. (iii) Grain and *bhusa* yield. (iv) (a) 1952-N.A. (b) and (c) No. (v) (a) Faizabad, Etawah, Kalyanpur, Atarra, and Kalai. (b) Nil. (vi) Nil. (vii) Conducted by C.P. (R)

## 5. RESULTS :

- (i) 1762 lb./ac.
- (ii) (a) 380.7 lb./ac.
- (b) 167.2 lb./ac.
- (iii) Only main effects of N and S are highly significant.

(iv) Av. yield of grain in lb./ac.

	N <sub>1</sub>	N <sub>2</sub>	N <sub>3</sub>	Mean
S <sub>1</sub>	1209	1344	1129	1227
S <sub>2</sub>	1690	2163	2054	1949
S <sub>3</sub>	1951	2065	1904	1973
S <sub>4</sub>	1699	2096	1895	1897
Mean	1637	1902	1746	1762

S.E. of difference of two

1. S marginal means = 155.4 lb./ac.
2. N marginal means = 59.1 lb./ac.
3. N means at a level of S = 118.2 lb./ac.
4. S means at a level of N = 182.9 lb./ac.

Crop :-Wheat (*Rabi*).

Ref :-U.P. 48(116).

Site :-Govt. Agri. Farm, Atarra.

Type :-'P'.

Object :-To find the optimum time and intensity of irrigating Wheat.

## 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Heavy *parva*. (b) N.A. (iii) 7.12.1948/N.A. (iv) (a) 3 times with Watt's plough. *Palewa* done in November. Field was then ploughed thrice with country plough before sowing. (b) to (e) N.A. (v) Green manured with *Sanai* in *Kharif*. (vi) Pb. 591. (vii) As per treatments. (viii) Weeding. (ix) Nil. (x) April, 1949.

## 2. TREATMENTS :

All combinations of (1) and (2)

- (1) 3 intensities of irrigation : L<sub>1</sub>=2", L<sub>2</sub>=3" and L<sub>3</sub>=4".
- (2) 2 intervals of irrigation : I<sub>1</sub>=4 weeks and I<sub>2</sub>=5 weeks.

## 3. DESIGN :

(i) 3×2 Fact. in R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) 80'×16.5'. (b) 74'×15'. (v) 3'×0.75'. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Not recorded. (iii) Grain yield. (iv) (a) No. (b) No. (c) Nil. (v) (a) No. (b) Nil. (vi) Nil. (vii) The expt. was conducted by I.R.I.

## 5. RESULTS :

- (i) 511 lb./ac
- (ii) 60.36 lb./ac.
- (iii) Main effect of L is highly significant while others are not significant.
- (iv) Av. yield of grain in lb./ac.

	L <sub>1</sub>	L <sub>2</sub>	L <sub>3</sub>	Mean
I <sub>1</sub>	444	551	569	521
I <sub>2</sub>	438	515	549	501
Mean	441	533	559	511

- S.E. of marginal mean of I = 21.34 lb./ac.  
 S.E. of marginal mean of L = 17.42 lb./ac.  
 S.E. of body of table = 30.18 lb./ac.

Crop :-Wheat (*Rabi*).

Ref :-U.P. 48(111).

Site :-Field Res. Stn., Bahadrabad.

Type :-'P'.

Object :—To find the optimum time and intensity of irrigating Wheat.

## 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Loam mixed with sand. (b) Refer soil analysis, Bahadrabad. (iii) 29 and 30.11.1948. (iv) (a) Ploughing by local practice, *palewa* before last ploughing. (b) Seeds sown by *desi* plough as per local practice. (c) to (e) N.A. (v) 100 mds./ac. of cowdung manure was applied before ploughing. (vi) Pb. 591. (vii) As per treatments. (viii) Weeding after first irrigation. (ix) 3.1'. (x) 17 to 26.4.1949.

## 2. TREATMENTS :

Main-plot treatments :

3 intensities of irrigation:  $L_1=2''$ ,  $L_2=3''$  and  $L_3=4''$  depth.

Sub-plot treatments :

All combinations of (1) and (2)

(1) 4 dates of irrigation:  $D_1=1.1.1949$ ,  $D_2=11.1.1949$ ,  $D_3=21.1.1949$  and  $D_4=31.1.1949$ .(2) 3 intervals of irrigation:  $I_1=4$  weeks,  $I_2=5$  weeks and  $I_3=6$  weeks.

## 3. DESIGN :

(i) Split-plot. (ii) (a) 3 main-plots/block and 12 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a)  $73' \times 15'$ . (b)  $67' \times 13.5'$ . (v)  $3' \times 0.75'$ . (vi) Yes.

## 4. GENERAL:

(i) Germination, flowering, maturing and stand of the wheat crop was very good. It was damaged by the winter winds at the time of maturing. (ii) No. (iii) Grain yield. (iv) (a) 1947—1949. (b) No. (c) N.A. (v) (a) No. (b) N.A. (vi) Nil. (vii) The expt. was conducted by I.R.I.

## 5. RESULTS :

(i) 897 lb./ac.

(ii) (a) 285.4 lb./ac.

(b) 88.9 lb./ac.

(iii) None of the effects is significant.

(iv) Av. yield of grain in lb./ac.

	$D_1$	$D_2$	$D_3$	$D_4$	Mean	$I_1$	$I_2$	$I_3$
$L_1$	889	899	878	870	884	904	866	882
$L_2$	920	916	952	840	907	904	886	931
$L_3$	949	911	868	870	900	911	888	900
Mean	919	909	899	860	897			
$I_1$	916	959	901	848	906			
$I_2$	901	874	902	843	880			
$I_3$	940	893	895	890	904			

## S.E. of difference of two

- |                                   |                 |
|-----------------------------------|-----------------|
| 1. L marginal means               | = 67.28 lb./ac. |
| 2. D marginal means               | = 24.20 lb./ac. |
| 3. I marginal means               | = 20.95 lb./ac. |
| 4. means in $D \times I$ table    | = 29.63 lb./ac. |
| 5. D means at the same level of L | = 41.91 lb./ac. |
| 6. I means at the same level of L | = 36.29 lb./ac. |
| 7. L means at the same level of I | = 73.51 lb./ac. |
| 8. L means at the same level of D | = 76.44 lb./ac. |

Crop :-Wheat (*Rabi*).

Ref :-U.P. 49(220).

Site :-Field Res. Stn., Bahadradad.

Type :-'I'.

Object :-To find the optimum time and intensity of irrigating Wheat.

**1. BASAL CONDITIONS :**

(i) (a) No. (b) Wheat. (c) 100 mds./ac. of cowdung manure was applied before ploughing. (ii) (a) Loam mixed with sand. (b) Refer soil analysis, Bahadradad. (iii) 9.11.1949. (iv) (a) The field has been levelled properly and well prepared with cowdung manure. It was ploughed 7 times both ways before sowing. (b) Sowing was done by *dest* plough according to local practice. (c), (d) and (e) N.A. (v) 100 mds./ac. of cowdung manure applied before sowing. (vi) Pb. 591. (vii) As per treatments. (viii) Weeding after first irrigation. (ix) 4.2". (x) 18.4.1950 to 30.4.1950.

**2. TREATMENTS :**

Main-plot treatments :

3 intensities of irrigation :  $L_1=2"$ ,  $L_2=3"$  and  $L_3=4"$  depth.

Sub-plot treatments :

All combinations of (1) and (2)

(1) 4 dates of irrigation :  $D_1=1.12.1949$ ,  $D_2=11.12.1949$ ,  $D_3=21.12.1949$  and  $D_4=31.12.1949$ .(2) 3 intervals of irrigation :  $I_1=4$  weeks,  $I_2=5$  weeks and  $I_3=6$  weeks.**3. DESIGN :**

(i) Split-plot. (ii) (a) 3 main-plots/block ; 12 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a)  $33' \times 33'$ . (b)  $31.5' \times 27'$ . (v)  $3' \times 0.75'$  (vi) Yes.

**4. GENERAL :**

(i) Germination, flowering, maturing, and stand were very good. (ii) Nil. (iii) Grain yield. (iv) 1947—1949. (b) No. (c) N.A. (v) (a) No. (b) N.A. (vi) Nil. (vii) The expt. was conducted by I.R.I.

**5. RESULTS :**

(i) 1643 lb./ac.

(ii) (a) 280.3 lb./ac.

(b) 236.4 lb./ac.

(iii) Only  $D \times I$  is significant.

(iv) Av. yield of grain in lb./ac.

	$D_1$	$D_2$	$D_3$	$D_4$	Mean	$I_1$	$I_2$	$I_3$
$L_1$	1696	1648	1878	1789	1753	1702	1719	1837
$L_2$	1826	1635	1605	1414	1620	1688	1657	1515
$L_3$	1514	1586	1586	1540	1556	1468	1615	1586
Mean	1679	1623	1690	1581	1643			
$I_1$	1585	1501	1746	1646	1619			
$I_2$	1728	1697	1601	1630	1664			
$I_3$	1723	1671	1722	1468	1646			

S.E. of difference of two

1. L marginal means = 66.1 lb./ac.
2. D marginal means = 64.3 lb./ac.
3. I marginal means = 55.7 lb./ac.
4. means in  $D \times I$  table = 78.8 lb./ac.
5. D means at the same level of L = 111.4 lb./ac.
6. I means at the same level of L = 96.5 lb./ac.
7. L means at the same level of I = 102.8 lb./ac.
8. L means at the same level of D = 117.0 lb./ac.

Crop :- Wheat.  
Site :- Govt. Agri. Farm, Atarra.

Ref :- U.P. 49(84).  
Type :- 'IM'.

Object :- To study the effect of application of N to Wheat at different levels and at different times in combination with different levels of irrigation.

### 1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Bajra+Moong* (mixed). (c) N.A. (ii) (a) *Parwa*. (b) N.A. (iii) 2.11.1949. (iv) (a) *Palewa*, 3 times ploughing by watt's plough followed by two ploughings with cultivator and 4 plankings. (b) N.A. (c) 45 srs./ac. (d) and (e) N.A. (v) Nil. (vi) C-13 (early). (vii) Irrigated. (viii) N.A. (ix) 2.21". (x) First week of April 1950.

### 2. TREATMENTS :

Main-plot treatments :

3 levels of irrigation :  $I_1$  = Irrigation 3 weeks after germination (at tillering stage),  $I_2 = I_1$  + irrigation 9 weeks after germination (at flowering stage) and  $I_3 = I_2$  + irrigation 12 weeks after germination (at milkey stage).

Sub-plot treatments :

All combinations of (1) and (2) + a control ( $N_0T_0$  = no manure)

(1) 2 levels of N :  $N_1 = 30$  lb./ac. of N and  $N_2 = 60$  lb./ac. of N.

(2) 2 times of application :  $T_1$  = full at sowing and  $T_2$  = half at sowing and half at first irrigation.

### 3. DESIGN :

(i) Split-plot. (ii) (a) 3 main-plots/blocks ; 5 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) Sub-plot : 26' x 33' main-plot : 165' x 26'. (b) 20' x 27'. (v) 3' all round the net plot. (vi) Yes.

### 4. GENERAL :

(i) Crop damaged by hail storm. (ii) N.A. (iii) No. of tillers per plant, no. of green leaves per plant, no. of dry leaves per plant, shoot length of green leaves, breadths of leaf and length of roots etc. Grain and *bhusa* yield. (iv) (a) 1949-1953. (b), (c) No. (v) (a) Kunraghat, Kalyanpur, Bharari, Meerut, Muzaffarnagar, Lucknow and Hawalbagh. (b) N.A. (vi) Nil. (vii) Conducted by C.P.

### 5. RESULTS :

(i) 1037 lb./ac.

(ii) (a) 162.3 lb./ac.

(b) 133.6 lb./ac.

(iii) Effects of N and 'control vs treatments' are highly significant. All other effects are not significant.

(iv) Av. yield of grain in lb./ac.

	$N_0T_0$	$N_1T_1$	$N_2T_1$	$N_1T_2$	$N_2T_2$	Mean
$I_1$	837	968	1137	992	1158	1018
$I_2$	902	978	1155	1054	1182	1054
$I_3$	882	927	1169	1006	1210	1039
Mean	874	958	1154	1017	1183	1037

S.E. of difference of two

1. I marginal means = 59.28 lb./ac.
2. NT marginal means = 62.99 lb./ac.
3. NT means at the same level of I = 109.11 lb./ac.
4. I means at the same level of NT = 114.18 lb./ac.

Crop :- Wheat.  
Site :- Govt. Agri. Farm, Atarra.

Ref :- U.P. 50(75).  
Type :- 'IM'.

Object :- To study the effect of application of N to Wheat at different levels and at different times in combination with different levels of irrigation.

### 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Sugarcane. (c) N.A. (ii) (a) *Parwa*. (b) N.A. (iii) 1.11.1950. (iv) (a) Preparation of land-five times ploughed with Watt's plough and once with *desi* plough. (b) Sown by seed drill. (c) 50 seeds/ac. (d) N.A. (e) N.A. (v) Nil. (vi) C-13 (early). (vii) Irrigated. (viii) Nil. (ix) 3.01". (x) 30.3.1951.

**2. TREATMENTS :****Main-plot treatments :**

4 levels of irrigation :  $I_0$ =No irrigation,  $I_1$ =Irrigation 3 weeks after germination (at tillering),  $I_2=I_1+$  irrigation 9 weeks after germination (at flowering) and  $I_3=I_2+$ irrigation 12 weeks after germination (at milky stage).

**Sub-plot treatments :**

All combinations of (1) and (2)+a control ( $N_0T_0$ =no manure).

(1) 2 levels of N :  $N_1=30$  and  $N_2=60$  lb./ac. of N.

(2) 2 times of application :  $T_1$ =full at sowing and  $T_2$ =half at sowing and half at 1st irrigation.

**3. DESIGN :**

(i) Split-plot. (ii) (a) 4 main-plots/block ; 5 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a)  $27' \times 30'$ . (b) main-plot  $27' \times 150'$  ; Sub-plot  $24' \times 27'$ . (v) Sub-plot border  $1\frac{1}{2}'$  around ; field border  $3'$  around ; sown space left between main-plots- $8'$  also to be used as irrigation channel. (vi) Yes.

**4. GENERAL :**

(i) Good. (ii) No. (iii) Grain yield. (iv) (a) 1949—1953. (b) No. (c) No. (v) (a) Kalyanpur, Kunra-ghat, Etawah, Muzzaffarnagar, Meerut, Bharari and Lucknow. (b) N.A. (vi) Nil. (vii) Conducted by C.P.

**5. RESULTS :**

(i) 1442 lb./ac.

(ii) (a) 195.7 lb./ac.

(b) 183.6 lb./ac.

(iii) Effects of T and 'control vs. treatment' are significant. Interaction  $N \times T$  is highly significant while all others are not significant.

(iv) Av. yield of grain in lb./ac.

	$N_0T_0$	$N_1T_1$	$N_2T_1$	$N_1T_2$	$N_2T_2$	Mean
$I_0$	1279	1331	1452	1723	1348	1427
$I_1$	1423	1348	1521	1809	1383	1497
$I_2$	1291	1279	1452	1694	1394	1422
$I_3$	1342	1429	1366	1521	1446	1421
Mean	1334	1347	1448	1687	1393	1442

**S.E. of difference of two**

1. marginal means of I = 71.4 lb./ac.

2. marginal means of N = 74.9 lb./ac.

3. N T means at the same level of I = 149.9 lb./ac.

4. I means at the same level of N T = 151.9 lb./ac.

Crop :-Wheat.

Ref :-U.P. 51(79).

Site :-Govt. Agri. Farm, Atarra.

Type :-'IM'.

Object :—To study the effect of application of N to Wheat at different levels and at different times in combination with different levels of irrigation.

**1. BASAL CONDITIONS :**

(i) (a) No. (b) *Chart*. (c) No. (ii) (a) *Kabar*. (b) N.A. (iii) 1st week of November. (iv) (a) N.A. (b) Sown by seed drill ; (c) 40-50 seers/ac. (d) N.A. (e) N.A. (v) Nil. (vi) C-13 (early). (vii) Irrigated. (viii) N.A. (ix) N.A. (x) N.A.

**2. TREATMENTS :****Main-plot treatments :**

4 levels of irrigation :  $I_0$ =No irrigation,  $I_1$ =Irrigation 3 weeks after germination (at tillering),  $I_2=I_1+$  irrigation 9 weeks after germination (at flowering) and  $I_3=I_2+$ Irrigation 12 weeks after germination (at milky stage).

**Sub-plot treatments :**

All combinations of (1) and (2)+a control ( $N_0T_0$ =no manure)

(1) 2 levels of N :  $N_1=30$  and  $N_2=60$  lb./ac. of N.

(2) 2 times of application :  $T_1$ =full at sowing and  $T_2$ =half at sowing and half at 1st irrigation.



## 3. DESIGN :

(i) Split-plot. (ii) (a) 4 main-plots/replication ; 5 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 27'×30'. (b) main-plot 27'×150' sub-plot 24'×27'. (v) Sub-plot border 1½' around. Field border 3' around ; irrigation channel 3' ; sown space left between main-plots-8' also to be used as irrigation channel. (vi) Yes.

## 4. GENERAL :

(i) No lodging. Good. (ii) No. (iii) Grain yield. (iv) (a) 1949—1953. (b) No. (c) No. (v) (a) Hawalbagh Etawah, Bharari, Faizabad, Kunraghat, Muzaffarnagar, Lucknow, Meerut and Kalyanpur. (b) N.A. (vi) Nil. (vii) Conducted by C P.

## 5. RESULTS :

(i) 1748 lb./ac.  
 (ii) 149.6 lb./ac.  
 (iii) Effect of N is significant and effects of T and 'control vs treatment' are highly significant while all other effects are not significant.  
 (iv) Av. yield of grain in lb./ac,

	N <sub>0</sub> T <sub>0</sub>	N <sub>1</sub> T <sub>1</sub>	N <sub>2</sub> T <sub>1</sub>	N <sub>1</sub> T <sub>2</sub>	N <sub>2</sub> T <sub>2</sub>	Mean
I <sub>0</sub>	1124	1707	1739	1837	1871	1656
I <sub>1</sub>	1143	1834	1964	1966	2025	1786
I <sub>2</sub>	1167	1819	1940	1936	1996	1772
I <sub>3</sub>	1154	1813	1958	1958	2001	1777
Mean	1147	1793	1900	1924	1973	1748

S.E. of difference of two

1. marginal means of I = 47.32 lb./ac.
2. marginal means of NT = 45.30 lb./ac.
3. NT means at the same level of I = 50.59 lb./ac.
4. I means at the same level of NT = 93.83 lb./ac.

Crop :- Wheat.

Ref :- U.P. 52(137).

Site :- Govt. Agri. Farm, Atarra.

Type :- 'IM'.

Object :- To study the effect of application of N to Wheat at different levels and at different times in combination with different levels of irrigation.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Early paddy. (c) N.A. (ii) (a) Light *kabar*. (b) N.A. (iii) 22.11.1952. (iv) (a) 5 ploughings with Watt's plough and levelling by *pata*. (b) N.A. (c) 7 chs./plot. (d) and (e) N.A. (v) Nil. (vi) C-13 (medium). (vii) Irrigated. (viii) N.A. (ix) N.A. (x) 3.4.1953.

## 2. TREATMENTS :

Main-plot treatments :

4 levels of irrigation : I<sub>0</sub>=No irrigation, I<sub>1</sub>=Irrigation 3 weeks after germination (at tillering), I<sub>2</sub>=I<sub>1</sub>+irrigation 9 weeks after germination (at flowering) and I<sub>3</sub>=I<sub>2</sub>+irrigation 12 weeks after germination (at milky stage).

Sub-plot treatments :

All combinations of (1) and (2)+ a control (N<sub>0</sub>T<sub>0</sub>=no manure)

(1) 2 levels of N : N<sub>1</sub>=30 and N<sub>2</sub>=60 lb./ac. of N.

(2) 2 times of application : T<sub>1</sub>=Full at sowing and T<sub>2</sub>=Half at sowing and half at 1st irrigation.

I<sub>1</sub> give on 19.1.1953. I<sub>2</sub> and I<sub>3</sub> were not given as canal water was not available. Hence I<sub>2</sub> and I<sub>3</sub> are identical to I<sub>1</sub>.

## 3. DESIGN :

(i) Split-plot. (ii) (a) 4 main-plots/replication and 5 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 34'×14'. (b) 31'×11'. (v) Sub-plot border=1½'. Distance between main-plots=3'. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Nil. (iii) Grain and straw yield. (iv) (a) 1949—1953. (b) and (c) No. (v) (a) Etawah, Kalyanpur, Meerut, Bharari, Faizabad, Muzaffarnagar and Kunraghat. (b) N.A. (vi) Nil. (vii) Conducted by C.P. (R).

## 5. RESULTS :

- (i) 1911 lb./ac.  
 (ii) (a) 124.7 lb./ac.  
 (b) 69.8 lb./ac.  
 (iii) None of the effects is significant.  
 (iv) Av. yield of grain in lb./ac.

	$N_0T_0$	$N_1T_1$	$N_2T_0$	$N_0T_2$	$N_2T_2$	Mean
$I_0$	1585	1646	2037	1683	1979	1786
$I_1$	1635	1849	2178	1901	2199	1952
Mean	1623	1798	2142	1846	2144	1911

## S.E. of difference of two

1. marginal means of I = 32.2 lb./ac.  
 2. marginal means of N = 24.7 lb./ac.  
 3. NT means at the same level of  $I_0$  = 49.4 lb./ac.  
 4. NT means at the same level of  $I_1$  = 28.5 lb./ac.  
 5. I means at the same level of NT = 48.4 lb./ac.

Crop :- Wheat.

Ref :- U.P. 53(154).

Site :- Govt. Agri. Farm, Atarra.

Type :- 'IM'.

Object :- To study the effect of application of N to Wheat at different levels and at different times in combination with different levels of irrigation.

## 1. BASAL CONDITIONS :

(i) (a) Cereal—Cereal. (b) Paddy. (c) Nil. (ii) (a) *Parwa*. (b) N.A. (iii) 23.11.1953. (iv) (a) *Polewa* on 22.11.1953, farm ploughings after the harvest of paddy on 1st, 6th, 12th, and 20th November 1953. (b) Sown by local seed drill. (c) 7 [chk. sown in [each field. (d) and (e) N.A. (v) Nil. (vi) C-13. (vii) Irrigated. (viii) Nil. (ix) N.A. (x) 17.4.1954.

## 2. TREATMENTS :

## Main-plot treatments :

4 levels of irrigation :  $I_0$ =No irrigation,  $I_1$ =Irrigation 3 weeks after germination (at tillering),  $I_2$ = $I_1$ +irrigation 9 weeks after germination (at flowering) and  $I_3$ = $I_2$ +irrigation 12 weeks after germination (at milky stage).

## Sub-plot treatments :

All combinations of (1) and (2)+a control ( $N_0T_0$ =no manure)

(1) 2 levels of N :  $N_1$ =30 and  $N_2$ =60 lb./ac. of N.

(2) 2 times of application :  $T_1$ =Full at sowing and  $T_2$ =Half at sowing and half at 1st irrigation.

## 3. DESIGN :

(i) Split-plot. (ii) (a) 4 main-plots/replication ; 5 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) Main-plot : 170'×14' and sub-plot 34'×14'. (b) Sub-plot 31'×11'. (v) Sub-plot border 1½'. Field border 3'. Sown place left between main-plots=3' also be used as irrigation channel. (vi) Yes.

## 4. GENERAL :

(i) Satisfactory. (ii) There was no attack of any disease or pest. (iii) Grain and straw yield. (iv) (a) 1949—1953. (b) and (c) No. (v) (a) Faizabad, Etawah, Kalyanpur, Bharari, Meerut, Kunraghat and Muzaffarnagar. (b) N.A. (vi) Nil. (vii) Conducted by C.P. (R).

## 5. RESULTS :

- (i) 2063 lb./ac.  
 (ii) (a) 28.87 lb./ac.  
 (b) 33.42 lb./ac.  
 (iii) Effects of I, N, T and 'control vs treated' are highly significant. I×control vs treated, N×T and T×I are significant. I×N, I×N×T are highly significant.

(iv) Av. yield of grain in lb./ac.

	$N_0T_0$	$N_1T_1$	$N_2T_1$	$N_1T_2$	$N_2T_2$	Mean
$I_0$	1470	1692	2266	1720	2230	1876
$I_1$	1659	2004	2464	1963	2550	2128
$I_2$	1679	1938	2455	1946	2537	2111
$I_3$	1692	1987	2447	2037	2529	2138
Mean	1625	1905	2408	1916	2462	2063

S.E. of difference of two

1. marginal means of I = 9.13 lb./ac.
2. marginal means of NT = 11.82 lb./ac.
3. NT means at the same level of I = 23.63 lb./ac.
4. I means at the same level of NT = 23.02 lb./ac.

Crop :-Wheat.

Ref :-U.P. 49(71).

Site :-Govt, Agri. Farm, Atarra.

Type :-'IM'.

Object :—To study the effect of different forms and levels of N in combination with levels of irrigation on Wheat.

## 1. BASAL CONDITIONS :

- (i) (a) Nil. (b) *Bajra+Moong* (mixed). (c) N.A. (ii) (a) *Parwa*. (b) N.A. (iii) 1 and 2.11.1949.  
 (iv) (a) 4 ploughings with Watt's plough followed by levelling with *para* and 4 plankings. Two ploughings with cultivator and 4 plankings. (b) N.A. (c) 45 seers/ac. (d) and (e) N.A. (v) Nil. (vi) C-13 (early).  
 (vii) Irrigated. (viii) N.A. (ix) 2.21<sup>st</sup>. (x) 1st week of April 1950.

## 2. TREATMENTS :

Main-plot treatments :

- 3 levels of irrigation :  $I_1$ =Irrigation 3 weeks after germination (at tillering),  $I_2$ = $I_1$ +irrigation 9 weeks after germination (at flowering) and  $I_3$ = $I_2$ +irrigation 12 weeks after germination (at milky stage).

Sub-plot treatments :

- 3 combination of forms and levels of N :  $N_0=0$ ,  $N_1=60$  lb./ac. of N as A/S and  $N_2=60$  lb./ac. of N as castor cake.

## 3. DESIGN :

- (i) (a) Split-plot. (ii) (a) 3 main-plots/block and 3 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) Main-plot—54'×40'. Sub-plot 18'×40'. (b) 12'×34'. (v) 3' all round the net plot. (vi) Yes.

## 4. GENERAL :

- (i) Crop damaged by frost and hail. (ii) N.A. (iii) Grain yield. (iv) (a) 1949—1953. (b) and (c) No. (v) (a) Varanasi, Kalyanpur, Bharari, Meerut, Kunraghat, Muzaffarnagar, Lucknow, Bulandshahr and Hawalbagh. (b) N.A. (vi) Nil. (vii) Conducted by C.P.

## 5. RESULTS :

- (i) 1291 lb./ac.  
 (ii) (a) 213.7 lb./ac.  
 (b) 119.1 lb./ac.  
 (iii) Levels of N differ highly significantly. Others are not significant.

(iv) Av. yield of grain in lb./ac.

	N <sub>0</sub>	N <sub>1</sub>	N <sub>2</sub>	Mean
I <sub>1</sub>	979	1368	1313	1220
I <sub>2</sub>	1112	1373	1354	1280
I <sub>3</sub>	1208	1524	1391	1374
Mean	1100	1422	1353	1291

S.E. of difference of two

1. marginal means of I = 100.7 lb./ac.
2. marginal means of N = 56.1 lb./ac.
3. N means at the same level of I = 97.2 lb./ac.
4. I means at the same level of N = 128.2 lb./ac.

Crop :-Wheat.

Ref :-U.P. 50(85).

Site :-Govt. Agri. Farm, Atarra.

Type :-'IM'.

Object :—To study the effect of different forms and levels of N in combination with different levels of irrigation on Wheat.

**1. BASAL CONDITIONS :**

(i) (a) Nil. (b) Fallow. (c) No. (ii) (a) *Parwa*. (b) N.A. (iii) 1.11.1950. (iv) (a) Five times ploughed with Watt's plough and once with cultivator. (b) Sown by seed drill. (c) 50 seers/ac. (d) and (e) N.A. (v) Nil. (vi) C-13 (erry). (vii) Irrigated. (viii) Nil. (ix) 3.01". (x) N.A.

**2. TREATMENTS :**

Main-plot treatments :

4 levels of irrigation : I<sub>0</sub>=N<sub>0</sub> irrigation, I<sub>1</sub>=Irrigation 3 weeks after germination (at tillering), I<sub>2</sub>=I<sub>1</sub>+Irrigation 9 weeks after germination (at flowering) and I<sub>3</sub>=I<sub>2</sub>+irrigation 12 weeks after germination (at milky stage).

Sub-plot treatments :

3 combinations of levels and forms of N : N<sub>0</sub>=No manure, N<sub>1</sub>=60 lb./ac. of N as A/S and N<sub>2</sub>=60 lb./ac. of N as castor cake.

**3. DESIGN :**

(i) Split-plot. (ii) (a) 4 main-plots/block and 3 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) 23'×34'. (b) Sub-plot : 20'×31' and Main-plot : 69'×34'. (v) Sub-plot border=1½' around. Field border=3' around. Sown space left between main-plots=5', sown space left between blocks=8' also to be used as irrigation channel. (vi) Yes.

**4. GENERAL :**

(i) Satisfactory. (ii) Nil. (iii) Grain yield. (iv) (a) 1949—1953. (b) and (c) No. (v) (a) Bharari, Varanasi, Kunraghat, Kalyanpur, Kalai, Etawah, Muzzaffarnagar, Meerut and Lucknow. (b) N.A. (vi) Nil. (vii) Conducted by C.P.

**5. RESULTS :**

(i) 1793 lb./ac.

(ii) (a) 96.1 lb./ac.

(b) 123.2 lb./ac.

(iii) Forms and levels of N are highly significant. Others are not significant.

(iv) Av. yield of grain in lb./ac.

	N <sub>0</sub>	N <sub>1</sub>	N <sub>2</sub>	Mean
I <sub>0</sub>	1554	1939	1752	1748
I <sub>1</sub>	1686	2072	1855	1871
I <sub>2</sub>	1641	1831	1831	1768
I <sub>3</sub>	1602	1969	1783	1785
Mean	1621	1953	1805	1793

S.E. of difference of two

1. marginal means of I = 45.3 lb./ac.
2. marginal means of N = 50.3 lb./ac.
3. N means at the same level of I = 100.6 lb./ac.
4. I means at the same level of N = 93.8 lb./ac.

Crop :- Wheat.

Ref :- U.P. 51(62).

Site :- Govt. Agri. Farm, Atarra.

Type :- 'IM'.

Object :- To study the effect of different forms and levels of N in combination with different levels of irrigation on Wheat.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Charl.* (c) No. (ii) (a) *Parwa kabar.* (b) N.A. (iii) 13.11.1951. (iv) (a) 4 ploughings with Watt's plough. (b) Sown by seed drill. (c) 11 chh/plot. (d) and (e) N.A. (vi) C-13 (early). (vii) Irrigated. (viii) 1 hosing. (ix) 2.20°. (x) N.A.

## 2. TREATMENTS :

Main-plot treatments :

4 levels of irrigations : I<sub>0</sub> = No irrigation, I<sub>1</sub> = Irrigation 3 weeks after germination (at tillering), I<sub>2</sub> = I<sub>1</sub> + irrigation 9 weeks after germination (at flowering), I<sub>3</sub> = I<sub>2</sub> + irrigation 12 weeks after germination (at milky stage).

Sub-plot treatments :

3 combinations of levels and forms of N : N<sub>0</sub> = No manure, N<sub>1</sub> = 60 lb./ac. of N as A/S and N<sub>2</sub> = 60 lb./ac of N as castor cake.

I<sub>1</sub> given on 15.1.1952. I<sub>2</sub> and I<sub>3</sub> not given at all due to the non-availability of canal water i.e. only one irrigation was given to the experiment, hence I<sub>2</sub> and I<sub>3</sub> both are identical to I<sub>1</sub>.

## 3. DESIGN :

(i) Split-plot. (ii) (a) 4 main-plots/replication and 3 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 19' x 42' (b) 16' x 39'. Main-plot size: 57' x 42'. (v) Sub-plot border: 1½' around. Field border: 3' around. Sown space left between main-plots-5'. Sown space left between blocks-8' also to be used as irrigation channel. (vi) Yes.

## 4. GENERAL :

(i) Good. No lodging. (ii) Nil. (iii) Grain yield. (iv) (a) 1949 to 1953. (b) and (c) No. (v) (a) Varanasi, Faizabad, Kunraghat, Kalyanpur, Bharari, Kalai, Meerut, Muzaffarnagar, Hawalbagh. Lucknow and Etawah. (b) N.A. (vi) Nil. (vii) Conducted by C.P.

## 5. RESULTS :

(i) 819.6 lb./ac.

(ii) (a) 70.07 lb./ac.

(b) 95.69 lb./ac.

(iii) Levels of irrigations and forms of N are highly significant.

(iv) Av. yield of grain in lb./ac.

	N <sub>0</sub>	N <sub>1</sub>	N <sub>2</sub>	Mean
I <sub>0</sub>	572.2	861.7	740.5	724.8
I <sub>1</sub>	699.3	973.8	880.4	851.2
Mean	667.5	945.8	845.4	819.6

S.E. of difference of two

1. marginal means of I = 23.36 lb./ac.
2. marginal means of N = 33.83 lb./ac.
3. N means at the same level of I<sub>0</sub> = 67.66 lb./ac.
4. N means at the same level of I<sub>1</sub> = 39.07 lb./ac.
5. I means at the same level of N = 50.79 lb./ac.

Crop :- Wheat.

Ref :- U.P. 52(138).

Site :- Govt. Agri. Farm, Atarra.

Type :- 'IM'.

Object : To study the effect of different forms and levels of N in combination with levels of irrigation on Wheat.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Early paddy. (c) N.A. (ii) (a) Light *kabar*. (b) N.A. (iii) 23.11.1952. (iv) (a) 5 ploughings with Watt's plough and levelling by *pata*. (b) N.A. (c) 40 to 50 srs./ac. (d) and (e) N.A. (v) Nil. (vi) C-13 (medium). (vii) Irrigated. (viii) N.A. (ix) N.A. (v) 2.4.1953.

## 2. TREATMENTS :

Main-plot treatments :

4 levels of irrigation : I<sub>0</sub>=No irrigation, I<sub>1</sub>=Irrigation 3 weeks after germination (at tillering), I<sub>2</sub>=I<sub>1</sub>+irrigation 9 weeks after germination (at flowering) and I<sub>3</sub>=I<sub>2</sub>+irrigation 12 weeks after germination (at milky stage).

Sub-plot treatments :

3 combinations of levels and forms of N : N<sub>0</sub>=No manure, N<sub>1</sub>=60 lb./ac. of N as A/S and N<sub>2</sub>=60 lb./ac. of N as castor cake.

I<sub>1</sub> given on 18.1.1953. I<sub>2</sub> and I<sub>3</sub> not given as water was not available in the canal. So I<sub>2</sub> and I<sub>3</sub> are identical to I<sub>1</sub>.

## 3. DESIGN :

(i) Split - plot. (ii) (a) 4 main-plots/replication and 3 sub-plots/main-plots. (b) N.A. (iii) 4. (iv) (a) 19'×42' (b) 16'×39'. Main=plot=57'×42'. (v) Sub-plot border=1½' around. Field border=3' around. Between main-plots=5'. Between blocks=8'. (vi) Yes.

## 4. GENERAL :

(i) Satisfactory. (ii) Nil. (iii) Grain and straw yield. (iv) (a) 1949—1953. (b) and (c) No. (v) (a) Varanasi, Faizabad, Etawah, Kalyanpur, Meerut, Hwalbagh, Muzaffarnagar, Bharari, Kunraghat, and Kalai. (b) N A. (vi) Nil. (vii) Conducted by C.P.(R).

## 5. RESULTS :

(i) 1113 lb./ac.

(ii) (a) 181.6 lb./ac.

(b) 108.4 lb./ac.

(iii) Effect of I is highly significant. Forms and levels of N are both highly significant. I×Forms of N and I×levels of N are also highly significant.

(iv) Av. yield of grain in lb./ac.

	N <sub>0</sub>	N <sub>1</sub>	N <sub>2</sub>	Mean
I <sub>0</sub>	893	936	880	903
I <sub>1</sub>	940	1536	1073	1183
Mean	928	1386	1025	1113

S.E. of difference of two

1. marginal means of I = 60.5 lb./ac.
2. marginal means of N = 38.3 lb./ac.
3. N means at the same level of I<sub>0</sub> = 76.7 lb./ac.
4. N means at the same level of I<sub>1</sub> = 44.3 lb./ac.
5. I means at the same level of N = 79.2 lb./ac.

Crop :- Wheat.

Ref :- U.P 53(155).

Site :- Govt. Agri. Farm, Atarra.

Type :- 'IM'.

Object :- To study the effect of different forms and levels of N in combination with levels of irrigation on Wheat.

## 1. BASAL CONDITIONS :

(i) (a) Cereal—Cereal. (b) Paddy. (c) Nil. (ii) (a) *Parwa*. (b) N.A. (iii) 23.11.1953. (iv) (a) *Palewa* on 22.10.1953. 4 ploughings after the harvest of paddy on 2, 7, 13 and 21.11.1953. (b) Sown by local seed drill. (c), (d) and (e) N.A. (v) Nil. (vi) C-13. (vii) Irrigated. (viii) N.A. (ix) N.A. (x) 17.4.1954.

## 2. TREATMENTS :

Main-plot=treatments :

4 levels of irrigation : I<sub>0</sub>=No irrigation, I<sub>1</sub>=Irrigation 3 weeks after germination (at tillering), I<sub>2</sub>=I<sub>1</sub>+irrigation 9 weeks after germination (at flowering) and I<sub>3</sub>=I<sub>2</sub>+irrigation 12 weeks after germination (at milky stage).

Sub-plot treatments :

3 combinations of forms and levels of N : N<sub>0</sub>=No manure, N<sub>1</sub>=60 lb./ac. of N as A/S and N<sub>2</sub>=60 lb./ac. of N as castor cake.

## 3. DESIGN :

(i) Split-plot. (ii) (a) 4 main-plots/replication ; 3 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) sub-plot 19'×42' ; main-plot 57'×42'. (b) Sub-plot 16'×39'. (x) Sub-plot border 1.5'. Field border 3'. Sowing space left between main-plots 5'. Sowing space left between blocks—8' also to be used as irrigation channel. (vi) Yes.

## 4. GENERAL :

(i) Satisfactory. (ii) No. (iii) Grain and straw yield. (iv) (a) 1949—1953. (b), (c) No. (v) (a) Varanasi, Faizabad, Etawah, Kalyanpur, Bharai, Meerut, Muzaffarnagar, Kalai and Kunraghat. (b) N.A. (vi) Nil. (vii) Conducted by C.P.(R).

## 5. RESULTS :

- (i) 1246 lb./ac.
- (ii) (a) 31.00 lb./ac.  
(b) 23.01 lb./ac.
- (iii) I, N, Forms of N, I×N, I×Forms of N are all highly significant.
- (iv) Av. yield of grain in lb./ac.

	N <sub>0</sub>	N <sub>1</sub>	N <sub>2</sub>	Mean
I <sub>0</sub>	945	981	954	960
I <sub>1</sub>	958	1353	1310	1270
I <sub>2</sub>	1105	1638	1378	1374
I <sub>3</sub>	1108	1741	1481	1443
Mean	1029	1428	1281	1246

S.E. of difference of two

1. marginal means of I = 12.66 lb./ac.
2. marginal means of N = 8.14 lb./ac.
3. N means at the same level of I = 16.27 lb./ac.
4. I means at the same level of N = 8.35 lb./ac.

Crop :-Wheat.

Ref :-U.P. 49(101).

Site :-Govt. Agri. Farm, Barabanki.

Type :-'IM'.

Object :—To study the effect of different levels of irrigation in combination with  $P_2O_5$  and Gypsum on Wheat.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Sann for G.M. (c) N.A. (ii) (a) Loam soil. (b) N.A. (iii) 15.11.1949. (iv) (a) 5 ploughings on 20, 25.10.1949, and 10, 11, 12.11.1949. (b) N.A. (c) 50 srs./ac. (d) and (e) N.A. (v) G.M. by Sannhemp. (vi) C-13. (vii) Irrigated. (viii) Nil. (ix) 2.31". (x) 27, 28.4.1950.

## 2. TREATMENTS :

Main-plot treatments :

2 levels of irrigation :  $I_1$  = Irrigation 9 weeks after germination (at flowering).  $I_2$  =  $I_1$  + 12 weeks after germination (at milky stage).

Sub-plot treatments :

All combinations of (1) and (2)

(1) 3 levels of  $P_2O_5$  as Super :  $P_0=0$ ,  $P_1=20$  and  $P_2=40$  lb./ac.(2) 3 levels of CaO as Gypsum :  $G_0=0$ ,  $G_1=25$  and  $G_2=50$  lb./ac.

## 3. DESIGN :

(i) Split-plot. (ii) (a) 2 main-plots/block ; 9 sub-plots/main-plot. (b) N.A. (iii) 2. (iv) (a) Main-plot size 162' x 40'. Sub-plot 18' x 40'. (b) 12' x 34'. (v) 3' all round the net plot. (vi) Yes.

## 4. GENERAL :

(i) Not good due to bad weather conditions and much moisture in the soil which was the result of heavy rains before sowing. (ii) N.A. (iii) Grain and fodder yield. (iv) (a) 1949—1950. (b), (c) No. (v) (a) Varanasi, Kalyanpur, Bulandshabar and Lucknow. (vi) Nil. (vii) Conducted by C.P.

## 5. RESULTS :

(i) 692.0 lb./ac.

(ii) (a) 167.0 lb./ac.

(b) 91.6 lb./ac.

(iii) None of the effects is significant.

(iv) Av. yield of grain in lb./ac.

	$P_0$	$P_1$	$P_2$	Mean	$G_0$	$G_1$	$G_2$
$I_1$	629.1	750.4	720.6	700.1	727.5	695.5	677.2
$I_2$	645.1	720.6	636.3	684.0	693.2	690.9	668.0
Mean	637.1	735.5	703.5	692.0	710.4	693.2	672.6
$G_0$	604.0	813.3	713.8	710.4			
$G_1$	652.0	734.4	693.2	693.2			
$G_2$	655.4	658.9	703.5	672.6			

S. E. of difference of two

- marginal means of I = 55.7 lb./ac.
- marginal means of P or G = 37.4 lb./ac.
- G or P means at the same level of I = 52.9 lb./ac.
- I means at the same level of G or P = 70.4 lb./ac.
- means in body of G x P table = 64.8 lb./ac.

Crop :- Wheat (Rabi).

Ref :- U.P. 50(115).

Site :- Govt. Agri. Farm, Barabanki.

Type :-'IM'.

Object :—To study the effect of different levels of irrigation in combination with  $P_2O_5$  and Gypsum on Wheat.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Sugarcane. (c) N.A. (ii) (a) Sandy loam. (b) N.A. (iii) 5.10.1950. (iv) (a) Preparation of land was good. (b) Sowing by seed drill. (c) 50 srs./ac. (d) and (e) N.A. (v) Nil. (vi) C-13 (medium-late). (vii) Irrigated. (viii) Nil. (ix) N.A. (x) 18.4.1951.



**2. TREATMENTS :****Main-plot treatments :**

- 2 levels of irrigation :  $I_1$ =Irrigation 9 weeks after germination (at flowering),  $I_2=I_1$ +irrigation 12 weeks after germination (at milky stage).

**Sub-plot treatments :**

All combinations of (1) and (2)

- (1) 3 levels of  $P_2O_5$  as Super.:  $P_0=0$ ,  $P_1=20$  and  $P_2=40$  lb./ac.  
 (2) 3 levels of Ca as Gypsum :  $G_0=0$ ,  $G_1=25$  and  $G_2=50$  lb./ac.

**3. DESIGN :**

- (i) Split-plot. (ii) (a) 2 main-plots/block and 9 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) Main-plot: 171'×32'; sub-plot: 19'×32'. (b) 16'×29'. (v) 11' all round the net plot. (vi) Yes.

**4. GENERAL :**

- (i) Poor. No lodging. (ii) N.A. (iii) Grain and fodder yield. (iv) (a) 1949 to 1950. (b) and (c) No. (v) (a) Kalyanpur and Varanasi. (b) N.A. (vi) Nil. (vii) Conducted by C.P.

**5. RESULTS :**

- (i) 1125 lb./ac.  
 (ii) (a) 267.0 lb./ac.  
 (b) 259.8 lb./ac.  
 (iii) None of the effects is significant.  
 (iv) Av. yield of grain in lb./ac.

	$G_0$	$G_1$	$G_2$	Mean	$P_0$	$P_1$	$P_2$
$I_1$	1257	1251	1199	1236	1241	1214	1253
$I_2$	1021	976	1049	1015	994	1135	917
Mean	1139	1113	1124	1125	1117	1174	1085
$P_0$	1153	1084	1114	1117			
$P_1$	1104	1171	1247	1174			
$P_2$	1159	1086	1010	1085			

**S.E. of difference of two**

1. I marginal means = 72.7 lb./ac.  
 2. P or G marginal means = 86.6 lb./ac.  
 3. P or G means at the same level of I = 122.5 lb./ac.  
 4. I means at the same level of P or G = 123.6 lb./ac.  
 5. means in body of P×G table = 150.0 lb./ac.

Crop :- Wheat (Rabi).

Site :- Govt. Agri. Farm, Baharaich.

Ref :- U.P. 50(133).

Type :- 'IM'.

Object :- To study the effect of different levels of irrigation in combination with  $P_2O_5$  and Gypsum on Wheat.

**1. BASAL CONDITIONS :-**

- (i) (a) Nil. (b) Sugarcane. (c) N.A. (ii) (a) Sandy loam. (b) N.A. (iii) 9.11.1950. (iv) (a) Preparation of land was good. (b) Sowing by seed drill. (c) 50 seers/ac. (d) and (e) N.A. (v) Nil. (vi) N.P.52 (medium-late) (vii) Irrigated. (viii) 2 harrowings. (ix) N.A. (x) 21, 22.4.1951.

**2. TREATMENTS :****Main-plot treatments :**

- 3 levels of irrigation : [ $I_0$ =No irrigation,  $I_1$ =Irrigation 3 weeks after germination (at tillering) and  $I_2=I_1$ +irrigation 9 weeks after germination (at flowering)].

**Sub-plot treatments :**

All combination of (1) and (2)

- (1) 3 levels of  $P_2O_5$  as Super :  $P_0=0$ ,  $P_1=20$  and  $P_2=40$  lb./ac.  
 (2) 3 levels of Ca as Gypsum :  $G_0=0$ ,  $G_1=25$  and  $G_2=50$  lb./ac.

**3. DESIGN :**

(i) Split-plot. (ii) (a) 3 main-plots/replication and 9 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) Main-plot 171'×35' sub-plot 19'×35', (b) 16'×32' (v) Sub-plot border =3'. Irrigation channel=3' sown space left between main-plots=8' also to be used as irrigation channel. (vi) Yes.

**4. GENERAL :**

(i) Satisfactory. (ii) Brown rust has affected the crop. (iii) Grain yield. (iv) (a) 1950—1953. (b) and (c) No. (v) (a) Kalai and Pratappgarh. (b) N.A. (vi) Nil. (vii) Conducted by C.P.

**5. RESULTS :**

- (i) 1237 lb./ac.  
 (ii) (a) 369.1 lb./ac.  
 (b) 196.2 lb./ac.  
 (iii) None of the effect is significant.

	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>	Mean	G <sub>0</sub>	G <sub>1</sub>	G <sub>2</sub>
I <sub>0</sub>	1127	1172	1143	1147	1113	1167	1162
I <sub>1</sub>	1298	1342	1288	1309	1375	1303	1249
I <sub>2</sub>	1164	1279	1325	1256	1206	1325	1237
Mean	1196	1264	1252	1237	1231	1265	1216
G <sub>0</sub>	1234	1240	1220	1231			
G <sub>1</sub>	1225	1337	1232	1265			
G <sub>2</sub>	1130	1215	1303	1216			

**S.E. of difference of two :**

1. I marginal means = 100.5 lb./ac.
2. P or G marginal means = 53.4 lb./ac.
3. I means at the same level of P or G = 125.6 lb./ac.
4. P or G means at the same level of I = 92.5 lb./ac.
5. means in body of G×P table = 92.5 lb./ac.

Crop :- Wheat.

Site :- Govt. Agri. Farm, Bahraich.

Ref :- U.P. 51(76).

Type :- 'IM'.

Object :- To study the effect of different levels of irrigation in combination with P<sub>2</sub>O<sub>5</sub> and Gypsum on Wheat.

**1. BASAL CONDITIONS :**

(i) (a) Nil. (b) Fallow. (c) No. (ii) (a) Sandy loam. (b) N.A. (iii) 3.11.1951. (iv) (a) to (e) N.A. (v) Nil. (vi) N.P. 52 (mid-early). (vii) Irrigated. (viii) N.A. (ix) N.A. (x) N.A.

**2. TREATMENTS :**

Main-plot treatments :

3 levels of irrigation : I<sub>0</sub>=No irrigation, I<sub>1</sub>=Irrigation 3 weeks after germination (at tillering) and I<sub>2</sub>=I<sub>1</sub>+irrigation 9 weeks after germination (at flowering).

Sub-plot treatments :

All combinations of (1) and (2)

(1) 3 levels of P<sub>2</sub>O<sub>5</sub> as Super : P<sub>0</sub>=0, P<sub>1</sub>=20 and P<sub>2</sub>=40 lb./ac.

(2) 3 levels of Ca as Gypsum : G<sub>0</sub>=0, G<sub>1</sub>=25 and G<sub>2</sub>=50 lb./ac.

**3. DESIGN :**

(i) Split-plot. (ii) (a) 3 main-plots/replication and 9 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 171'×35', 19'×35' (b) 16'×32' (v) Sub-plot border 3', irrigation channel 3', sown space left between main-plots 8' also to be used as irrigation channel. (vi) Yes.

**4. GENERAL :**

(i) Good. No lodging. (ii) Rust in 2 plots, plants were dried. (iii) Grain yield. (iv) (a) 1950—1953. (b) No. (c) No. (v) (a) Pratappgarh and Kalai. (b) N.A. (vi) Nil. (vii) Conducted by C.P.

## 5. RESULTS :

- (i) 962 lb./ac.  
 (ii) (a) 298.0 lb./ac.  
 (b) 164.0 lb./ac.  
 (iii) None of the effects is significant.  
 (iv) Av. yield of grain in lb./ac.

	G <sub>0</sub>	G <sub>1</sub>	G <sub>2</sub>	Mean	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>
I <sub>0</sub>	943	946	970	953	944	943	972
I <sub>1</sub>	908	930	1026	955	903	1021	941
I <sub>2</sub>	994	972	974	980	963	981	995
Mean	948	949	990	962	937	982	969
P <sub>0</sub>	930	928	952	937			
P <sub>1</sub>	1006	933	1005	982			
P <sub>2</sub>	908	986	1014	969			

## S.E. of difference of two

- |  |               |
|--|---------------|
| 1. marginal means of I                 | =70.3 lb./ac. |
| 2. marginal means of P or G            | =38.7 lb./ac. |
| 3. G or P means at the same level of I | =67.0 lb./ac. |
| 4. I means at the same level of G or P | =89.0 lb./ac. |
| 5. means in body of P×G table          | =67.0 lb./ac. |

Crop :-Wheat (*Rabi*).

Ref :-U.P. 52(116).

Site :-Govt. Agri. Farm, Baharaich.

Type :-'IM'.

Object :-To study the effect of different levels of irrigation in combination with P<sub>2</sub>O<sub>5</sub> and Gypsum on Wheat.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) N.A. (c) N.A. (ii) (a) Loam. (b) N.A. (iii) 3.11.1952. (iv) (a) Ploughing on 26, 27, 28, 30.10.1951. (b) N.A. (c) 40-50 seers/ac. in general. (d) N.A. (e) N.A. (v) Nil. (vi) N.P. 52 (mid early). (vii) Irrigated. (viii) N.A. (ix) N.A. (x) 5.4.1953.

## 2. TREATMENTS :

Main-plot treatments :

3 levels of irrigation : I<sub>0</sub>=No irrigation, I<sub>1</sub>=Irrigation 3 weeks after germination (at tillering), I<sub>2</sub>=I<sub>1</sub>+irrigation 9 weeks after germination (at flowering).

Sub-plot treatments :

All combinations of (1) and (2)

- (1) 3 levels of P<sub>2</sub>O<sub>5</sub> as Super : P<sub>0</sub>=0, P<sub>1</sub>=20 and P<sub>2</sub>=40 lb./ac.  
 (2) 3 levels of Ca as Gypsum : G<sub>0</sub>=0, G<sub>1</sub>=25 and G<sub>2</sub>=50 lb./ac.

## 3. DESIGN :

(i) Split-plot. (ii) (a) 3 main-plots/replication and 9 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 19'×35'. (b) 16'×35'. (v) Sub-plot border 1½", field border 3' between main-plots. (vi) Yes.

## 4. GENERAL :

(i) Poor. (ii) Yellow rust 35% on stem. (iii) Grain and straw yield. (iv) (a) 1950-1953. (b) No. (c) No. (v) (a) Kalai. (b) N.A. (vi) Nil. (vii) Conducted by C.P. (R).

## 5. RESULTS :

- (i) 313.4 lb./ac.  
 (ii) (a) 148.6 lb./ac.  
 (b) 96.5 lb./ac.  
 (iii) None of the effects is significant.

(iv) Av. yield of grain in lb./ac.

	G <sub>0</sub>	G <sub>1</sub>	G <sub>2</sub>	Mean	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>
I <sub>0</sub>	253.4	347.3	303.6	301.4	280.8	321.8	301.7
I <sub>1</sub>	331.8	326.3	330.8	319.7	320.0	358.2	280.8
I <sub>2</sub>	310.8	308.1	338.2	319.0	309.9	329.1	318.1
Mean	298.7	327.2	314.2	313.4	303.6	336.4	300.2
P <sub>0</sub>	317.2	299.9	293.5	303.6			
P <sub>1</sub>	299.0	352.8	357.3	336.4			
P <sub>2</sub>	279.9	329.1	291.7	300.2			

S.E. of difference of two

1. marginal means of I = 35.02 lb./ac.
2. marginal means of P or G = 22.74 lb./ac.
3. G or P means at the same level of I = 39.38 lb./ac.
4. I means at the same level of G or P = 47.54 lb./ac.
5. means in body of G × P table = 39.38 lb./ac.

Crop :-Wheat.

Ref :-U.P. 53(217).

Site :-Govt. Agri. Farm, Bahraich.

Type :- 'IM'.

Object :-To study the effect of different levels of irrigation in combination with P<sub>2</sub>O<sub>5</sub> and Gypsum on Wheat.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b), (c) N.A. (ii) (a) Sandy loam. (b) N.A. (iii) 6.11.1953. (iv) (a) Ploughings on 6 and 7.9.1953 and 4.11.1953. (b) Sown by seed drill. (c), (d) and (e) N.A. (v) Nil. (vi) C-13 (early). (vii) Irrigated. (viii) Weeding on 3.12.1953 and 7.1.1954. (ix) N.A. (x) 29.3.1954 and 1.4.1954.

## 2. TREATMENTS :

Main-plot treatments :

3 levels of Irrigation, I<sub>0</sub>=No Irrigation, I<sub>1</sub>=Irrigation 3 weeks after germination (at tillering) and I<sub>2</sub>=I<sub>1</sub>+Irrigation 9 weeks after germination (at flowering).

Sub-plot treatments :

All combinations of (1) and (2).

- (1) 3 levels of P<sub>2</sub>O<sub>5</sub> as Super : P<sub>0</sub>=0, P<sub>1</sub>=20 and P<sub>2</sub>=40 lb./ac.
- (2) 3 levels of Ca as Gypsum : G<sub>0</sub>=0, G<sub>1</sub>=25 and G<sub>2</sub>=50 lb./ac.

## 3. DESIGN :

(i) Split-plot. (ii) (a) 3 main-plots/replication ; 9 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) main-plot : 171' × 35'. sub-plot : 19' × 35'. (b) 16 × 32'. (v) Sub-plot border = 1½', field border = 3' around. Sown space left between main-plots-4' also to be used as irrigation channel. Irrigation channel 3' around. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) Wheat rust. (iii) Grain yield. (iv) (a) 1950—1953. (b), (c) No. (v) (a) Pratapgarh and Kalai. (b) N.A. (vi) Nil. (vii) Expt. was conducted by C.P.

## 5. RESULTS :

- (i) 672.9 lb./ac.
- (ii) (a) 252.5 lb./ac.
- (b) 172.0 lb./ac.
- (iii) Only the interaction I × P is significant. Others are not significant.

(iv) Av. yield of grain in lb./ac.

	G <sub>0</sub>	G <sub>1</sub>	G <sub>2</sub>	Mean	I <sub>0</sub>	I <sub>1</sub>	I <sub>2</sub>
P <sub>0</sub>	603.5	567.0	766.6	645.7	676.4	687.3	573.4
P <sub>1</sub>	620.8	701.9	735.6	686.1	635.3	720.2	702.8
P <sub>2</sub>	654.5	745.7	660.9	687.0	543.3	754.8	763.0
Mean	626.3	671.5	721.0	672.9			
I <sub>0</sub>	608.0	570.6	676.3	618.3			
I <sub>1</sub>	620.8	708.3	833.2	720.8			
I <sub>2</sub>	650.0	735.6	653.6	679.7			

S.E. of difference of two

1. I marginal means =59.5 lb./ac.
2. P or G marginal means =40.5 lb./ac.
3. I means at the same level of P or G =82.7 lb./ac.
4. P or G means at the same level of I =70.2 lb./ac.
5. means in the body of P×G table =70.2 lb./ac.

Crop :-Wheat.

Ref :-U.P. 49(77).

Site :-State Mechanised Farm, Bharari.

Type :-'IM'.

Object :-To study the effect of application of N to Wheat at different levels and at different times in combination with different levels of irrigation.

## 1. BASAL CONDITIONS :

(i) (a), (b) and (c) N.A. (ii) (a) N.A. (b) N.A. (iii) N.A. (iv) N.A. (v) N.A. (vi) C-13 (early). (vii) N.A. (viii) N.A. (ix) N.A. (x) N.A.

## 2. TREATMENTS :

Main-plot treatments :

3 levels of irrigation : I<sub>1</sub>=Irrigation 3 weeks after germination (at tillering stage), I<sub>2</sub>=I<sub>1</sub>+irrigation 9 weeks after germination (at flowering stage) and I<sub>3</sub>=I<sub>2</sub>+irrigation 12 weeks after germination (at milky stage).

Sub-plot treatments :

All combination of (1) and (2)+a control (N<sub>0</sub>T<sub>0</sub>=no manure)

(1) 2 levels of N as A/S : N<sub>1</sub>=30 lb./ac. of N and N<sub>2</sub>=60 lb./ac. of N.

(2) 2 times of application of N : T<sub>1</sub>=All at sowing and T<sub>2</sub>=half at sowing and half at first irrigation.

## 3. DESIGN :

(i) Split-plot. (ii) (a) 3 main-plots/block ; 5 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) Main-plot : 22 × 165' ; sub-plot : 22' × 33'. (b) 16' × 27'. (v) 3' ring round the net-plot. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) N.A. (iii) Grain yield. (iv) (a) 1949-1953. (b), (c) No. (v) (a) Kunraghat, Kalyanpur, Atarra, Meerut, Muzaffarnagar, Lucknow and Hawalbagh. (b) N.A. (vi) Nil. (vii) Expt. was conducted by C.P.

## 5. RESULTS :

(i) 1245 lb./ac.

(ii) (a) 346.4 lb./ac.

(b) 270.4 lb./ac.

(iii) Only control vs. treated effect is highly significant.

(iv) Av. yield of grain in lb./ac.

	$N_0T_0$	$N_1T_1$	$N_2T_1$	$N_1T_2$	$N_2T_2$	Mean
$I_1$	899	1262	1435	1400	1538	1307
$I_2$	1020	1331	1469	1296	1279	1279
$I_3$	985	1141	1608	899	1106	1148
Mean	968	1245	1504	1198	1308	1245

S.E. of the difference of two

1. I marginal means = 126.5 lb./ac.
2. NT marginal means = 127.5 lb./ac.
3. NT means at the same level of I = 220.8 lb./ac.
4. I means at the same level of NT = 199.7 lb./ac.

Crop :-Wheat.

Ref :-U.P. 50(76).

Site :-State Mechanised Farm, Bharari.

Type :-'IM'.

Object :-To study the effect of application of N to Wheat at different levels and at different times in combination with different levels of irrigation.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Maize. (c) N.A. (ii) (a) *Parwa* soil. (b) N.A. (iii) 24.11.1950. (iv) (a) 3 harrowings. (b) Sown by seed drill. (c) 50 seer/ac. (d) and (e) N.A. (v) Nil. (vi) Nil. (vii) Irrigated. (viii) Nil. (ix) N.A. (x) 16.4.1951.

## 2. TREATMENTS :

Main-plot treatments :

4 levels of irrigation :  $I_0$ =No irrigation,  $I_1$ =Irrigation 3 weeks after germination (at tillering),  $I_2=I_1$ +Irrigation 9 weeks after germination (at flowering) and  $I_3=I_2$ +Irrigation 12 weeks after germination (at milky stage).

Sub-plot treatments :

All combinations of (1) and (2)+a control ( $N_0T_0$ =no manure)(1) 2 levels of N as A/S :  $N_1=30$  and  $N_2=60$  lb /ac. of N.(2) 2 times of application of N :  $T_1$ =All at sowing and  $T_2$ =Half at sowing and half at 1st irrigation.

## 3. DESIGN :

(i) Split-plot. (ii) (a) 4 main-plots/replication and 5 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) Main-plot: 27'×150' and Sub-plot: 27'×30'. (b) 24'×27'. (v) Sub-plot border=1½' around. Field border=3' around. Irrigation channel=3'. Sown space left between main-plots—8', also to be used as irrigation channel. (vi) Yes.

## 4. GENERAL :

(i) Slightly below normal. (ii) Nil. (iii) Grain yield. (iv) (a) 1949-1953. (b) and (c) No. (v) (a) Kalyanpur, Kunraghat, Etawah, Muzaffarnagar, Meerut, Atarra, and Lucknow. (b) N.A. (vi) Nil. (vii) Expt. was conducted by C.P.

## 5. RESULTS :

- (i) 699.5 lb./ac.
- (ii) (a) 149.4 lb./ac.
- (b) 189.9 lb./ac.
- (iii) None of the effects is significant.

(iv) Av. yield of grain in lb./ac.

	$N_0T_0$	$N_1T_1$	$N_2T_1$	$N_1T_2$	$N_2T_2$	Mean
$I_0$	535.8	674.1	783.6	783.6	472.5	649.9
$I_1$	679.9	864.3	772.1	864.3	610.7	758.3
$I_2$	737.5	610.7	507.0	772.1	777.8	681.0
$I_3$	668.4	749.0	823.9	651.1	651.1	708.7
Mean	655.4	724.5	721.6	767.8	628.0	699.5

## S.E. of difference of two

1. I marginal means = 54.54 lb./ac.
2. NT marginal means = 77.53 lb./ac.
3. NT means at the same level of I = 155.07 lb./ac.
4. I means at the same level of NT = 149.03 lb./ac.

Crop :- Wheat.

Ref :- U.P. 51(83).

Site :- State Mechanised Farm, Bharari.

Type :- 'IM'.

Object :- To study the effect of application of N to Wheat at different levels and at different times in combination with different levels of irrigation.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fallow. (c) No. (ii) (a) Rankar, parwa soil. (b) N.A. (iii) 1.12.1951. (iv) (a) N.A. (b) Sown by seed drill. (c) 40-50 seers/ac. (d) and (e) N.A. (v) Nil. (vi) C-13 (early). (vii) Irrigated. (viii) N.A. (ix) N.A. (x) N.A.

## 2. TREATMENTS :

## Main-plot treatments :

4 levels of irrigation :  $I_0$ =No irrigation,  $I_1$ =Irrigation 3 weeks after germination (at tillering),  $I_2$ = $I_1$ +Irrigation 9 weeks after germination (at flowering) and  $I_3$ = $I_2$ +Irrigation 12 weeks after germination (at milky stage).

## Sub-plot treatments :

All combinations of (1) and (2) + a control ( $N_0T_0$ =no manure)

(1) 2 levels of N as A/S :  $N_1$ =30 and  $N_2$ =60 lb./ac. of N.

(2) 2 times of application of N :  $T_1$ =All at sowing and  $T_2$ =Half at sowing and half at 1st irrigation.

## 3. DESIGN :

(i) Split-plot. (ii) (a) 4 main-plots/replication and 5 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) Main-plot : 24'x150' and Sub-plot : 24'x30'. (b) 21'x27'. (v) Sub-plot border=1½' around. Field border around=3', Irrigation channel=3'. Sowing space left between main-plots=4' also to be used as irrigation channel. (vi) Yes.

## 4. GENERAL :

(i) Poor. No lodging. (ii) No. (iii) Grain yield. (iv) (a) 1949-1953. (b) and (c) No. (v) (a) Hawalbagh, Etawah, Kalyanpur, Faizabad, Meerut, Atarra, Kunraghat, Muzaffarnagar and Lucknow. (b) N.A. (vi) The crop was sown late and hence poor yield. (vii) Expt. was conducted by C.P.

## 5. RESULTS:

(i) 1980 lb./ac.

(ii) (a) 238.7 lb./ac.

(b) 270.1 lb./ac.

(iii) Main effect of I is significant. Interaction  $I \times N \times T$  is significant. Others are not significant.

(iv) Av. yield of grain in lb./ac.

	$N_0T_0$	$N_1T_1$	$N_2T_1$	$N_1T_2$	$N_2T_2$	Mean
$I_0$	1679	1882	1837	1734	1909	1808
$I_1$	2077	1813	2104	2114	1803	1982
$I_2$	1934	2015	2062	1906	2166	2017
$I_3$	2057	1939	2282	2277	2005	2112
Mean	1937	1912	2071	2008	1971	1980

S.E. of difference of two

1. I marginal means = 75.50 lb./ac.
2. NT marginal mean = 95.51 lb./ac.
3. NT means at the same level of I = 191.02 lb./ac.
4. I means at the same level of NT = 186.79 lb./ac.

Crop :- Wheat.

Ref :- U.P. 52(130).

Site :- State Mechanised Farm, Bharari.

Type :- 'IM'.

Object :- To study the effect of application of N to Wheat at different levels and at different times in combination with different levels of irrigation.

## 1. BASAL CONDITIONS :

(i) (a) *Sanal*—Wheat. (b) *Sanal*. (c) N.A. (ii) (a) *Parwa* soil. (b) N.A. (iii) 8.11.1952. (iv) (a) Ploughing on 29.7.1952 and two harrowings on 31.10.1952. (b) N.A. (c) 40 to 50 srs./ac. (d) and (e) N.A. (v) Nil. (vi) Pb. 591 (mid-late). (vii) Irrigated. (viii) N.A. (ix) N.A. (x) 25.3.1953.

## 2. TREATMENTS :

Main-plot treatments :

4 levels of irrigation :  $I_0$ =No Irrigation,  $I_1$ =Irrigation 3 weeks after germination (at tillering),  $I_2=I_1+$  Irrigation 9 weeks after germination (at flowering) and  $I_3=I_2+$ Irrigation 12 weeks after germination (at milky stage).

Sub-plot treatments :

All combinations of (1) and (2)+a control ( $N_0T_0$ =no manure).(1) 2 levels of N as A/S :  $N_1=30$  and  $N_2=60$  lb./ac. of N.(2) 2 times of application of N :  $T_1$ =All at sowing and  $T_2$ =Half at sowing and half at 1st irrigation.

## 3. DESIGN :

(i) Split-plot. (ii) (a) 4 main-plots/replication and 5 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) Main-plot :  $24' \times 150'$  and sub-plot :  $24' \times 30'$ . (b)  $21' \times 27'$ . (v) Sub-plot border= $1\frac{1}{2}'$ , main-plot border= $4'$  and between blocks= $4'$ . (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Slight rust disease was traceable during February. (iii) Grain and straw yield. (iv) (a) 1949—1953. (b) and (c) No. (v) (a) Etawah, Kalyanpur, Meerut, Atarra, Faizabad, Muzaffarnagar and Kunra-ghat. (vi) Nil. (vii) Expt. was conducted by C.P. (R).

## 5. RESULTS :

- (i) 2016 lb./ac.
- (ii) (a) 331.6 lb./ac.
- (b) 358.8 lb./ac.
- (iii) Only the interaction  $I \times T$  is significant.



## (iv) Av. yield of grain in lb./ac.

	$N_0T_0$	$N_1T_1$	$N_2T_1$	$N_1T_2$	$N_2T_2$	Mean
$I_0$	1879	2067	1884	2442	1892	2033
$I_1$	1951	2299	2257	1993	2116	2123
$I_2$	1953	2089	1879	1827	2015	1953
$I_3$	2099	1662	1679	2040	2302	1956
Mean	1970	2029	1925	2076	2081	2016

## S.E. of difference of two

1. I marginal means = 104.87 lb./ac.
2. NT marginal means = 126.87 lb./ac.
3. NT means at the same level of I = 253.74 lb./ac.
4. I means at the same level of NT = 250.01 lb./ac.

Crop :- Wheat.

Ref :- U.P. 53(67).

Site :- State Mechanised Farm, Bharari.

Type :- 'IM'.

Object :—To study the effect of application of N to Wheat at different levels and at different times in combination with different levels of irrigation.

## 1. BASAL CONDITIONS :

(i) (a) *Sanal*—Wheat. (b) *Sanal*. (c) Nil. (ii) (a) *Parwa* soil. (b) N.A. (iii) 19.11.1953. (iv) (a) Ploughing on 23.8.1953, harrowing on 17.10.1953 and 28.10.1953. (b) Improved seed drill used for sowing. (c) 40—50 srs./ac. (d) and (e) N.A. (v) N.A. (vi) Pb. 591 (mid-late). (vii) Irrigated. (viii) Weeding and hoeing. (ix) N.A. (x) 4.4.1954.

## 2. TREATMENTS :

## Main-plot treatments :

4 levels of irrigation :  $I_0$ =No irrigation,  $I_1$ =Irrigation 3 weeks after germination (at tillering),  $I_2$ = $I_1$ +Irrigation 9 weeks after germination (at flowering) and  $I_3$ = $I_2$ +Irrigation 12 weeks after germination (at milky stage).

## Sub-plot treatments :

All combinations of (1) and (2)+a control ( $N_0T_0$ =no manure).

(1) 2 levels of N as A/S :  $N_1$ =30 and  $N_2$ =60 lb./ac. of N.

(2) 2 times of application of N :  $T_1$ =All at sowing and  $T_2$ =Half at sowing and half at 1st irrigation.

## 3. DESIGN :

(i) Split-plot. (ii) (a) 4 main-plots/replication and 5 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) Main-plot size : 24' × 150' and Sub-plot : 24' × 30'. (b) 21' × 27'. (v) Plot border 1.5' and field border 3'. Sown space left between main-plots to serve as irrigation channel 4'. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Slight rust attack. (iii) Grain and straw yield. (iv) (a) 1949—1953. (b) and (c) No. (v) (a) Faizabad, Etawah, Kalyanpur, Atarra, Meerut, Kunraghat and Muzaffarnagar. (b) N.A. (vi) Nil. (vii) Experiment conducted by C.P. (R).

## 5. RESULTS :

- (i) 1792 lb./ac.
- (ii) (a) 228.0 lb./ac.
- (b) 255.0 lb./ac.
- (iii) None of the effects is significant.

(iv) Av. yield of grain in lb./ac.

	N <sub>0</sub> T <sub>0</sub>	N <sub>1</sub> T <sub>1</sub>	N <sub>2</sub> T <sub>1</sub>	N <sub>1</sub> T <sub>2</sub>	N <sub>2</sub> T <sub>2</sub>	Mean
I <sub>0</sub>	1882	1719	1778	1857	1620	1771
I <sub>1</sub>	1852	1699	1902	1719	1818	1798
I <sub>2</sub>	1837	1976	1877	1660	1857	1841
I <sub>3</sub>	1818	1709	1832	1778	1660	1759
Mean	1847	1776	1847	1753	1739	1792

S.E. of difference of two

1. I marginal means = 72.10 lb./ac.
2. NT marginal means = 90.14 lb./ac.
3. NT means at the same level of I = 180.28 lb./ac.
4. I means at the same level of NT = 176.65 lb./ac.

Crop :- Wheat.

Ref :- U.P. 49(85).

Site :- State Mechanised Farm, Bharari.

Type :- 'IM'.

Object :- To study the effect of different forms and levels of N in combination with levels of irrigation on Wheat.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) N.A. (ii) (a) and (b) N.A. (iii) 9.11.1949. (iv) (a) N.A. (b) Drilling by seed drill. (c) 45 seers/ac. (d) N.A. (e) N.A. (v) Nil. (vi) C-13 (early). (vii) Irrigated. (viii) N.A. (ix) N.A. (x) N.A.

## 2. TREATMENTS :

Main-plot treatments :

3 levels of irrigation : I<sub>1</sub>=Irrigation 3 weeks after germination (at tillering), I<sub>2</sub>=I<sub>1</sub>+Irrigation 9 weeks after germination (at flowering), I<sub>3</sub>=I<sub>2</sub>+Irrigation 12 weeks after germination (at milky stage).

Sub-plot treatments :

3 applications of N : N<sub>0</sub>=No manure, N<sub>1</sub>=60 lb./ac. of N as A/S, N<sub>2</sub>=60 lb./ac. of N as Castor cake.

## 3. DESIGN :

(i) Split-plot. (ii) (a) 3 main-plots/block ; 3 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) main-plot 54'×40', Sub-plot 18'×40'. (b) 12'×34'. (v) 3' around. (vi) Yes.

## 4. GENERAL :

(i) Poor. (ii) Nil. (iii) No. of tillers/plant, no. of green leaves/plant, no. of dry leaves/plant, height of plant, length of leaf and breadth of leaf. (iv) (a) 1949—1953. (b) No. (c) No. (v) (a) Banaras, Kalyanpur, Atarra, Meerut, Kunraghat, Muzaffarnagar, Lucknow, Bulandshahr and Hawalbagh. (b) N.A. (vi) Nil. (vii) Experiment conducted by C.P.

## 5. RESULTS :

- (i) 989.3 lb./ac.
- (ii) (a) 281.6 lb./ac.  
(b) 154.4 lb./ac.
- (iii) Levels of N are highly significant and interaction I×forms of N is significant. Others are not significant.
- (iv) Av. yield of grain in lb./ac.

	N <sub>0</sub>	N <sub>1</sub>	N <sub>2</sub>	Mean
I <sub>1</sub>	686.3	759.5	960.8	802.2
I <sub>2</sub>	970.0	1262.8	1079.8	1104.2
I <sub>3</sub>	805.5	1336.0	1043.2	1061.5
Mean	820.5	1119.4	1027.9	989.3

S.E. of difference of two

1. marginal means of I = 132.77 lb./ac.
2. marginal means of N = 72.78 lb./ac.
3. N means at the same level of I = 126.06 lb./ac.
4. I means at the same level of N = 168.00 lb./ac.

Crop :- Wheat.

Ref :- U.P. 50(86),

Site :- State Mechanised Farm, Bharari.

Type :- 'IM'.

Object :—To study the effect of different forms and levels of N in combination with levels of irrigation on Wheat.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Maize. (c) N.A. (ii) (a) *Parwa* soil. (b) N.A. (iii) 14.11.1950. (iv) (a) 3 harrowings. (b) Sown by seed drill. (c) 50 seers/ac. (d) N.A. (e) N.A. (v) Nil. (vi) C-13 (early). (vii) Irrigated. (viii) Nil. (ix) N.A. (x) 16.4.1951.

## 2. TREATMENTS :

Main-plot treatments :

4 levels of irrigation:  $I_0$ =No irrigation,  $I_1$ =Irrigation 3 weeks after germination (at tillering),  $I_2=I_1+$  Irrigation 9 weeks after germination (at flowering),  $I_3=I_2+$ Irrigation 12 weeks after germination (at milky stage).

Sub-plot treatments :

3 applications of N:  $N_0$ =No manure,  $N_1$ =60 lb./ac. of N as A/S,  $N_2$ =60 lb./ac. of N as Castor cake.

## 3. DESIGN :

(i) Split-plot. (ii) (a) 4 main-plots/block ; 3 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) Main-plot 60'×40' ; Sub-plot 20'×49'. (b) 17'×37'. (v) Sub-plot border 1½' around. Field border 3' around. Sown space left between main-plots 5' sown space left between blocks 8' also to be used as irrigation channel. (vi) Yes.

## 4. GENERAL :

(i) Average growth. (ii) Nil. (iii) Grain yield. (iv) (a) 1949-1954. (b) No. (c) No. (v) (a) Banaras, Kunraghat, Kalyanpur, Kalai, Etawah, Muzaffarnagar, Meerut, Atarra and Lucknow. (b) N.A. (vi) Nil. (vii) Experiment conducted by C.P.

## 5. RESULTS :

(i) 1187 lb./ac.  
 (ii) (a) 422.3 lb./ac.  
 (b) 283.8 lb./ac.  
 (iii) Only  $I \times$  forms of N is significant.  
 (iv) Av. yield of grain in lb./ac.

	$N_0$	$N_1$	$N_2$	Mean
$I_0$	1080	1116	1300	1165
$I_1$	991	1175	1062	1076
$I_2$	1270	1543	890	1234
$I_3$	1128	1211	1484	1274
Mean	1117	1261	1184	1187

S.E. of difference of two

- |                                   |                 |
|-----------------------------------|-----------------|
| 1. marginal means of I            | =199.06 lb./ac. |
| 2. marginal means of N            | =115.87 lb./ac. |
| 3. N means at the same level of I | =231.74 lb./ac. |
| 4. I means at the same level of N | =274.64 lb./ac. |

Crop :-Wheat (*Rabi*).

Ref :-U.P. 51(65).

Site :- State Mechanised Farm, Bharari.

Type :- 'IM'.

Object :—To study the effect of different forms and levels of N in combination with levels of irrigation on Wheat.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fallow. (c) No. (ii) (a) *Ranker* and *Kabar*. (b) N.A. (iii) 30.11.1951. (iv) (a) One ploughing and 2 harrowings. (b) Sown by seed drill. (c) 40-50 seers/ac. (d) and (e) N.A. (v) Nil. (vi) C-13 (early). (vii) Irrigated. (viii) N.A. (ix) 1.98°. (x) N.A.

**2. TREATMENTS :****Main-plot treatments :**

4 levels of Irrigation :  $I_0$ =No irrigation,  $I_1$ =Irrigation 3 weeks after germination (at tillering),  $I_2=I_1$ +Irrigation 9 weeks after germination (at flowering),  $I_3=I_2$ +Irrigation 12 weeks after germination (at milky stage).

**Sub-plot treatments :**

3 applications of N :  $N_0$ =No manure,  $N_1$ =60 lb./ac. of N as A/S and  $N_2$ =60 lb./ac. of N as castor cake.

**3. DESIGN :**

(i) Split-plot. (ii) (a) 4 main-plots/replication and 3 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) Main-plot size : 60'×40' and sub-plot : 20'×40'. (b) 17'×37'. (v) Sub-plot border=1½' around. Field border =3' around. Sown space left between main plots=5'. Sown space left between blocks=6' also to be used as irrigation channel. (vi) Yes.

**4. GENERAL :**

(i) Good. No lodging. (ii) No. (iii) Grain yield. (iv) (a) 1949—1953 (b) and (c) No. (v) (a) Banaras, Faizabad, Kunraghat, Kalayanpur Atarra, Etawah, Kalai, Meerut, Muzaffarnager, Hawalbagh and Lucknow. (b) N.A. (vi) Nil. (vii) Experiment conducted by C.P.

**5. RESULTS :**

(i) 1349 lb./ac.

(ii) (a) 452.9 lb./ac.

(b) 240.0 lb./ac.

(iii) Only levels of N are highly significant. No other effect is significant.

(iv) Av. yield of grain in lb./ac.

	$N_0$	$N_1$	$N_2$	Mean
$I_0$	1046	1327	1251	1208
$I_1$	1215	1391	1358	1321
$I_2$	1097	1353	1429	1293
$I_3$	1338	1545	1839	1574
Mean	1174	1404	1469	1349

**S.E. of difference of two**

- marginal means of I = 184.9 lb./ac.
- marginal means of N = 84.8 lb./ac.
- N means at the same level of I = 169.7 lb./ac.
- I means at the same level of N = 231.0 lb./ac.

Crop :-Wheat.

Site :-State Mechanised Farm, Bharari.

Ref:-U.P. 52(135).

Type :-'IM'.

Object :-To study the effect of different forms and levels of N in combination with levels of irrigation on Wheat.

**1. BASAL CONDITIONS :**

(i) (a) *Sanat*-Wheat. (b) *Sanai*. (c) Nil. (ii) (a) *Parwa* soil. (b) N.A. (iii) 13.11.1952. (iv) (a) One ploughing on 29.7.1952 and 2 harrowings on 31.10.1952. (b) N.A. (c) 9 chh./plot. (d) and (e) N.A. (v) Nil. (vi) Pb-591 (medium late). (vii) Irrigated. (viii) N.A. (ix) N.A. (x) 25.3.1953.

**2. TREATMENTS :****Main-plot treatments :**

4 levels of Irrigation :  $I_0$ =No irrigation,  $I_1$ =Irrigation 3 weeks after germination (at tillering),  $I_2=I_1$ +Irrigation 9 weeks after germination (at flowering) and  $I_3=I_2$ +Irrigation 12 weeks after germination (at milky stage).

**Sub-plot treatments :**

3 applications of N :  $N_0$ =No manure,  $N_1$ =60 lb./ac. of N as A/S and  $N_2$ =60 lb./ac. of N as Castor cake

**3. DESIGN :**

(i) Split-plot. (ii) (a) 4 main-plots/replication and 3 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) Main-plot : 60'×40' ; sub-plot : 20'×40'. (b) 17'×37'. (v) Sub-plot border 1½' ; between main-plots 5' ; between blocks 6'. (vi) Yes.

**4. GENERAL :**

(i) Good. (ii) Slight rust was traceable during February. (iii) Grain and straw yield. (iv) (a) 1949—1953. (b) and (c) No. (v) (a) Banaras, Faizabad, Etawah, Kalayanpur, Meerut, Kalai, Atarra, Hawalbagh, Kunraghat and Muzaffarnagar. (b) N.A. (vi) Nil. (vii) Experiment conducted by C.P.(R).

**5. RESULTS :**

- (i) 1376 lb./ac.  
 (ii) (a) 280.8 lb./ac.  
 (b) 224.2 lb./ac.  
 (iii) Only levels of N are highly significant.  
 (iv) Av. yield of grain in lb./ac.

	N <sub>0</sub>	N <sub>1</sub>	N <sub>2</sub>	Mean
I <sub>0</sub>	1304	1291	1478	1358
I <sub>1</sub>	1278	1282	1465	1342
I <sub>2</sub>	1313	1589	1607	1503
I <sub>3</sub>	1033	1389	1487	1303
Mean	1232	1388	1509	1376

**S.E. of difference of two**

1. marginal means of I = 114.6 lb./ac.  
 2. marginal means of N = 79.3 lb./ac.  
 3. N means at the same level of I = 158.5 lb./ac.  
 4. I means at the same level of N = 172.9 lb./ac.

**Crop :-Wheat.****Ref :- U.P. 53(68).****Site :-State Mechanised Farm, Bharari.****Type :-'IM'.**

**Object :-** To study the effect of different forms and levels of N in combination with levels of irrigation on Wheat.

**1. BASAL CONDITIONS :**

(i) (a) *Sanai*-Wheat. (b) *Sanai*. (c) Nil. (ii) (a) *Parwa* soil. (b) N.A. (iii) 20.11.1953. (iv) (a) Ploughing on 22.8.1953 and harrowings on 28.10.1953, and 16.11.1953. (b) Sown by seed drill. (c) 4-5 srs /ac. (d), (e) N.A. (v) N.A. (vi) Pb. 591 (medium late). (vii) Irrigated. (viii) Weeding and hoeing at proper time. (ix) N.A. (x) 5, 6.4.1954.

**2. TREATMENTS :****Main-plot treatments :**

4 levels of Irrigation : I<sub>0</sub>=No irrigation, I<sub>1</sub>=Irrigation 3 weeks after germination (at tillering), I<sub>2</sub>=I<sub>1</sub>+Irrigation 9 weeks after germination (at flowering) and I<sub>3</sub>=I<sub>2</sub>+Irrigation 12 weeks after germination (at milky stage).

**Sub-plot treatments :**

3 applications of N : N<sub>0</sub>=No manure, N<sub>1</sub>=60 lb./ac. of N as A/S and N<sub>2</sub>=60 lb./ac. of N as Caster cake.

**3. DESIGN :**

(i) Split-plot. (ii) (a) 4 main-plots/replication ; 3 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) Main-plot : 24'×150'. sub-plot : 20'×40'. (b) 17'×37'. (v) Plot border 1.5' and field border 3' around. Sown space left between main-plot 5' ; block partition 6' serving as irrigation channel. (vi) Yes.

**4. GENERAL :**

(i) Good. (ii) Slight incidence of rust. (iii) Grain and straw yield. (iv) (a) 1949—1953. (b), (c) No. (v) (a) Faizabad, Etawah, Kalayanpur, Atarra, Meerut, Kunraghat, Muzaffarnagar, Banaras and Kalai. (b) N.A. (vi) Nil. (vii) Experiment conducted by C.P.(R).

## 5. RESULTS :

- (i) 1150 lb./ac.  
 (ii) (a) 574.8 lb./ac.  
 (b) 189.0 lb./ac.  
 (iii) None of the effects is significant.  
 (iv) Av. yield of grain in lb./ac.

	N <sub>0</sub>	N <sub>1</sub>	N <sub>2</sub>	Mean
I <sub>0</sub>	1031	1022	1031	1028
I <sub>1</sub>	1164	1140	1180	1161
I <sub>2</sub>	1206	1051	1304	1187
I <sub>3</sub>	1140	1215	1320	1225
Mean	1135	1107	1209	1150

## S.E. of difference of two

1. marginal means of I = 234.6 lb./ac.  
 2. marginal means of N = 66.8 lb./ac.  
 3. N means at the same level of I = 133.7 lb./ac.  
 4. I means at the same level of N = 258.8 lb./ac.

Crop :- Wheat.

Ref :- U.P. 49(97).

Site :- Govt. Agri. School Farm, Bulandshahr.

Type :- 'IM'.

Object :- To study the effect of different levels of irrigation in combination with P<sub>2</sub>O<sub>5</sub> and Gypsum on Wheat.

## 1. BASAL CONDITIONS :

- (i) (a) Nil. (b) Green manuring (*Sanai*). (c) N.A. (ii) (a) Loam. (b) N.A. (iii) 27, 28.10.1949. (iv) (a) 6 ploughings by *deshi* plough. (b) to (c) N.A. (v) Green manuring of *Sanai* by ploughing in on 9.8.1949. (vi) Pb. 591. (vii) Irrigated. (viii) Hoeing and weeding on 29, 30.1.1950. (ix) N.A. (x) 14, 15.4.1950.

## 2. TREATMENTS :

## Main-plot treatments :

- 2 levels of irrigation : I<sub>1</sub> = Irrigation 9 weeks after germination (at flowering) and I<sub>2</sub> = I<sub>1</sub> + Irrigation 12 weeks after germination (at milky stage).

## Sub-plot treatments :

All combinations of (1) and (2)

- (1) 3 levels of P<sub>2</sub>O<sub>5</sub> as Super : P<sub>0</sub> = 0, P<sub>1</sub> = 20 and P<sub>2</sub> = 40 lb./ac.  
 (2) 3 levels of Ca as Gypsum : G<sub>0</sub> = 0, G<sub>1</sub> = 25 and G<sub>2</sub> = 50 lb./ac.

## 3. DESIGN :

- (i) Split-plot. (ii) (a) 2 main-plots/block ; 9 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) Main-plot size : 162' × 40' and sub-plot : 18' × 40'. (b) 12' × 34'. (v) 3' ring round the net-plot. (vi) Yes.

## 4. GENERAL :

- (i) Normal. (ii) N.A. (iii) Grain and straw yield. (iv) (a) No. (b) and (c) No. (v) (a) Banaras, Kalyanpur, Barabanki and Lucknow. (b) N.A. (vi) Nil. (vii) Experiment conducted by C.P.

## 5. RESULTS :

- (i) 2151 lb./ac.  
 (ii) (a) 568.5 lb./ac.  
 (b) 315.4 lb./ac.  
 (iii) None of the effects is significant.

(iv) Av. yield of grain in lb./ac.

	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>	Mean	I <sub>1</sub>	I <sub>2</sub>
G <sub>0</sub>	2178	2141	2105	2141	2135	2147
G <sub>1</sub>	2086	2196	2086	2123	1952	2294
G <sub>2</sub>	2050	2306	2215	2190	1940	2440
Mean	2105	2214	2135	2151		
I <sub>1</sub>	2099	2001	1928	2009		
I <sub>2</sub>	2111	2428	2343	2294		

S.E. of difference of two

1. I marginal means = 154.7 lb./ac.
2. P or G marginal means = 105.1 lb./ac.
3. P or G means at the same level of I = 148.7 lb./ac.
4. I means at the same level of P or G = 196.7 lb./ac.
5. means in body of G×P table = 182.1 lb./ac.

Crop :- Wheat.

Ref :- U.P. 49(75).

Site :- Govt. Agri. School Farm, Bulandshahr.

Type :- 'IM'.

Object :- To study the effect of different forms and levels of N in combination with levels of irrigation on Wheat.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Green manure (*Sanaī*). (c) Nil. (ii) (a) Loam. (b) N.A. (iii) 27.10.1949. (iv) (a) Ploughing in *Sanaī* on 9.8.1949, 6 ploughings by *deshī* plough. (b) N.A. (c) 50 srs./ac. (d) and (e) N.A. (v) Field green manured by *Sanaī*. (vi) Pb. 591 (mid-late). (vii) Irrigated. (viii) Hoeing and weeding on 29, 31.1.1950. (ix) N.A. (x) 14, 15.4.1950.

## 2. TREATMENTS :

Main-plot treatments :

3 levels of irrigation : I<sub>1</sub>=Irrigation 3 weeks after germination (at tillering), I<sub>2</sub>=I<sub>1</sub>+Irrigation 9 weeks after germination (at flowering) and I<sub>3</sub>=I<sub>2</sub>+Irrigation 12 weeks after germination (at milky stage).

Sub-plot treatments :

3 applications of N : N<sub>0</sub>=No manure, N<sub>1</sub>=60 lb./ac. of N as A/S and N<sub>2</sub>=60 lb./ac. of N as Castor cake.

## 3. DESIGN :

(i) Split-plot. (ii) (a) 3 main-plots/block ; 3 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) Main-plot size : 54'×40' and Sub-plot : 18'×40'. (b) 12'×34'. (v) 3' ring round the net plot. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) N.A. (iii) Grain yield. (iv) (a) No. (b) and (c) No. (v) (a) Banaras, Kalyanpur, Atarra, Bharari, Meerut, Muzaffarnagar, Lucknow, Hawalbagh and Kunraghat. (b) N.A. (vi) Nil. (vii) Experiment conducted by C.P.

## 5. RESULTS :

- (i) 2245 lb./ac.
- (ii) (a) 240.0 lb./ac.
- (b) 179.3 lb./ac.

... Forms of N and interaction I×forms of N are significant. Others are not significant.

(iv) Av. yield of grain in lb./ac.

	N <sub>0</sub>	N <sub>1</sub>	N <sub>2</sub>	Mean
I <sub>1</sub>	2269	2160	2233	2221
I <sub>2</sub>	2343	2086	2672	2367
I <sub>3</sub>	2086	2196	2160	2147
Mean	2233	2147	2355	2245

S.E. of difference of two

1. I marginal means = 113.1 lb./ac.
2. N marginal means = 84.5 lb./ac.
3. N means at the same level of I = 146.4 lb./ac.
4. I means at the same level of N = 164.6 lb./ac.

Crop :-Wheat (*Rabi*).

Ref :-U.P. 50(74).

Site :-Govt. Agri. Farm, Etawah.

Type :-'IM'.

Object :—To study the effect of application of N to Wheat at different levels and at different times in combination with different levels of irrigation.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) and (c) N.A. (ii) (a) Clayey loam. (b) N.A. (iii) Last week of October, (iv) (a) N.A. (b) Sown by seed drill. (c) 40–50 seers/ac. (d) and (e) N.A. (v) Nil. (vi) Pb. 591 (mid-late). (vii) Irrigated, (viii) N.A. (ix) N.A. (x) N.A.

## 2. TREATMENTS :

Main-plot treatments :

4 levels of irrigation : I<sub>0</sub>=No irrigation, I<sub>1</sub>=Irrigation 3 weeks after germination (at tillering), I<sub>2</sub>=I<sub>1</sub>+Irrigation 9 weeks after germination (at flowering) and I<sub>3</sub>=I<sub>2</sub>+Irrigation 12 weeks after germination (at milky stage).

Sub-plot treatments :

All combinations of (1) and (2)+a control (N<sub>0</sub>T<sub>0</sub>=no manure)(1) 2 levels of N as A/S : N<sub>1</sub>=30 and N<sub>2</sub>=60 lb./ac. of N.(2) 2 times of application of N : T<sub>1</sub>=All at sowing and T<sub>2</sub>=Half at sowing and half at 1st irrigation.

## 3. DESIGN :

(i) Split-plot. (ii) (a) 4 main-plots/replication and 5 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) Main-plot : 25'×175' and Sub-plot : 25'×35'. (b) 22'×32'. (v) Sub-plot border=1½' around. Field border=3' around. Irrigation channel=3'. Sown space left between main-plots=8' also to be used as irrigation channel. (vi) Yes.

## 4. GENERAL :

(i) Satisfactory. (ii) Nil. (iii) Grain yield. (iv) (a) 1950–1954. (b) and (c) No. (v) (a) Kunraghat, Kalyanpur, Muzaffarnagar, Meerut, Bharari, Aṭarra and Lucknow. (b) N.A. (vi) Nil. (vii) Experiment conducted by C.P.

## 5. RESULTS :

- (i) 1204 lb./ac.
- (ii) (a) 369.6 lb./ac.
- (b) 245.1 lb./ac.
- (iii) Only main effect of I is highly significant.



(iv) Av. yield of grain in lb./ac.

	$N_0T_0$	$N_1T_1$	$N_2T_1$	$N_1T_2$	$N_2T_2$	Mean
$I_0$	475	599	623	387	599	527
$I_1$	1183	1241	1687	1580	1506	1439
$I_2$	1273	1416	1432	1236	1262	1324
$I_3$	1443	1443	1644	1533	1517	1516
Mean	1094	1175	1346	1184	1221	1204

S.E. of difference of two

1. marginal means of I = 135.0 lb./ac.
2. marginal means of NT = 100.1 lb./ac.
3. NT means at the same level of I = 200.1 lb./ac.
4. I means at the same level of NT = 224.2 lb./ac.

Crop :- Wheat (*Rabi*).

Ref :- U.P. 51(72).

Site :- Govt. Agri. Farm, Etawah.

Type :- 'IM'.

Object :—To study the effect of application of N to Wheat at different levels and at different times in combination with different levels of irrigation.

**1. BASAL CONDITIONS :**

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) (a) Loam. (b) N.A. (iii) Last week of October, sowing was delayed. (iv) (a) N.A. (b) Sown by seed drill. (c) 40-50 srs./ac. (d) and (e) N.A. (v) Nil. (vi) Pb.591 (medium late). (vii) Irrigated. (viii) N.A. (ix) 1.10°. (x) N.A.

**2. TREATMENTS :**

Main-plot treatments :

4 levels of irrigation :  $I_0$  = No irrigation,  $I_1$  = Irrigation 3 weeks after germination (at tillering stage),  $I_2$  =  $I_1$  + Irrigation 9 weeks after germination (at flowering stage) and  $I_3$  =  $I_2$  + Irrigation 12 weeks after germination (at milky stage).

Sub-plot treatments :

All combinations of (1) and (2) + a control ( $N_0T_0$  = no manure)(1) 2 levels of N as A/S :  $N_1$  = 30 lb./ac. and  $N_2$  = 60 lb./ac.(2) 2 times of application of N :  $T_1$  = All at sowing and  $T_2$  = half at sowing and half at first irrigation.**3. DESIGN :**

(i) Split-plot. (ii) (a) 4 main-plots/replication and 5 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) Main-plot size : 20' × 175' and sub-plot : 20' × 35'. (b) 17' × 32'. (v) Sub-plot border : 1½' around, field border 3' around. Irrigation channel 3', sown space left between main-plots : 4½' also to be used as irrigation channel. (vi) Yes.

**4. GENERAL :**

(i) Good. (ii) No. (iii) Grain yield. (iv) (a) 1950—1954. (b), (c) No. (v) (a) Kalyanpur, Faizabad, Muzaffarnagar, Meerut, Atarra, Kunraghat, Hawalbagh and Lucknow. (b) N.A. (vi) Nil. (vii) Experiment conducted by C.P.

**5. RESULTS :**

- (i) 725 lb./ac.
- (ii) (a) 433.7 lb./ac.  
(b) 270.6 lb./ac.
- (iii) Only main effect of I is highly significant.

(iv) Av. yield of grain in lb./ac.

	$N_0T_0$	$N_1T_1$	$N_2T_1$	$N_1T_2$	$N_2T_2$	Mean
$I_0$	206	291	113	386	365	272
$I_1$	458	664	705	517	486	566
$I_2$	978	1112	942	1194	998	1045
$I_3$	911	1132	932	926	1189	1018
Mean	638	800	673	756	760	725

S.E. of the difference of two

1. marginal means of I = 137.1 lb./ac.
2. marginal means of NT = 95.7 lb./ac.
3. NT means at the same level of I = 191.4 lb./ac.
4. I means at the same level of NT = 219.3 lb./ac.

Crop :- Wheat (*Rabi*).

Ref :- U.P. 52(132).

Site :- Govt. Agri. Farm, Etawah.

Type :- 'IM'.

Object :- To study the effect of application of N to Wheat at different levels and at different times in combination with different levels of irrigation.

## 1. BASAL CONDITIONS:

(i) (a) *Chari*-Wheat. (b) *Chari*. (c) Nil. (ii) (a) loam. (b) N.A. (iii) 11.11.1952. (iv) (a) 3 ploughings with wats plough, 2 ploughings with cultivator, 2 ploughings with *desi* plough. (b) N.A. (c) 40 to 50 srs./ac. (d), (e) N.A. (v) Nil. (vi) Pb-591 (late). (vii) Irrigated. (viii) N.A. (ix) N.A. (x) 13.4.1953.

## 2. TREATMENTS:

Main-plot treatments:

4 levels of irrigation:  $I_0$ =No irrigation,  $I_1$ =Irrigation 3 weeks after germination (at tillering stage),  $I_2$ = $I_1$ +Irrigation 9 weeks after germination (at flowering stage) and  $I_3$ = $I_2$ +Irrigation 12 weeks after germination (at milky stage).

Sub-plot treatments:

All combinations of (1) and (2)+a control ( $N_0T_0$ =no manure)(1) 2 levels of N as A/S:  $N_1$ =30 lb./ac. of N and  $N_2$ =60 lb./ac. of N.(2) 2 times of application of N:  $T_1$ =All at sowing and  $T_2$ =half at sowing and half at first irrigation.

## 3. DESIGN:

(i) Split-plot. (ii) (a) 4 main-plots/replication and 5 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) Main-plot: 30' x 175' and sub-plot: 20' x 35'. (b) 17' x 32'. (v) Sub-plot border 1½' around; distance between main-plots is 4½'. (vi) Yes.

## 4. GENERAL:

(i) Good. (ii) Nil. (iii) Grain and straw yield. (iv) (a) 1950—1954. (b), (c) No. (v) (a) Kalyanpur, Meerut, Atarra, Bharari, Faizabad, Muzaffarnagar and Kunraghat. (b) N.A. (vi) Nil. (vii) Experiment conducted by C.P.(R).

## 5. RESULTS

- (i) 232 lb./ac.
- (ii) (a) 271.6 lb./ac.  
(b) 210.8 lb./ac.
- (iii) Main effect of I and the control vs. treated effect are both highly significant. Others are not significant.

(iv) Av. yield of grain in lb./ac.

	$N_0T_0$	$N_1T_1$	$N_2T_1$	$N_1T_2$	$N_2T_2$	Mean
$I_0$	278	358	355	340	463	359
$I_1$	1158	1292	1426	1356	1508	1348
$I_2$	1313	1611	1670	1647	1477	1544
$I_3$	1439	1730	1529	1853	1838	1678
Mean	1047	1248	1245	1299	1322	1232

S.E. of difference of two

1. marginal means of I = 85.9 lb./ac.
2. marginal means of NT = 74.5 lb./ac.
3. NT means at the same level of I = 149.0 lb./ac.
4. I means at the same level of NT = 158.6 lb./ac.

Crop :-Wheat (*Rabi*).

Ref :-U.P. 53(113).

Site :-Govt. Agri. Farm, Etawah.

Type :- 'IM'.

Object :—To study the effect of application of N to Wheat at different levels and at different times in combination with different levels of irrigation.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) N.A. (c) N.A. (ii) (a) Loam. (b) N.A. (iii) 3.11.1953. (iv) (a) Ploughing and harrowing with watts plough, cultivator and *desi* plough on 13.7.1953, 6.8.1953, 19.8.1953, 5.9.1953, 19.9.1953, 26.9.1953 and 21.10.1953. (b) Sown by improved seed drill. (c) 40-50 srs./ac. (d) and (e) N.A. (v) Nil. (vi) Pb. 591 (late). (vii) Irrigated. (viii) Nil. (ix) N.A. (x) 25.4.1954.

## 2. TREATMENTS :

Main plot treatments :

4 levels of irrigation :  $I_0$ =No Irrigation,  $I_1$ =Irrigation 3 weeks after germination (at tillering stage),  $I_2$ = $I_1$ +Irrigation 9 weeks after germination (at flowering stage) and  $I_3$ = $I_2$ +Irrigation 12 weeks after germination (at milky stage).

Sub-plot treatments :

All combinations of (1) and (2) + a control ( $N_0T_0$ =no manure)(1) 2 levels of N as A/S :  $N_1$ =30 lb./ac. of N and  $N_2$ =60 lb./ac. of N.(2) 2 times of application of N :  $T_1$ =All at sowing and  $T_2$ = half at sowing and half at first irrigation.

## 3. DESIGN :

(i) Split-plot. (ii) (a) 4 main plots/replication and 5 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) Main-plot : 20'×75', : sub-plot : 20'×35'. (b) 17'×32'. (v) Sub-plot border 1.5' and field border 3' around. Sown space left between main-plots to serve as irrigation channel 4.5' (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Nil. (iii) Grain and straw yield. (iv) (a) 1950—1954. (b) and (c) No. (v) (a) Faizabad, Kunraghat, Kalyanpur, Atarra, Bharari, Meerut and Muzaffarnagar. (b) N.A. (vi) Nil. (vii) Experiment conducted by C.P. (R).

## 5. RESULTS :

- (i) 1297 lb./ac.
- (ii) (a) 319.5 lb./ac.
- (b) 356.8 lb./ac.
- (iii) Main effect of I is highly significant and the interaction  $I \times$  'control vs. treated' is significant.

(iv) Av. yield of grain in lb./ac.

	N <sub>0</sub> T <sub>0</sub>	N <sub>1</sub> T <sub>1</sub>	N <sub>2</sub> T <sub>1</sub>	N <sub>1</sub> T <sub>2</sub>	N <sub>2</sub> T <sub>2</sub>	Mean
I <sub>0</sub>	770	981	934	746	546	795
I <sub>1</sub>	1130	1367	1488	1508	1611	1421
I <sub>2</sub>	2054	1529	1359	1552	1513	1601
I <sub>3</sub>	1421	1302	1320	1400	1418	1372
Mean	1344	1295	1275	1301	1272	1297

## S.E. of difference of two

1. marginal means of I = 101.0 lb./ac.
2. marginal means of NT = 126.1 lb./ac.
3. NT means at the same level of I = 252.3 lb./ac.
4. I means at the same level of NT = 247.2 lb./ac.

Crop :- Wheat (*Rabi*).

Ref :- U.P. 50(84).

Site :- Govt. Agri. Farm, Etawah.

Type :- 'IM'.

Object :—To study the effect of different forms and levels of N in combination with levels of irrigation on Wheat.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Green manure. (c) Nil. (ii) (a) Clayey loam. (b) N.A. (iii) 1.11.1950. (iv) (a) Ploughings on 24.6.1950, 9.9.1950, 20.9.1950, 28.9.1950, 7.10.1950 and 30.10.1950. (b) Sown by seed drill. (c) 50 srs./ac. (d) and (e) N.A. (v) Nil. (vi) Pb. 591 (mid late). (vii) Irrigated. (viii) Harrowing on 15.12.1950 (ix) N.A. (x) 23,24.4.1951.

## 2. TREATMENTS :

## Main-plot treatments :

4 levels of irrigation : I<sub>0</sub> = No irrigation, I<sub>1</sub> = Irrigation 3 weeks after germination (at tillering), I<sub>2</sub> = I<sub>1</sub> + Irrigation 9 weeks after germination (at flowering) and I<sub>3</sub> = I<sub>2</sub> + Irrigation 12 weeks after germination (at milky stage).

## Sub-plot treatments :

3 applications of N : N<sub>0</sub> = No manure, N<sub>1</sub> = 60 lb./ac. of N as A/S and N<sub>2</sub> = 60 lb./ac. of N as castor cake.

## 3. DESIGN :

(i) Split-plot. (ii) (a) 4 main-plots/replication and 3 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) Main-plot 60' × 40'; sub-plot 20' × 40'. (b) 17' × 37'. (v) Sub-plot border = 1½' around. Field border = 2' around. Sown space left between main-plots = 5', sown space left between blocks = 8'—also to be used as irrigation channel. (vi) Yes.

## 4. GENERAL :

(i) Satisfactory. (ii) After germination, crop was attacked by *kata* which disappeared after 1st irrigation. (iii) Grain yield. (iv) (a) 1950-1954. (b) and (c) No. (v) (a) Kunraghat, Banaras, Kalyanpur, Kalai, Muzaffarnagar, Meerut, Bharari, Atarra and Lucknow. (vi) Nil. (vii) Expt. was conducted by C.P.

## 5. RESULTS :

- (i) 1526 lb./ac.
- (ii) (a) 150.7 lb./ac.
- (b) 210.1 lb./ac.
- (iii) Main effects of I and levels of N are highly significant. Others are not significant.

(iv) Av. yield of grain in lb./ac.

	N <sub>0</sub>	N <sub>1</sub>	N <sub>2</sub>	Mean
I <sub>0</sub>	778	908	1033	906
I <sub>1</sub>	1597	1585	1680	1621
I <sub>2</sub>	1520	2131	1840	1830
I <sub>3</sub>	1520	1929	1787	1745
Mean	1354	1638	1585	1526

S.E. of difference of two.

1. marginal means of I = 71.1 lb./ac.
2. marginal means of N = 85.8 lb./ac.
3. N means at the same level of I = 171.5 lb./ac.
4. I means at the same level of N = 157.1 lb./ac.

Crop :-Wheat (*Rabi*).

Ref :-U.P. 51(63).

Site :-Govt. Agri. Farm, Etawah.

Type :-'IM'.

Object :-To study the effect of different forms and levels of N in combination with levels of irrigation on Wheat.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) (a) Clay loam. (b) N.A. (iii) 17.11.1951. (iv) (a) N.A. (b) Sown by seed drill. (c) 40-50 seers/ac. (d) and (e) N.A. (v) Nil. (vi) Pb. 591 (mid-late). (vii) Irrigated. (viii) N.A. (ix) 1.10". (x) N.A.

## 2. TREATMENTS :

Main-plot treatments :

4 levels of irrigation : I<sub>0</sub>=No irrigation, I<sub>1</sub>=Irrigation 3 weeks after germination (at tillering), I<sub>2</sub>=I<sub>1</sub>+Irrigation 9 weeks after germination (at flowering, and I<sub>3</sub>=I<sub>2</sub>+Irrigation 12 weeks after germination (at milky stage).

Sub-plot treatments :

3 applications of N : N<sub>0</sub>=No manure, N<sub>1</sub>=60 lb./ac. of N as A/S and N<sub>2</sub>=60 lb./ac. of N as Castor cake.

## 3. DESIGN :

(i) Split-plot. (ii) (a) 4 main-plots/replication and 3 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) Main-plot : 60'×40' and Sub-plot : 20'×40'. (b) 17'×37'. (v) Sub-plot border=1½' around. Field border=2½' around. Sown space left between blocks=5' also used as irrigation channel. Sown space left between main-plots=5'. (vi) Yes.

## 4. GENERAL :

(i) Percentage of germination was poor (70%) general stand was good ; no lodging. (ii) Nil. (iii) Grain yield. (iv) (a) 1950-1954. (b) and (c) No. (v) (a) Bararas, Faizabad, Kupraghat, Kalyanpur Atarra, Bharari, Kalai, Meerut, Muzaffarnagar, Hawalbagh and Lucknow. (b) N.A. (vi) Nil. (vii) Experiment conducted by C.P.

## 5. RESULTS :

- (i) 726 lb./ac.
- (ii) (a) 308.3 lb./ac.
- (b) 196.7 lb./ac.
- (iii) Main effect of I is highly significant and forms of N effect is significant. Other effect are not significant.

(v) Av. yield of grain in lb./ac.

	N <sub>0</sub>	N <sub>1</sub>	N <sub>2</sub>	Mean
I <sub>0</sub>	185	321	401	302
I <sub>1</sub>	739	654	913	768
I <sub>2</sub>	908	935	1011	951
I <sub>3</sub>	872	801	966	880
Mean	676	678	823	726

S.E. of difference of two

1. marginal means of I = 125.9 lb./ac.
2. marginal means of N = 69.5 lb./ac.
3. N means at the same level of I = 139.1 lb./ac.
4. I means at the same level of N = 169.5 lb./ac.

Crop :-Wheat (*Rabi*).

Ref :-U.P. 52(133).

Site :-Govt. Agri. Farm, Etawah.

Type :-'IM'.

Object :-To study the effect of different forms and levels of N in combination with levels of irrigation on Wheat.

## 1. BASAL CONDITIONS :

(i) (a) *Chari*—Wheat. (b) *Chari*. (c) Nil. (ii) (a) Loam. (b) N.A. (iii) 11.11.1952. (iv) (a) 3 ploughings with *Watts* plough, two ploughings with cultivator and 2 with *dest* plough. (b) N.A. (c) 40 to 50 seers/ac. (d) and (e) N.A. (v) Nil. (vi) Pb. 591 (medium late). (vii) Irrigated. (viii) N.A. (ix) N.A. (x) 14.4.1953.

## 2. TREATMENTS :

Main-plot treatments :

4 levels of irrigation : I<sub>0</sub>=No irrigation, I<sub>1</sub>=Irrigation 3 weeks after germination (at tillering), I<sub>2</sub>=I<sub>1</sub>+Irrigation 9 weeks after germination (at flowering) and I<sub>3</sub>=I<sub>2</sub>+Irrigation 12 weeks after germination (at milky stage).

Sub-plot treatments :

3 of N : N<sub>0</sub>=No manure, N<sub>1</sub>=60 lb./ac. of N as A/S and N<sub>2</sub>=60 lb./ac. of N as Castor cake.

## 3. DESIGN :

(i) Split-plot. (ii) (a) 4 main-plots/replication and 3 sub-plots/main-plot. (b) N.A. (iii) 4, (iv) (a) Main-plot: 60'×40' and sub-plot: 20'×40'. (b) 17'×37'. (v) Sub-plot border=1½' around. Field border=2½' around. Between main-plots=5'. Between blocks=5'. (vi) Yes.

## 4. GENERAL :

(i) Satisfactory. (ii) Nil. (iii) Grain and straw yield. (iv) (a) 1950—1951. (b) and (c) No. (v) (a) Banaras, Faizabad, Kalyanpur, Meerut, Kalai, Atarra, Hawalbagh, Kunraghat and Muzaffarnagar. (b) N.A. (vi) Nil. (vii) Experiment conducted by C.P. (R).

## 5. RESULTS :

- (i) 954 lb./ac.
- (ii) (a) 285.3 lb./ac.
- (b) 266.0 lb./ac.
- (iii) Only main effect of I is significant.

(iv) Av. yield of grain in lb./ac.

	N <sub>0</sub>	N <sub>1</sub>	N <sub>2</sub>	Mean
I <sub>0</sub>	490	341	414	415
I <sub>1</sub>	1077	1135	1064	109
I <sub>2</sub>	1260	1122	1313	1232
I <sub>3</sub>	1106	1008	1113	1076
Mean	983	902	976	954

## S.E. of difference of two

1. marginal means of I = 116.5 lb./ac.
2. marginal means of N = 94.0 lb./ac.
3. N means at the same level of I = 188.1 lb./ac.
4. I means at the same level of N = 192.7 lb./ac.

Crop :- Wheat (*Rabi*).

Ref :- U.P. 53(107).

Site :- Govt. Agri. Farm, Etawah.

Type :- 'IM'.

Object :—To study the effect of different forms and levels of N in combination with levels of irrigation on Wheat.

## 1. BASAL CONDITIONS :

(i) (a) G.M. (b) G.M. (c) Nil. (ii) (a) Loam. (b) N.A. (iii) 30.10.1953. (iv) (a) Ploughing and harrowing on 13.7.1953, 6.8.1953, 19.8.1953, 5.9.1953, 19.9.1953, 26.9.1953, 5.10.1953, 21.10.1953, 30.10.1953 with *Watt's* and *desi* plough (b) Sown by improved seed drill. (c) 40-50 srs/ac. (d) N.A. (e) N.A. (v) Nil. (vi) Pb. 591. (vii) Irrigated. (viii) Nil. (ix) N.A. (x) 23.4.1954.

## 2. TREATMENTS :

## Main-plot treatments :

4 levels of irrigation : I<sub>0</sub>=No irrigation, I<sub>1</sub>=Irrigation 3 weeks after germination (at tillering), I<sub>2</sub>=I<sub>1</sub>+irrigation 9 weeks after germination (at flowering), I<sub>3</sub>=I<sub>2</sub>+irrigation 12 weeks after germination (at milky stage).

## Sub-plot treatments :

3 combinations of forms and levels of N : N<sub>0</sub>=No manure, N<sub>1</sub>=60 lb./ac. of N as A/S and N<sub>2</sub>=60 lb./ac. of N as castor cake.

## 3. DESIGN :

(i) Split-plot. (ii) (a) 4 main-plots/replication and 3 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) Main-plot : 40' × 60', sub-plot : 20' × 40'. (b) 17' × 37'. (v) Sub-plot border 1.5' and field border 2.5' around. Sowing space left between main-plots 5' and between blocks is 5' which serves as irrigation channel also. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Effected by rust. (iii) Grain and straw yield. (iv) (a) 1950-1954. (b) No. (c) No. (v) (a) Varanasi, Faizabad, Kunraghat, Kalvanpur, Atarra, Bharari, Meerut, Muzaffarnagar and Kalai. (b) N.A. (vi) Nil. (vii) Experiment conducted by C.P. (R).

## 5. RESULTS :

- (i) 1235 lb./ac.
- (ii) (a) 453.0 lb./ac.
- (b) 270.2 lb./ac.
- (iii) Main effect of I is highly significant and forms of N effect is significant.

(iv) Av. yield of grain in lb./ac.

	N <sub>0</sub>	N <sub>1</sub>	N <sub>2</sub>	Mean
I <sub>0</sub>	637	579	623	613
I <sub>1</sub>	1264	1652	1002	1306
I <sub>2</sub>	1567	1638	1531	1579
I <sub>3</sub>	1349	1536	1442	1442
Mean	1204	1351	1150	1235

## S.E. of difference of two

1. marginal means of I = 184.9 lb./ac.
2. marginal means of N = 95.5 lb./ac.
3. N means at the same level of I = 191.0 lb./ac.
4. I means at the same level of N = 241.9 lb./ac.

Crop :- Wheat (*Rabi*).

Ref :- U.P. 51(57).

Site :- Govt. Agri. Farm, Faizabad.

Type :- 'IM'.

Object :- To study the effect of application of N to Wheat at different levels and at different times in combination with different levels of irrigation.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) G.M. (c) Nil. (ii) (a) Clay loam. (b) N.A. (iii) 4.11.1951. (iv) (a) 10 ploughings. (b) Sown by seed drill. (c) 40-50 srs/ac. (d) N.A. (e) N.A. (v) Nil. (vi) N.P.52 (medium). (vii) Irrigated. (viii) N.A. (ix) 2.31". (x) N.A.

## 2. TREATMENTS :

## Main-plot treatments :

4 levels of irrigation : I<sub>0</sub>=No irrigation, I<sub>1</sub>=Irrigation 3 weeks after germination (at tillering), I<sub>2</sub>=I<sub>1</sub>+irrigation 9 weeks after germination (at flowering) and I<sub>3</sub>=I<sub>2</sub>+irrigation 12 weeks after germination (at milky stage).

## Sub-plot treatments :

All combinations of (1) and (2)+a control (N<sub>0</sub>T<sub>0</sub>=no manure).

(1) 2 levels of N as A/S : N<sub>1</sub>=30 and N<sub>2</sub>=60 lb./ac. of N.

(2) 2 times of application : T<sub>1</sub>=Full at sowing and T<sub>2</sub>=half at sowing and half at 1st irrigation.

I<sub>1</sub> given on 28.12.1951. I<sub>2</sub> given on 13.2.1952. I<sub>3</sub> could not be given due to western winds which ripened the plants. Hence I<sub>3</sub> is identical to I<sub>2</sub>.

## 3. DESIGN :

(i) Split-plot. (ii) (a) 4 main-plots/replication and 5 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) Main-plot 18'×225', sub-plot 18'×45'. (b) 15'×42'. (v) Sub-plot border 1½' around ; field border 5' around. Irrigation channel 3' ; sown space left between main-plots 4' also to be used as irrigation channel. (vi) Yes.

## 4. GENERAL :

(i) Good No lodging. (ii) Slight attack of rust in some plots. (iii) Grain yield. (iv) (a) 1951-1953. (b) No. (c) No. (v) (a) Hawalbagh, Etawah, Muzaffarnagar, Meerut, Bharari, Atarra, Kunraghat, Lucknow and Kalyanpur. (b) N.A. (vi) Considerable damage has been done due to rats in most of the plots. (vii) Experiment conducted by C.P.

## 5. RESULTS :

(i) 595.6 lb./ac.

(ii) (a) 133.8 lb./ac.

(b) 119.8 lb./ac.

(iii) Main effect of N doses [and control vs treated are both highly significant. None of the other effects is significant.



(iv) Av. yield of grain in lb./ac.

	$N_0T_0$	$N_1T_1$	$N_2T_1$	$N_1T_2$	$N_2T_2$	Mean
$I_0$	297.8	726.7	544.5	733.4	617.8	584.0
$I_1$	366.7	677.8	615.6	677.8	655.6	598.7
$I_2$	445.6	725.6	574.5	643.4	610.0	599.8
Mean	388.9	713.9	577.3	674.5	623.4	595.6

S.E. of difference of

1.  $I_0$  and  $I_1$  marginal means =42.3 lb./ac.
2.  $I_0$  and  $I_2$  or  $I_1$  and  $I_2$  marginal means =36.6 lb./ac.
3. two marginal means of NT =42.4 lb./ac.
4. two NT means at the same level of  $I_0$  or  $I_1$  =84.7 lb./ac.
5. two NT means at the same level of  $I_2$  =59.9 lb./ac.
6.  $I_0$  and  $I_1$  means at the same level of NT =86.8 lb./ac.
7.  $I_0$  and  $I_2$  or  $I_1$  and  $I_2$  means at the same level of NT =75.1 lb./ac.

Crop :-Wheat (Rabi).

Ref :-U.P. 52(13).

Site :-Govt. Agri. Farm, Faizabad.

Type :-'IM'.

Object :-To study the effect of application of N to Wheat at different levels and at different times in combination with different levels of irrigation.

## 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Loam. (b) N.A. (iii) 12.11.1952. (iv) (a) Ploughings by *pariza* and *desi* plough on 6, 29.9.1952, 9, 14.10.1952 and 9, 11.11.1952, *Shur* plough on 14.10.1952 and 10.11.1952. (b) N.A. (c) 17 chk./plot. (d) and (e) N.A. (v) N.A. (vi) N.P. 52 (medium). (vii) Irrigated. (viii) N.A. (ix) N.A. (x) 22.4.1953.

## 2. TREATMENTS :

Main-plot treatments :

4 levels of irrigation :  $I_0$ =No irrigation,  $I_1$ =Irrigation 3 weeks after germination (at tillering stage),  $I_2=I_1$ +irrigation 9 weeks after germination (at flowering stage) and  $I_3=I_2$ +irrigation 12 weeks after germination (at milky stage).

Sub-plot treatments :

All combinations of (1) and (2)+a control ( $N_0T_0$ =no manure).(1) 2 levels of N as A/S :  $N_1$ =30 lb./ac. of N and  $N_2$ =60 lb./ac. of N.(2) 2 times of application :  $T_1$ =Full at sowing and  $T_2$ =Half at sowing and half at first irrigation.

## 3. DESIGN :

(i) Split-plot. (ii) (a) 4 main-plots/replication ; 5 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) Main-plot : 15' x 240' ; sub-plot : 15' x 48'. (b) 12' x 45' (v) Sub-plot border 1½', field border 3' around, distance between main-plots 4', distance between blocks 4'. (vi) Yes.

## 4. GENERAL :

(i) Satisfactory. (2) Attack of rust—yellow, black and orange.. (iii) Grain and straw yield. (iv) (a) 1951—1953. (b), (c) No. (v) (a) Etawah, Kalyanpur, Meerut, Atarra, Bharari, Muzaffarnagar and Kunraghat. (b) N.A. (vi) Nil. (vii) Experiment conducted by C.P.(R).

## 5. RESULTS :

(i) 717 lb./ac.

(ii) (a) 180.1 lb./ac.

(b) 133.0 lb./ac.

(iii) Main effect of N and control vs treated are both highly significant. Time of application and interaction  $I \times N \times T$  are both significant. Others are not significant.

(iv) Av. yield of grain in lb./ac.

	$N_0T_0$	$N_1T_1$	$N_2T_1$	$N_1T_2$	$N_2T_2$	Mean
$I_0$	436	672	856	664	913	708
$I_1$	404	710	1032	700	706	710
$I_2$	534	842	846	706	892	764
$I_3$	566	861	737	607	664	687
Mean	485	771	868	669	794	717

S.E. of the difference of two

1. marginal means of I = 57.0 lb./ac.
2. marginal means of NT = 47.0 lb./ac.
3. NT means at the same level of I = 94.1 lb./ac.
4. I means at the same level of NT = 101.6 lb./ac.

Crop :-Wheat (*Rabi*).

Ref :-U.P. 53(62).

Site :-Govt. Agri. Farm, Faizabad.

Type :-'IM'.

Object :-To study the effect of application of N to Wheat at different levels and at different times in combination with different levels of irrigation.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) (a) Clay loam. (b) N.A. (iii) 14.11.1953. (iv) (a) Ploughing with *prija* plough, cultivator and *desi* plough. (b) Sown by seed drill. (c) 40-50 ars./ac. (d), (e) N.A. (v) N.A. (vi) N.P. 52 (medium). (vii) Irrigated. (viii) Weeding and hoeing at the proper time are common in practice. (ix) N.A. (x) 23.4.1954.

## 2. TREATMENTS :

Main-plot treatments :

4 levels of irrigation :  $I_0$ =No irrigation,  $I_1$ =Irrigation 3 weeks after germination (at tillering stage),  $I_2$ = $I_1$ +irrigation 9 weeks after germination (at flowering stage) and  $I_3$ = $I_2$ +irrigation 12 weeks after germination (at milky stage).

Sub-plot treatments :

All combination of (1) and (2)+a control ( $N_0T_0$ =no manure).(1) 2 levels of N as A/S :  $N_1$ =30 lb./ac. of N and  $N_2$ =60 lb./ac. of N.(2) 2 times of application :  $T_1$ =Full at sowing and  $T_2$ =Half at sowing and half at first irrigation.

## 3. DESIGN:

(i) Split-plot. (ii) (a) 4 main-plots/replication and 5 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) Main-plot : 15' x 220' ; sub-plot 15' x 48'. (b) 12' x 45'. (v) Plot border 1.5' and field border 4' around. Sown space left between main plots 4' also to serve as irrigation channel. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) 15-20 % attacked by rust. (iii) Grain and straw yield. (iv) (a) 1951-1953. (b), (c) No. (v) (a) Etawah, Kalyanpur, Atarra, Bharari, Meerut, Kunraghat and Muzaffarnagar. (b) N.A. (vi) Due to constant heavy rains, plots could not be prepared properly. (vii) Experiment conducted by C.P.(R).

## 5. RESULTS :

(i) 581 lb./ac.

(ii) (a) 140.0 lb./ac.

(b) 91.8 lb./ac.

(iii) Control vs. treated,  $I \times N$ ,  $I \times T$  and  $I \times$  control vs. treated are all highly significant. [Interaction  $I \times N \times T$  is significant.

(iv) Av. yield of grain in lb./ac.

	$N_0T_0$	$N_1T_1$	$N_2T_1$	$N_1T_2$	$N_2T_2$	Mean
$I_0$	254	643	820	627	708	610
$I_1$	690	700	399	721	648	632
$I_2$	396	560	747	554	612	574
$I_3$	379	477	526	588	576	509
Mean	430	595	623	622	636	581

S.E. of the difference of two

1. marginal means of I = 44.3 lb./ac.
2. marginal means of NT = 32.5 lb./ac.
3. NT means at the same level of I = 64.9 lb./ac.
4. I means at the same level of NT = 73.0 lb./ac.

Crop :- Wheat (*Rabi*).

Site :- Govt. Agri. Farm, Faizabad.

Ref :- U.P. 51(64).

Type :- 'IM'.

Object :- To study the effect of different forms and levels of N in combination with levels of irrigation on Wheat.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Green manure. (c) Nil. (ii) (a) Clay loam. (b) N.A. (iii) 27.11.1951. (iv) (a) 6 ploughings by *desi* plough and 4 ploughings by *pariza* plough. (b) Sown by seed, drill. (c) 50 srs./ac. (d) and (e) N.A. (v) Nil. (vi) N.P.52 (medium). (vii) Irrigated. (viii) N.A. (ix) 2.31°. (x) N.A.

## TREATMENTS :

Main-plot treatments :

4 levels of irrigation :  $I_0$  = No irrigation,  $I_1$  = Irrigation 3 weeks after germination (at tillering),  $I_2 = I_1 +$  irrigation 9 weeks after germination (at flowering) and  $I_3 = I_2 +$  irrigation 12 weeks after germination (at milky stage).

Sub-plot treatments :

3 combinations of forms and levels of N :  $N_0$  = No manure,  $N_1 = 60$  lb./ac. of N as A/S and  $N_2 = 60$  lb./ac. of N as castor cake.

$I_1$  given on 27.12.1951,  $I_2$  given on 12.2.1952 and  $I_3$  not given due to western winds which ripened the plants after 2nd irrigation. Hence  $I_3$  is identical to  $I_2$ .

## 3. DESIGN :

(i) Split-plot. (ii) (a) 4 main-plots/replication and 3 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) Main-plot : 57' x 41' and sub-plot 22' x 44'. (b) 19' x 41'. (v) Sub-plot border = 1½' around, field border = 3' around. Sown space left between main-plots = 5', sown space left between blocks = 10' also to be used as irrigation channel. (vi) Yes.

## 4. GENERAL :

(i) Poor due to late sowing. No lodging except in one plot receiving A/S. (ii) There was slight attack of rust in some of the plots. (iii) Grain yield. (iv) (a) 1951-1953. (b) and (c) No. (v) (a) Varanasi, Kunraghat, Kalyanpur, Bharari, Etawah, Kalai, Meerut, Muzaffarnagar, Hawalbagh and Lucknow (b) N.A. (vi) Damage done by rats in most of the plots. (vii) Experiment conducted by C.P.

## 5. RESULTS :

- (i) 612.6 lb./ac.
- (ii) (a) 141.7 lb./ac.
- (b) 128.6 lb./ac.

i. Only main effect of I is highly significant.

(iv) Av. yield of grain in lb./ac.

	N <sub>0</sub>	N <sub>1</sub>	N <sub>2</sub>	Mean
I <sub>0</sub>	311.0	327.1	355.9	331.3
I <sub>1</sub>	701.0	524.8	684.8	636.9
I <sub>2</sub>	816.9	671.3	735.1	741.1
Mean	616.4	548.6	627.7	612.6

## S.E. of difference of

1. I<sub>0</sub> and I<sub>1</sub> marginal means = 57.8 lb./ac.
2. I<sub>0</sub> and I<sub>2</sub> or I<sub>1</sub> and I<sub>2</sub> marginal means = 50.1 lb./ac.
3. two N marginal means = 45.5 lb./ac.
4. two N means at the same level of either I<sub>0</sub> or I<sub>1</sub> = 90.9 lb./ac.
5. two N means at the same level of I<sub>2</sub> = 64.3 lb./ac.
6. I<sub>0</sub> and I<sub>1</sub> means at the same level of N = 94.1 lb./ac.
7. I<sub>0</sub> and I<sub>2</sub> or I<sub>1</sub> and I<sub>2</sub> means at the same level of N = 81.5 lb./ac.

Crop :- Wheat (*Rabi*).

Ref :- U.P. 52(136).

Site :- Govt. Agri. Farm, Faizabad.

Type :- 'IM'.

Object :—To study the effect of different forms and levels of N in combination with levels of irrigation on Wheat.

## 1. BASAL CONDITIONS :

(i) (a) *Chari*—Wheat. (b) *Chari*. (c) N.A. (ii) (a) Loam. (b) N.A. (iii) 15.11.1952. (iv) (a) Ploughing by *Pariza* on 6, 11.11.1952. Ploughings by *dest* plough on 4, 9, 14.10.1952 and 7, 14, 10.11.1952. (r) N.A. (c) 40 to 50 srs./ac. (d) and (e) N.A. (v) N.A. (vi) N.P.52 (medium-early). (vii) Irrigated. (viii) N.A. (ix) N.A. (x) 21.4.1953.

## 2. TREATMENTS :

## Main-plot treatments :

4 levels of irrigation : I<sub>0</sub>=No irrigation, I<sub>1</sub>=Irrigation 3 weeks after germination (at tillering), I<sub>2</sub>=I<sub>1</sub>+irrigation 9 weeks after germination (at flowering) and I<sub>3</sub>=I<sub>2</sub>+irrigation 12 weeks after germination (at milky stage).

## Sub-plot treatments :

3 combinations of forms and levels of N : N<sub>0</sub>=No manure, N<sub>1</sub>=60 lb./ac. of N as A/S and N<sub>2</sub>=60 lb./ac. of N as castor cake.

## 3. DESIGN :

(i) Split-plot. (ii) (a) 4 main-plots/replication and 3 sub-plots/main-plot. (iii) 4. (iv) (a) Main-plot : 57'×41' sub-plot : 22'×44'. (b) 19'×41'. (v) Sub-plot border=1½' around, field border=3', distance between main-plots=5' and distance between blocks=10'. (vi) Yes.

## 4. GENERAL :

(i) Poor. (ii) Attack of rust yellow, black and orange. (iii) Grain and straw yield. (iv) (a) 1951—1953. (b) and (c) No. (v) (a) Varanasi, Etawah, Kalyanpur, Meerut, Kalai, Atarra, Hawalbagh, Bharari, Kunraghat and Muzaffarnagar. (b) N.A. (vi) Nil. (vii) Experiment conducted by C.P. (R).

## 5. RESULTS :

- (i) 537.7 lb./ac.
- (ii) (a) 169.0 lb./ac.
- (b) 115.7 lb./ac.
- (iii) Only main effect of N is highly significant.

(iv) Av. yield of grain in lb./ac.

	N <sub>0</sub>	N <sub>1</sub>	N <sub>2</sub>	Mean
I <sub>0</sub>	413.4	643.5	683.0	580.0
I <sub>1</sub>	298.4	647.1	593.2	512.9
I <sub>2</sub>	305.6	697.4	571.6	524.9
I <sub>3</sub>	258.8	643.5	697.4	533.2
Mean	319.0	657.9	636.3	537.7

S.E. of difference of two

1. I marginal means =69.0 lb./ac.
2. N marginal means =40.9 lb./ac.
3. N means at the same level of I =81.8 lb./ac.
4. I means at the same level of N =96.0 lb./ac.

Crop :- Wheat (*Rabi*).

Ref :- U.P. 53(60).

Site :- Govt. Agri. Farm, Faizabad.

Type :- 'IM'.

Object :- To study the effect of different forms and levels of N in combination with levels of irrigation on Wheat.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Moong-Lobia*. (c) Nil. (ii) (a) Clay loam. (b) N.A. (iii) 14.11.1953. (iv) (a) Ploughing and harrowing 8-10 times. (b) Sown by seed drill. (c) 40-50 srs/ac. (d) and (e) N.A. (v) N.A. (vi) N.P. 52 (medium). (vii) Irrigated. (viii) Weeding and hoeing at the proper time are common in practice. (ix) N.A. (x) 27.4.1954.

## 2. TREATMENTS :

Main-plot treatments :

4 levels of irrigation : I<sub>0</sub>=No irrigation, I<sub>1</sub>=Irrigation 3 weeks after germination (at tillering), I<sub>2</sub>=I<sub>1</sub>+irrigation 9 weeks after germination (at flowering) and I<sub>3</sub>=I<sub>2</sub>+irrigation 12 weeks after germination (at milky stage).

Sub-plot treatments :

3 combination of forms and levels of N : N<sub>0</sub>=No manure. N<sub>1</sub>=60 lb./ac. of N as A/S and N<sub>2</sub>=60 lb./ac. of N as castor cake

## 3. DESIGN :

(i) Split-plot. (ii) (a) 4 main-plots/replication and 3 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) Main plot : 66'×44' ; sub-plot : 22'×44'. (b) 19'×41'. (v) Plot border 1.5' and field border 3' around. Sown space left between main-plots 5' ; block partition 10' to serve as irrigation channel. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) 15-20% rust incidence. (iii) Grain and straw yield. (iv) (a) 1951-1953. (b) and (c) No (v) (a) Varanasi, Etawah, Kalyanpur, Atarra, Bharari, Meerut, Kunraghat, Kalai and Muzaffarnagar, (b) N.A. (vi) Nil. (vii) Experiment conducted by C.P. (R).

## 5. RESULTS :

- (i) 492 lb./ac.
- (ii) (a) 61.6 lb./ac.
- (b) 117.6 lb./ac.
- (iii) Only main effect of levels of N is highly significant.

(iv) Av. yield of grain in lb./ac.

	N <sub>0</sub>	N <sub>1</sub>	N <sub>2</sub>	Mean
I <sub>0</sub>	324	568	517	470
I <sub>1</sub>	306	625	550	494
I <sub>2</sub>	250	557	684	497
I <sub>3</sub>	333	529	660	507
Mean	303	570	603	492

S.E. of the difference of two

1. marginal means of I =25.2 lb./ac.
2. marginal means of N =41.6 lb./ac.
3. N means at the same level of I =83.2 lb./ac.
4. I means at the same level of N =72.4 lb./ac.

Crop :- Wheat (*Rabi*).

Ref :- U.P. 49(82).

Site :- Govt. Agri. School Farm, Hawalbagh.

Type :- 'IM'.

Object :- To study the effect of application of N to Wheat at different levels and at different times in combination with different levels of irrigation.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) N.A. (ii) (a) Loam. (b) N.A. (iii) 11.11.1949. (iv) (a) Once ploughed by *victor* plough, 4 times ploughed by *desi* plough. (b) Broadcasting (c) 40 srs./ac. (d) and (e) N.A. (v) Nil. (vi) N.P.A. (vii) Irrigated. (viii) N.A. (ix) 5.90°. (x) 8 and 9.5.1950.

## 2. TREATMENTS :

Main-plot treatments :

3 levels of irrigation : I<sub>1</sub>=Irrigation 3 weeks after germination (at tillering stage), I<sub>2</sub>=I<sub>1</sub>+irrigation 9 weeks after germination (at flowering stage), and I<sub>3</sub>=I<sub>2</sub>+irrigation 12 weeks after germination (at milky stage).

Sub-plot treatments :

All combinations of (1) and (2)+a control (N<sub>0</sub>T<sub>0</sub>=no manure).

(1) 2 levels of N as A/S : N<sub>1</sub>=30 and N<sub>2</sub>=60 lb./ac. of N.

(2) 2 times of application : T<sub>1</sub>=full at sowing and T<sub>2</sub>= $\frac{1}{2}$  at sowing and  $\frac{1}{2}$  at first irrigation.

## 3. DESIGN :

(i) Split-plot (ii) (a) 3 main-plots/block ; 5 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) Main-plot : 22' x 165' Sub-plot : 22' x 33'. (b) 16' x 27'. (v) 3' all round the net plot. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) N.A. (iii) Length of roots per plant, length of shoot per plant, length of leaf, breadth of leaf, fresh wt. of shoot, dry wt. of shoot, no of dry leaves, green leaves, no of grains per ear and grain and *bhusa* yield. (iv) (a) 1949-1951. (b) and (c) No. (v) (a) Kunraghat, Kalyanpur, Atarra, Bharari, Meerut Muzaffarnagar and Lucknow. (b) N.A. (vi) Nil. (vii) Experiment conducted by C.P.

## RESULTS :

- (i) 960.2 lb./ac.
- (ii) (a) 462.7 lb./ac.
- (b) 308.7 lb./ac.
- (iii) Only the interaction I x N is highly significant. Others are not significant.

(iv) Av. yield of grain in lb./ac.

	$N_0T_0$	$N_1T_1$	$N_2T_1$	$N_1T_2$	$N_2T_2$	Mean
$I_1$	976.6	1002.5	656.8	717.3	756.2	821.9
$I_2$	1305.0	1054.4	738.9	968.0	963.6	1006.0
$I_3$	894.5	717.3	1140.8	868.6	1642.1	1052.7
Mean	1058.7	924.7	845.5	851.3	1120.6	960.2

S.E. of the difference of two

1. marginal means of I : = 169.0 lb./ac.
2. marginal means of NT = 145.5 lb./ac.
3. NT means at the same level of I = 252.0 lb./ac.
4. I means at the same level of NT = 281.7 lb./ac.

Crop :- Wheat (*Rabi*).

Ref :- U.P. 51(66).

Site :- Govt. Agri. School Farm, Hawalbagh.

Type :- 'IM'.

Object :- To study the effect of application of N to Wheat at different levels and at different times in combination with different levels of irrigation.

## 1. BASAL CONDITIONS :

(i) (a) No. (b) Paddy. (c) N.A. (ii) (a) Clay loam. (b) N.A. (iii) 11, 12.12.1951. (iv) (a) N.A. (b) Broadcasting. (c) 40-50 sers/ac. (d) N.A. (e) N.A. (v) Nil. (vi) N.P. 4 (medium). (vii) Irrigated. (viii) N.A. (ix) N.A. (x) N.A.

## 2. TREATMENTS :

Main-plot treatments :

4 levels of irrigation :  $I_0$  = no irrigation  $I_1$  = Irrigation 3 weeks after germination (at tillering),  $I_2$  =  $I_1$  + irrigation 9 weeks after germination (at flowering) and  $I_3$  =  $I_2$  + irrigation 12 weeks after germination (at milky stage).

Sub-plot treatments :

All combinations of (1) and (2) + a control ( $N_0T_0$  = no manure).

(1) 2 levels of N as A/S :  $N_1$  = 30 and  $N_2$  = 60 lb./ac. of N.

(2) 2 times of application :  $T_1$  = Full at sowing and  $T_2$  = Half at sowing and half at 1st irrigation.

## 3. DESIGN :

(i) Split-plot. (ii) (a) 4 main-plot/replication and 5 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) Main-plot :  $150' \times 15'$  ; Sub-plot :  $15' \times 30'$ . (b)  $12' \times 27'$ . (v) Sub-plot border  $1\frac{1}{2}'$  around. Irrigation channel 3', space between main-plots 6'. (vi) Yes.

## 4. GENERAL :

(i) Poor due to late sowing. (ii) Nil. (iii) Grain yield. (iv) (a) 1949—1951. (b) No. (c) No. (v) (a) Etawah, Faizabad, Muzaffarnagar, Meerut, Kalyanpur, Eharari, Atarra, Kunraghat and Lucknow. (b) N.A. (vi) Poor yield due to rains at harvesting. (vii) Experiment conducted by C.P.

## 5. RESULTS :

- (i) 68.49 lb./ac.
- (ii) (a) 138.0 lb./ac.
- (b) 35.9 lb./ac.
- (iii) None of the effects is significant.

(iv) Av. yield of grain in lb./ac.

	$N_0T_0$	$N_1T_1$	$N_2T_1$	$N_1T_2$	$N_2T_2$	Mean
$I_0$	43.21	32.41	47.53	38.89	36.73	39.75
$I_1$	56.18	77.78	43.21	97.23	75.62	70.00
$I_2$	54.02	38.89	51.86	64.82	47.53	51.42
$I_3$	79.94	108.03	159.69	108.03	108.03	112.78
Mean	58.34	64.28	75.62	77.24	66.98	68.49

S.E. of the difference of two

1. marginal means of I = 43.7 lb./ac.
2. marginal means of NT = 12.7 lb./ac.
3. NT means at the same level of I = 25.4 lb./ac.
4. I means at the same level of NT = 49.2 lb./ac.

Crop :- Wheat (*Rabi*).

Ref :- U.P. 49(72).

Site :- Govt. Agri. School Farm, Hawalbagh.

Type :- 'IM'.

Object :- To study the effect of different forms and levels of N in combination with levels of irrigation on Wheat.

**1. BASAL CONDITIONS :**

(i) (a) Nil. (b) Paddy. (c) Nil. (ii) (a) Loam. (b) N.A. (iii) 10.11.1949. (iv) (a) Ploughing by U.P. plough No. 1; it was ploughed by *desi* plough twice before sowing and planking. (b) N.A. (c) 40 srs/ac. (d) N.A. (e) N.A. (v) Nil. (vi) N.P.4 (medium). (vii) Irrigated. (viii) N.A. (ix) 5.90°. (x) 8, 10.5.1950.

**2. TREATMENTS :**

Main-plot treatments :

3 levels of irrigation :  $I_1$  = Irrigation 3 weeks after germination (at tillering),  $I_2 = I_1$  + irrigation 9 weeks after germination (at flowering),  $I_3 = I_2$  + irrigation 12 weeks after germination (at milky stage).

Sub-plot treatments :

3 combination of forms and levels of N :  $N_0$  = No manure,  $N_1$  = 60 lb./ac. of N as A/S,  $N_2$  = 60 lb./ac. of N as castor cake.

**3. DESIGN :**

(i) Split-plot. (ii) (a) 3 main-plots/replication and 3 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) Main-plot : 54' x 34'; Sub-plot : 18' x 34'. (b) 12' x 28', (v) 3' all round the net plot. (vi) Yes.

**4. GENERAL :**

(i) N.A. (ii) N.A. (iii) Grain yield. (iv) (a) 1949-1952. (b) No. (c) No. (v) (a) Varanasi, Kalyanpur, Atarra, Bharari, Meerut, Kunraghat, Muzaffarnagar, Lucknow and Bulandshahr. (b) N.A. (vi) Nil. (vii) Experiment conducted by C.P.

**5. RESULTS :**

(i) 979 lb/ac.

(ii) (a) 224.8 lb/ac.

(b) 338.5 lb/ac.

(iii) Only main effect of levels of N is highly significant.



(iv) Av. yield of grain in lb./ac.

	N <sub>0</sub>	N <sub>1</sub>	N <sub>2</sub>	Mean
I <sub>1</sub>	756	1156	1111	1008
I <sub>2</sub>	600	956	1433	996
I <sub>3</sub>	561	1072	1167	933
Mean	639	1061	1237	979

S.E. of the difference of two

1. marginal means of I = 106.0 lb./ac.
2. marginal means of N = 159.6 lb./ac.
3. N means at the same level of I = 276.4 lb./ac.
4. I means at the same level of N = 249.3 lb./ac.

Crop :-Wheat (*Rabi*).

Ref :-U.P. 51(67).

Site :-Govt. Agri. School Farm, Hawalbagh,

Type :-'IM'.

Object :-To study the effect of different forms and levels of N in combination with levels of irrigation on Wheat.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) N.A. (ii) (a) Clay loam. (b) N.A. (iii) 13, 14.12.1951. (iv) (a) N.A. (b) broadcasting. (c) 40-50 srs./ac. (d), (e) N.A. (v) Nil. (vi) N.P.4 (medium). (vii) Irrigated. (viii) N.A. (ix) N.A. (x) N.A.

## 2. TREATMENTS :

Main-plot treatments :

4 levels of irrigation : I<sub>0</sub>=No irrigation, I<sub>1</sub>=Irrigation 3 weeks after germination (at tillering), I<sub>2</sub>=I<sub>1</sub>+irrigation 9 weeks after germination (at flowering) and I<sub>3</sub>=I<sub>2</sub>+irrigation 12 weeks after germination (at milky stage).

Sub-plot treatments :

3 combinations of forms and levels of N : N<sub>0</sub>=No manure, N<sub>1</sub>=60 lb./ac. of N as A/S and N<sub>2</sub>=60 lb./ac. of N as castor cake.

## 3. DESIGN :

(i) Split-plot. (ii) 4 main-plots/replication and 3 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) Main-plot size 43'×40' and sub-plot : 16'×40'. (b) 13'×37'. (v) Sub-plot border 1½' around. Field border 3' around. Sown spacing left between main-plots 4'. Sown space left between blocks 8' also to be used as irrigation channel. (vi) Yes.

## 4. GENERAL :

(i) Very poor growth due to late sowing. Stems very slender. There was no lodging. (ii) Rust infection (iii) Grain yield. (iv) (a) 1951-1952. (b), (c) No. (v) (a) Varanasi, Faizabad, Kunraghat, Kalyanpur, Atarra, Bharari, Etawah, Kalai, Meerut, Muzaffarnagar and Lucknow. (b) N.A. (vi) Poor yield due to excessive rains. (vii) Experiment conducted by C.P.

## 5. RESULTS :

- (i) 48.83 lb./ac.
- (ii) (a) 38.35 lb./ac.
- (b) 33.08 lb./ac.
- (iii) Effects of forms of N is highly significant.

(iv) Av. yield of grain in lb./ac.

	N <sub>0</sub>	N <sub>1</sub>	N <sub>2</sub>	Mean
I <sub>0</sub>	64.04	26.20	32.02	40.75
I <sub>1</sub>	32.02	27.65	66.95	42.21
I <sub>2</sub>	36.39	33.47	98.97	56.28
I <sub>3</sub>	46.57	37.81	84.41	56.27
Mean	44.76	31.29	70.59	48.88

S.E. of difference of two

1. marginal means of I = 15.66 lb./ac.
2. marginal means of N = 11.70 lb./ac.
3. N means at the same level of I = 23.39 lb./ac.
4. I means at the same level of N = 24.70 lb./ac.

Crop :-Wheat (*Rabi*).

Ref :-U.P. 52(139).

Site :-Govt. Agri. School Farm, Hawalbagh.

Type :-'IM'.

Object :-To study the effect of different forms and levels of N in combination with levels of irrigation on Wheat.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) (a) Loam. (b) N.A. (iii) 4.12.1952. (iv) (a) Ploughing by U. P. No. 1 plough on 3.8.1952. ploughings on 28, 29.11.1952. ; 1, 3.12.1952 by *desi* plough. (b) N.A. (c) 40 to 50 ars./ac. (d) and (e) N.A. (v) Nil. (vi) N.P.4. (vii) Irrigated. (viii) N.A. (ix) N.A. (x) 7.5.1953.

## 2. TREATMENTS :

Main-plot treatments :

4 levels of irrigation : I<sub>0</sub>=No irrigation. I<sub>1</sub>=Irrigation 3 weeks after germination (at tillering). I<sub>2</sub>=I<sub>1</sub>+irrigation 9 weeks after germination (at flowering) and I<sub>3</sub>=I<sub>2</sub>+irrigation 12 weeks after germination (at milky stage).

Sub-plot treatments :

3 combinations of forms and levels of N : N<sub>0</sub>=No manure. N<sub>1</sub>=50 lb./ac. of N as A/S and N<sub>2</sub>=60 lb./ac. of N as castor cake.

## 3. DESIGN :

(i) Split-plot. (ii) (a) 4 main-plots/replication ; 3 sub-plots/main-plot. (b) N.A. (iii) 4 (iv) (a) Main-plot 40'×42'. Sub-plot 14'×40'. (b) 11'×37'. (v) Sub-plot border 1½' Field border 3'. Between main-plots 3' Between blocks 6'. (vi) Yes.

## 4. GENERAL :

(i) Satisfactory. (ii) Nil. (iii) Grain and straw yield. (iv) (a) 1949-1952. (b), (c) No. (v) (a) Varanasi, Faizabad, Etawah, Kalyanpur, Meerut, Kalai, Atarra, Bharari, Kunraghat and Muzaffarnagar. (b) N.A. (vi) Nil. (vii) Experiment conducted by C.P. (R).

## 5. RESULTS :

- (i) 708 lb./ac.
- (ii) (a) 221.3 lb./ac.  
(b) 168.8 lb./ac.
- (iii) Forms of N and levels of N are both highly significant.

(iv) Av. yield of grain in lb /ac.

	N <sub>0</sub>	N <sub>1</sub>	N <sub>2</sub>	Mean
I <sub>0</sub>	543	323	1404	757
I <sub>1</sub>	461	447	1183	697
I <sub>2</sub>	427	406	1232	688
I <sub>3</sub>	385	282	1404	690
Mean	454	365	1306	708

S.E. of difference of two

1. marginal means of I = 90.4 lb./ac.
2. marginal means of N = 59.7 lb./ac.
3. N means at the same level of I = 119.4 lb./ac.
4. I means at the same level of N = 132.9 lb./ac.

Crop :-Wheat (*Rabi*).

Site :-Govt. Agri. Farm, Kalai.

Ref :-U.P. 50(80).

Type :-'IM'.

Object:—To study the effect of different forms and levels of N in combination with levels of irrigation on Wheat.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) G.M. (c) Nil. (ii) (a) *Domat*—Loam. (b) N.A. (iii) 3.10.1950. (iv) (a) 7 ploughings by turn west. (b) Sown by seed drill. (c) 50 seers/ac. (d) and (e) N.A. (v) Nil. (vi) Pb. 409. (medium). (vii) Irrigated. (viii) 1 weeding and hoeing on 12 and 15.12.1950. (ix) 3.55°. (x) 26.4.1951.

## 2. TREATMENTS :

Main-plot treatments :

4 levels of irrigation : I<sub>0</sub>=No irrigation, I<sub>1</sub>=Irrigation 3 weeks after germination (at tillering), I<sub>2</sub>=I<sub>1</sub>+irrigation 9 weeks after germination (at flowering) and I<sub>3</sub>=I<sub>2</sub>+irrigation 12 weeks after germination (at milky stage).

Sub-plot treatments :

3 combinations of forms and levels of N : N<sub>0</sub>=No manure, N<sub>1</sub>=60 lb./ac. of N as A/S and N<sub>2</sub>=60 lb./ac. of N as castor cake.

## 3. DESIGN :

(i) Split-plot. (ii) (a) 4 main-plots/replication and 3 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) Main-plot : 60'×40' and sub-plot : 20'×40'. (b) N.A. (v) 1½' all round the net plot. (vi) Yes.

## 4. GENERAL :

(i) Fair. (ii) Attack of rust 30%. (iii) Grain yield. (iv) (a) 1950—1954. (b) No. (c) N.A. (v) (a) Kunraghat, Varanasi, Kalyanpur, Etawah, Muzaffarnagar, Meerut, Bharari, Atarra and Lucknow. (b) N.A. (vi) Nil. (vii) The expt. was conducted by C.P.

## 5. RESULTS :

- (i) 1243 lb./ac.
- (ii) (a) 165.1 lb./ac.
- (b) 202.3 lb./ac.
- (iii) Only main effect of I is highly significant.

(v) Av. yield of grain in lb./ac.

	N <sub>0</sub>	N <sub>1</sub>	N <sub>2</sub>	Mean
I <sub>0</sub>	795	807	837	813
I <sub>1</sub>	1330	1591	1709	1543
I <sub>2</sub>	1294	1294	1508	1365
I <sub>3</sub>	1246	1223	1282	1250
Mean	1165	1229	1334	1243

S.E. of difference of two

1. marginal means of I = 77.8 lb./ac.
2. marginal means of N = 82.6 lb./ac.
3. N means at the same level of I = 165.2 lb./ac.
4. I means at the same level of N = 155.7 lb./ac.

Crop :-Wheat (*Rabi*).

Ref :- U.P. 51(58).

Site :-Govt. Agri. Farm, Kalai.

Type :-'IM'.

Object :-To study the effect of different forms and levels of N in combinations with levels of irrigation on Wheat.

## 1. BASAL CONDITIONS :

- (i) (a) *Chari*-Wheat. (b) *Chari*. (c) No. (ii) (a) Loam. (b) N.A. (iii) 4.11.1951. (iv) (a) N.A. (b) Sown by seed drill. (c) 50 seers/ac. (d) and (e) N.A. (v) Nil. (vi) Pb. 591 (medium). (vii) As per treatments. (viii) N.A. (ix) N.A. (x) N.A.

## 2. TREATMENTS :

Main-plot treatments :

- 4 levels of irrigation : I<sub>0</sub>=No irrigation, I<sub>1</sub>=Irrigation 3 weeks after germination (at tillering), I<sub>2</sub>=I<sub>1</sub>+irrigation 9 weeks after germination (at flowering) and I<sub>3</sub>=I<sub>2</sub>+irrigation 12 weeks after germination (at milky stage).

Sub-plot treatments :

- 3 combinations of forms and levels of N : N<sub>0</sub>=No manure, N<sub>1</sub>=60 lb./ac. of N as A/S and I<sub>2</sub>=60 lb./ac. of N as castor cake.

## 3. DESIGN :

- (i) Split-plot. (ii) (a) 4 main-plots/replication and 3 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) Main-plot : 60' x 40' and Sub-plot : 20' x 40'. (b) 17' x 37'. (v) 1½' all round the net plot. (vi) Yes.

## 4. GENERAL :

- (i) Good. No lodging. (ii) Nil. (iii) Grain yield. (iv) (a) 1950-1954. (b) No. (c) N.A. (v) (a) Varanasi, Faizabad, Kunraghat, Kalyanpur, Atarra, Bharari, Etawah, Meerut, Muzaffarnagar, Hawalbagh and Lucknow. (b) N.A. (vi) Nil. (vii) The expt. was conducted by C.P.

## 5. RESULTS :

- (i) 1113 lb./ac.  
(ii) (a) 229.3 lb./ac.  
(b) 136.0 lb./ac.  
(iii) Main effect of I is highly significant. Main effect of forms of N is highly significant and levels of N is significant. Interactions are not significant.

(iv) Av. yield of grain in lb /ac.

	N <sub>0</sub>	N <sub>1</sub>	N <sub>2</sub>	Mean
I <sub>0</sub>	561	623	605	596
I <sub>1</sub>	1153	1149	1411	1238
I <sub>2</sub>	1238	1255	1549	1347
I <sub>3</sub>	1246	1131	1433	1270
Mean	1049	1040	1250	1113

## S.E. of difference of two

1. marginal means of I = 93.6 lb./ac.
2. marginal means of N = 48.1 lb./ac.
3. N means at the same level of I = 96.2 lb./ac.
4. I means at the same level of N = 122.2 lb./ac.

Crop :- Wheat.

Ref :- U.P. 52(131).

Site :- Govt. Agri. Farm, Kalai.

Type :- 'IM'.

Object :—To study the effect of different forms and levels of N in combination with levels of irrigation on Wheat.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fodder. (c) N.A. (ii) (a) Loam. (b) N.A. (iii) 9.11.1952. (iv) (a) Ploughing with gary plough on 15.10.1952, ploughing with *desi* plough on 16.10.1952, ploughing with double cultivator on 26.10.1952 and ploughing with *desi* plough on 3.11.1952. (b) N.A. (c) 14.8 chk./plot. (d) and (e) N.A. (v) Application of compost on 2.11.1952 to the entire field. (vi) Pb. 591 (medium-late). (vii) Irrigated, as per treatments. (viii) Harrowing with lever harrow on 29.12.1952. (ix) N.A. (x) 7.4.1953.

## 2. TREATMENTS :

## Main-plot treatments :

4 levels of irrigation : I<sub>0</sub>=No irrigation, I<sub>1</sub>=Irrigation 3 weeks after germination (at tillering), I<sub>2</sub>=I<sub>1</sub>+irrigation 9 weeks after germination (at flowering) and I<sub>3</sub>=I<sub>2</sub>+irrigation 12 weeks after germination (at milky stage).

## Sub-plot treatments :

3 combinations of forms and levels of N : N<sub>0</sub>=No manure, N<sub>1</sub>=60 lb./ac. of N as A/S and N<sub>2</sub>=60 lb./ac. of N as castor cake.

## 3. DESIGN :

(i) Split-plot. (ii) (a) 4 main-plots/replication and 3 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) Main-plot : 60' x 40' and sub-plot : 20' x 40'. (b) 17' x 37' (v) 14' all round the net plot. (vi) Yes.

## 4. GENERAL :

(i) Poor. (ii) Nil. (iii) Grain and straw yield. (iv) (a) 1950—1954. (b) No. (c) N.A. (v) (a) Varanasi, Faizabad, Etawah, Kalyanpur, Meerut, Atarra, Hawalbagh, Bharari, Kunraghat, and Muzaffarnagar. (b) N.A. (vi) Nil. (vii) The experiment was conducted by C.P. (R).

## 5. RESULTS :

- (i) 524.6 lb./ac.
- (ii) (a) 210.8 lb./ac.
- (b) 95.9 lb./ac.
- (iii) Main effect of I and main effect of levels of N are highly significant. Interaction I x levels of N is significant.

(iv) Av. yield of grain in lb./ac.

	N <sub>0</sub>	N <sub>1</sub>	N <sub>2</sub>	Mean
I <sub>0</sub>	200.3	267.1	311.6	259.7
I <sub>1</sub>	427.4	703.4	658.9	596.6
I <sub>2</sub>	373.9	805.8	658.9	612.9
I <sub>3</sub>	418.5	703.4	765.7	629.2
Mean	355.0	619.9	598.8	524.6

S.E. of difference of two

1. I marginal means = 86.1 lb./ac.
2. N marginal means = 33.9 lb./ac.
3. N means at the same level of I = 67.8 lb./ac.
4. I means at the same level of N = 102.3 lb./ac.

Crop :- Wheat (*Rabi*).

Ref :- U.P. 53(110).

Site :- Govt. Agri. Farm, Kalai.

Type :- 'IM'.

Object :- To study the effect of different forms and levels of N in combination with levels of irrigation on Wheat.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fa.low. (c) Nil. (ii) (a) Loam. (b) N.A. (iii) 1.11.1953. (iv) (a) 9 ploughings and harrowings (b) Sown behind the plough. (c) 40—50 srs./ac. (d) and (e) N.A. (v) N.A. (vi) Pb. 591 (late). (vii) N.A. (viii) Nil. (ix) N.A. (x) 4.4.1953.

## 2. TREATMENTS :

Main-plot treatments :

4 levels of irrigation : I<sub>0</sub>=No. irrigation, I<sub>1</sub>=Irrigation 3 weeks after germination (at tillering), I<sub>2</sub>=I<sub>1</sub>+irrigation 9 weeks after germination (at flowering) and I<sub>3</sub>=I<sub>2</sub>+irrigation 12 weeks after germination (at milky stage).

Sub-plot treatments :

3 combinations of forms and levels of N : N<sub>0</sub>=No manure, N<sub>1</sub>=60 lb./ac. of N as A/S and N<sub>2</sub>=60 lb./ac. of N as castor cake.

## 3. DESIGN :

(i) Split-plot. (ii) (a) 4 main-plots/replication and 3 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) Main-plot: 40' × 60' and sub-plot 20' × 40'. (b) 17' × 37'. (v) 1½' all round the net plot. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Nil. (iii) Grain and straw yield. (iv) (a) 1950—1954. (b) No. (c) N.A. (v) (a) Varanasi Faizabad, Etawah, Kalyanpur, Atarra, Bharari, Meerut, Kunraghat and Muzaffarnagar. (b) N.A. (vi) Nil. (vii) The experiment was conducted by C.P. (R).

## 5. RESULTS :

- (i) 1293 lb./ac.
- (ii) (a) 546.0 lb./ac.
- (b) 455.5 lb./ac.

(iii) Only main effect of I is significant.

(iv) Av. yield of grain in lb./ac.

	N <sub>0</sub>	N <sub>1</sub>	N <sub>2</sub>	Mean
I <sub>0</sub>	899	784	712	798
I <sub>1</sub>	1017	1656	1656	1443
I <sub>2</sub>	1398	1567	1496	1487
I <sub>3</sub>	1122	1754	1460	1445
Mean	1109	1440	1331	1293

S.E. of difference of two

1. I marginal means = 222.9 lb./ac.
2. N marginal means = 161.0 lb./ac.
3. N means at the same level of I = 322.1 lb./ac.
4. I means at the same level of N = 344.7 lb./ac.

Crop :-Wheat (*Rabi*).

Ref :-U.P. 50(122).

Site :-Govt. Agri. Farm, Kalai.

Type :-'IM'.

Object :—To study the effect of different levels of irrigation in combination with  $P_2O_5$  and Gypsum on Wheat.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) G.M. (c) Nil. (ii) (a) *Domat*. (b) N.A. (iii) 14.11.1950. (iv) (a) 7 ploughings. (b) By seed drill. (c) 5 seers/ac. (d) and (e) N.A. (v) N.A. (vi) Pb. 409. (vii) Irrigated. (viii) Weeding and hoeing on 26, 29.12.1950. (ix) N.A. (x) 25.4.1951.

## 2. TREATMENTS :

## Main-plot treatments :

3 levels of irrigation :  $I_0$ =No irrigation.  $I_1$ =Irrigation 3 weeks after germination (at tillering) and  $I_2$ = $I_1$  +irrigation 9 weeks after germination (at flowering).

## Sub-plot treatments :

All combinations of (1) and (2)

(1) 3 levels of  $P_2O_5$  as Super :  $P_0=0$ ,  $P_1=20$  and  $P_2=40$  lb./ac.

(2) 3 levels of Ca as Gypsum :  $G_0=0$ ,  $G_1=25$  and  $G_2=50$  lb./ac.

## 3. DESIGN :

(i) Split-plot. (ii) (a) 3 main-plots/block ; 9 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) Main-plot :  $171' \times 35'$ , sub-plot :  $19' \times 35'$ . (b)  $16' \times 32'$ . (v)  $1\frac{1}{2}'$  all round the net plot. (vi) Yes.

## 4. GENERAL :

(i) Fair. (ii) N.A. (iii) Grain and fodder yield. (iv) (a) 1950—1954. (b) No. (c) N.A. (v) (a) Partapgarh, Baharaich. (b) N.A. (vi) Nil. (vii) The expt. was conducted by C.P.

## 5. RESULTS :

- (i) 1334 lb./ac.  
 (ii) (a) 290.6 lb./ac.  
 (b) 293.9 lb./ac.  
 (iii) Main effects of I and P are both highly significant. All others are not significant.  
 (iv) Av. yield of grain in lb./ac.

	$P_0$	$P_1$	$P_2$	Mean	$G_0$	$G_1$	$G_2$
$I_0$	865	1138	909	971	1011	856	1045
$I_1$	1337	1677	1821	1612	1614	1670	1551
$I_2$	1205	1459	1594	1419	1327	1390	1541
Mean	1136	1425	1441	1334	1317	1305	1379
$G_0$	1118	1390	1444				
$G_1$	972	1522	1422				
$G_2$	1317	1361	1458				

## S.E. of difference of two

1. marginal means of I = 79.1 lb./ac.  
 2. marginal means of G or P = 80.0 lb./ac.  
 3. G or P means at the same level of I = 138.5 lb./ac.  
 4. I means at the same level of G or P = 138.0 lb./ac.  
 5. means of the body of G  $\times$  P table = 138.5 lb./ac.

Crop :-Wheat (*Rabi*).  
Site :-Govt. Agri. Farm, Kalai.

Ref :-U.P. 51(77).  
Type :-'IM'.

Object :-To study the effect of different levels of irrigation in combination with  $P_2O_5$  and Gypsum on Wheat.

1. BASAL CONDITIONS :

(i) (a) *Charl*-Wheat. (b) *Charl*. (c) No. (ii) (a) Loam. (b) N.A. (iii) 5.11.1951. (iv) (a) N.A. (b) Seed drill. (c) 40-50 srs./ac. (d) and (e) N.A. (v) Nil (vi) Pb.409 (vii) Irrigated. (viii) N.A. (ix) N.A. (x) N.A.

2. TREATMENTS :

Main-plot treatments :

3 levels of irrigation :  $I_0$ =No irrigation,  $I_1$ =Irrigation 3 weeks after germination (at tillering),  $I_2$ = $I_1$  + irrigation 9 weeks after germination (at flowering).

Sub-plot treatments :

All combinations of (1) and (2)

(1) 3 levels of  $P_2O_5$  as Super :  $P_0=0$ ,  $P_1=20$  and  $P_2=40$  lb./ac.

(2) 3 levels of Ca as Gypsum :  $G_0=0$ ,  $G_1=25$  and  $G_2=50$  lb./ac.

3. DESIGN :

(i) Split-plot. (ii) (a) 3 main-plots/replication ; 9 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) Main-plot  $171' \times 35'$ . sub-plot :  $19' \times 35'$ . (b)  $16' \times 32'$ . (v)  $1\frac{1}{2}'$  all round the net plot. (vi) Yea.

4. GENERAL :

(i) Good. No lodging. (ii) Nil. (iii) Grain yield. (iv) (a) 1950—1954. (b) No. (c) N.A. (v) Baharaich and Partapgarh. (b) N.A. (vi) Nil. (vii) The expt. was conducted by C.P.

5. RESULTS :

(i) 1048 lb./ac.

(ii) (a) 416.5 lb./ac.

(b) 203.1 lb./ac.

(iii) Main effects of I and P are highly significant. All other effects are not significant.

(iv) Av. yield of grain in lb./ac.

	$G_0$	$G_1$	$G_2$	Mean	$P_0$	$P_1$	$P_2$
$I_0$	724	698	711	711	698	633	802
$I_1$	1227	1191	1183	1200	1098	1265	1238
$I_2$	1209	1258	1236	1234	1145	1181	1376
Mean	1053	1049	1043	1048	980	1026	1139
$P_0$	1006	961	974				
$P_1$	1039	1017	1022				
$P_2$	1114	1169	1134				

S.E. of difference of two

1. marginal means of I = 98.2 lb./ac.
2. marginal means of G or P = 47.9 lb./ac.
3. G or P means at the same level of I = 82.9 lb./ac.
4. I means at the same level of G or P = 119.2 lb./ac.
5. means of the body of  $G \times P$  table = 82.9 lb./ac.



Crop :-Wheat (*Rabi*).

Ref :- U.P. 52(123).

Site :-Govt. Agri. Farm, Kalai.

Type :-'IM'.

Object :-To study the effect of different levels of irrigation in combination with  $P_2O_5$  and Gypsum on Wheat.**1. BASAL CONDITIONS :**

(i) (a) Nil. (b) Fodder. (c) Nil. (ii) (a) Loam. (b) N.A. (iii) 11.11.1952. (iv) (a) Ploughing with *desi* plough on 10, 13 and 16.10.1952. Ploughing with double cultivator on 26.10.1952. Ploughing with double *desi* plough on 3.11.1952. (b) N.A. (c) 40-50 seers/ac. in general-exact amount/plot is N.A. (d) and (e) N.A. (v) Compost on 27.10.1952, 31.10.1952 and 1.11.1952. (vi) Pb. 591 (mid-late). (vii) Irrigated as per treatments. (viii) N.A. (ix) N.A. (x) 7.4.1953.

**2. TREATMENTS :**

Main-plot treatments :

3 levels of irrigation:  $I_0$ =No irrigation,  $I_1$ =Irrigation 3 weeks after germination (at tillering),  $I_2$ = $I_1$ +irrigation 9 weeks after germination (at flowering).

Sub-plot treatments :

All combinations of (1) and (2)

- (1) 3 levels of  $P_2O_5$  as super:  $P_0=0$ ,  $P_1=20$  and  $P_2=40$  lb./ac.  
 (2) 3 levels of Ca as Gypsum:  $G_0=0$ ,  $G_1=25$  and  $G_2=50$  lb./ac.

**3. DESIGN :**

(i) Split-plot. (ii) 3 main-plots/replication and 9 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 19'x35'. (b) 16'x32' (v) 1½' all round the net plot. (vi) Yes.

**4. GENERAL :**

(i) Poor. (ii) Nil. (iii) Grain and straw yield. (iv) (a) 1950-1954. (b) No. (c) N.A. (v) (a) Baharaich. (b) N.A. (vi) Nil. (vii) The experiment was conducted by C.P. (R).  $I_0$  was rejected, hence the experiment was analysed with two main-plot treatments only.

**5. RESULTS :**

- (i) 3-5.5 lb./ac.  
 (ii) (a) 98.90 lb./ac.  
 (b) 76.96 lb./ac.  
 (iii) Main effect of G is significant. All other effects are not significant.  
 (iv) Av. yield of grain in lb./ac.

	$G_0$	$G_1$	$G_2$	Mean	$P_0$	$P_1$	$P_2$
$I_1$	371.9	371.8	370.1	361.3	343.7	380.1	360.1
$I_2$	422.0	312.7	394.7	369.8	351.0	382.9	375.6
Mean	385.9	327.3	382.4	365.5	347.3	381.5	367.8
$P_0$	367.8	288.5	385.6				
$P_1$	415.7	321.1	404.7				
$P_2$	347.4	369.2	356.9				

**S.E. of difference of two**

1. marginal means of I = 23.31 lb./ac.  
 2. marginal means of G or P = 22.22 lb./ac.  
 3. G or P means at the same level of I = 31.42 lb./ac.  
 4. I means at the same level of G or P = 34.66 lb./ac.  
 5. means of the body of G x P table = 38.48 lb./ac.

Crop :- Wheat (*Rabi*).

Ref :- U.P. 53(103).

Site :- Govt. Agri. Farm, Kalai.

Type :- 'IM'.

Object :- To study the effect of different levels of irrigation in combination with  $P_2O_5$  and Gypsum on Wheat.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) (a) Loam. (b) N.A. (iii) 26.10.1953. (iv) (a) 6 ploughings and harrowings. (b) Sown by sced drill. (c) 40-50 srs/ac. (d) N.A. (e) N.A. (v) N.A. (vi) Pb. 591 (late). (vii) Irrigated-as per treatments. (viii) Nil. (ix) N.A. (x) 2,3,4.1954.

## 2. TREATMENTS :

Main-plot treatments :

3 levels of irrigation :  $I_0$ =No irrigation,  $I_1$ =Irrigation 3 weeks after germination (at tillering),  $I_2$ = $I_1$ +irrigation 9 weeks after germination (at flowering).

Sub-plot treatments :

All combination of (1) and (2)

(1) 3 levels of  $P_2O_5$  as Super :  $P_0=0$ ,  $P_1=20$  and  $P_2=40$  lb./ac.(2) 3 levels of Ca as Gypsum :  $G_0=0$ ,  $G_1=25$  and  $G_2=50$  lb./ac.

## 3. DESIGN :

(i) Split-plot. (ii) (a) 3 main-plots/replication and 9 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) Main plot :  $171' \times 35'$ ; Sub-plot :  $19' \times 35'$ . (b)  $16' \times 32'$ . (v)  $1\frac{1}{2}'$  all round the net-plot. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Nil. (iii) Grain and straw yield. (iv) (a) 1950—1954. (b) No. (c) N.A. (v) (a) Partapgarh, Baharakh. (b) N.A. (vi) Nil. (vii) The experiment was conducted by C.P. (R).

## 5. RESULTS :

(i) 986.1 lb./ac.

(ii) (a) 860.6 lb./ac.

(b) 275.1 lb./ac.

(iii) None of the effects is significant.

(iv) Av. yield of grain in lb./ac.

	$P_0$	$P_1$	$P_2$	Mean	$G_0$	$G_1$	$G_2$
$I_0$	1050.1	856.9	1101.2	1002.7	1134.0	999.1	875.1
$I_1$	1072.0	969.9	907.9	983.3	915.2	1082.9	951.7
$I_2$	955.3	886.0	1075.7	972.3	948.0	944.4	1024.6
Mean	1025.8	904.3	1028.3	986.1			
$G_0$	1053.8	860.5	1082.9	999.1			
$G_1$	1002.7	969.9	1053.8	1008.8			
$G_2$	1021.0	882.4	948.0	950.5			

S.E. of the difference of two

1. marginal means of I = 202.8 lb./ac.
2. marginal means of G or P = 64.8 lb./ac.
3. G or P means at the same level of I = 112.3 lb./ac.
4. I means at the same level of G or P = 222.6 lb./ac.
5. means of the body of  $G \times P$  table = 112.3 lb./ac.

Crop :- Wheat (*Rabi*).

Ref :- U.P. 49(68).

Site :- Govt. Agri. Res. Farm, Kalyanpur.

Type :- 'IM'.

Object:—To study the effect of different forms and levels of N in combination with levels of irrigation on Wheat.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Urid*. (c) Nil. (ii) (a) Loam. (b) N.A. (iii) 14.11.1949. (iv) (a) One ploughing by Watt's plough, one by *desi* plough and *pata*, one harrowing by tractor and 4 *pata* by cultivator. (b) By seed drill. (c) 45 srs/ac. (d) N.A. (e) N.A. (v) Nil. (vi) C-13 (early). (vii) Irrigated. (viii) Inter-culture on 17.12.1949. (ix) N.A. (x) 2.4.1950.

## 2. TREATMENTS :

Main-plot treatments :

3 levels of irrigation:  $I_1$  = Irrigation 3 weeks after germination (at tillering),  $I_2$  =  $I_1$  + irrigation 9 weeks after germination (at flowering),  $I_3$  =  $I_1$  + irrigation 12 weeks after germination (at milky stage).

Sub-plot treatments :

3 combinations of forms and levels of N:  $N_0$  = No manure,  $N_1$  = 60 lb./ac. of N as A/S,  $N_2$  = 60 lb./ac. of N as castor cake.

## 3. DESIGN :

(i) Split-plot. (ii) (a) 3 main-plots/replication and 3 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) Main-plot 50' x 40' Sub-plot 18' x 40'. (b) 12' x 34'. (v) 3' all round the net plot. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) N.A. (iii) Grain yield. (iv) (a) 1949—1953. (b) No. (c) N.A. (v) (a) Varanasi, Atarra, Bharari, Meerut, Kunraghat, Muzaffarnagar, Lucknow, Bulandshahar and Hawalbagh. (b) N.A. (vi) Nil. (vii) The experiment was conducted by C.P.

## 5. RESULTS :

(i) 2101 lb./ac.

(ii) (a) 141.0 lb./ac.

(b) 154.0 lb./ac.

(iii) Effect of forms of N is significant and effect of levels of N is highly significant. Others are not significant.

(iv) Av. yield of grain in lb./ac.

	$N_0$	$N_1$	$N_2$	Mean
$I_1$	2013	2105	2251	2123
$I_2$	1848	1958	2288	2031
$I_3$	1958	2178	2306	2147
Mean	1940	2080	2282	2101

S.E. of the difference of two

- |                                   |                 |
|-----------------------------------|-----------------|
| 1. marginal means of I            | = 66.4 lb./ac.  |
| 2. marginal means of N            | = 72.6 lb./ac.  |
| 3. N means at the same level of I | = 125.8 lb./ac. |
| 4. I means at the same level of N | = 122.3 lb./ac. |

Crop :- Wheat (*Rabi*).

Ref :- U.P. 50(81).

Site :- Govt. Agri. Res. Farm, Kalyanpur.

Type :- 'IM'.

Object:—To study the effect of different forms and levels of N in combination with levels of irrigation on Wheat.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Maize and *Moong*. (c) N.A. (ii) (a) Loam. (b) N.A. (iii) 26, 27.10.1950. (iv) (a) Ploughings with Watt's plough on 28.9.1950. Tractor harrowing on 30.9.1950. *Palewa* on 10 to 12.10.50. *Desi* plough and *pata* on 23.10.1950 and 26.10.30. (b) Sowing by seed drill. (c) 43 srs./ac. (d) and (e) N.A. (v) Nil. (vi) C-13 (early). (vii) Irrigated. (viii) Nil. (ix) 3.45°. (x) N.A.

**2. TREATMENTS :****Main-plot treatments :**

4 levels of irrigation :  $I_0$ =No irrigation,  $I_1$ =Irrigation 3 weeks after germination (at tillering),  $I_2$ = $I_1$ +Irrigation 9 weeks after germination (at flowering) and  $I_3$ = $I_2$ +Irrigation 12 weeks after germination (at milky stage).

**Sub-plot treatments :**

3 combinations of forms and levels of N :  $N_0$ =No manure,  $N_1$ =60 lb./ac. of N as A/S and  $N_2$ =60 lb./ac. of N as castor cake.

$I_1$  given on 25.11.1950,  $I_2$  not given due to rains from 23.12.1950 to 16.1.1951 and  $I_3$  given on 3.4.3.1951. Hence  $I_2$  becomes identical to  $I_1$ .

**3. DESIGN :**

(i) Split-plot. (ii) (a) 4 main-plots/replication and 3 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) Main-plot=57'×35' sub-plot=19'×35'. (b) 19'×32'. (v) Sub-plot border=1½' around. Field border=3' around. Sown space left between main-plots=5'. Sown space left between blocks=8'—also to be used as irrigation channel. (vi) Yes.

**4. GENERAL :**

(i) Fairly good. (ii) Nil. (iii) Grain and straw yield. (iv) (a) 1949—1953. (b) No. (c) N.A. (v) (a) Kunraghat, Banaras, Etawah, Kalai, Muzaffarnagar, Meerut, Bharari, Atarra and Lucknow. (b) N.A. (vi) Plots of  $I_0N_1$ ,  $I_0N_2$ ,  $I_2N_0$ ,  $I_3N_1$ , were damaged by rats. (vii) The experiment was conducted by C.P.

**5. RESULTS :**

- (i) 2045 lb./ac.  
 (ii) (a) 229.5 lb./ac.  
 (b) 228.6 lb./ac.  
 (iii) Only the effect of levels of N is highly significant. All other effects are not significant.  
 (iv) Av. yield of grain in lb./ac.

	$N_0$	$N_1$	$N_2$	Mean
$I_1$	1601	2319	2268	2063
$I_2$	1358	2494	2244	2032
$I_3$	1663	2137	2359	2053
Mean	1495	2361	2279	2045

**S.E. of difference of**

- $I_0$  and  $I_3$  marginal means = 108.2 lb./ac.
- $I_0$  and  $I_1$  or  $I_1$  and  $I_3$  marginal means = 93.7 lb./ac.
- two marginal means of N = 94.2 lb./ac.
- two N means at the same level of  $I_0$  or  $I_3$  = 186.7 lb./ac.
- two N means at the same level of  $I_1$  = 102.0 lb./ac.
- $I_0$  and  $I_3$  means at the same level of N = 186.9 lb./ac.
- $I_0$  and  $I_1$  or  $I_1$  and  $I_3$  means at the same level of N = 161.9 lb./ac.

Crop :- Wheat (*Rabi*).

Ref :-U.P. 51(61).

Site :- Govt. Agri. Res. Farm, Kalyanpur.

Type :- 'IM'.

Object :-To study the effect of different forms and levels of N in combination with levels of irrigation on Wheat.

**1. BASAL CONDITIONS :**

(i) (a) Nil. (b) *Kakun*. (c) N.A. (ii) (a) Loam, (b) N.A. (iii) 7.11.1951. (iv) (a) 4 ploughings with *desi* plough, 1 ploughing with watts plough and tractor harrowings—2. (b) Seed drilled. (c) 40-50 srs/ac. (d) and (e) N.A. (v) Nil. (vi) C-13 (early). (vii) Irrigated as per treatments. (viii) N.A. (ix) 1.07". (x) N.A.

**2. TREATMENTS :****Main-plot treatments :**

4 levels of Irrigation :  $I_0$ =No Irrigation,  $I_1$ =Irrigation 3 weeks after germination (at tillering),  $I_2$ = $I_1$ +Irrigation 9 weeks after germination (at flowering) and  $I_3$ = $I_2$ +Irrigation 12 weeks after germination (at milky stage).

**Sub-plot treatments :**

3 combinations of forms and levels of N :  $N_0$ =No manure,  $N_1$ =60 lb./ac. of N as A/S and  $N_2$ =60 lb./ac. of N as castor cake.

**3. DESIGN :**

(i) Split-plot. (ii) (a) 4 main-plots/replication and 3 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) Main-plot=57'×35' and sub-plot=19'×35'. (b) 16'×32' (v) 1½' ring round the net-plot. (vi) Yes.

**4. GENERAL :**

(i)  $N_1I_0$ ,  $N_2I_1$ ,  $N_3I_1$  showed poor tillering otherwise crop condition was good. (ii) Nil. (iii) Grain yield. (iv) (a) 1949—1953. (b) N.A. (c) N.A. (v) (a) Banaras, Faizabad, Kunraghat, Atarra, Bharari, Etawah, Kalai, Meerut, Muzaffarnagar, Hawalbagh and Lucknow. (b) N.A. (vi) Nil. (vii) The experiment was conducted by C.P.

**5. RESULTS :**

(i) 1014 lb./ac.

(ii) (a) 279.4 lb./ac.

(b) 135.5 lb./ac.

(iii) Effects of forms of N and levels of N are both highly significant. Others are not significant.

(iv) Av. yield of grain in lb./ac.

	$N_0$	$N_1$	$N_2$	Mean
$I_0$	694	1252	1099	1015
$I_1$	675	1326	1176	1059
$I_2$	596	1209	1047	951
$I_3$	645	1294	1154	1031
Mean	652	1270	1119	1014

**S.E. of difference of two**

1. marginal means of I = 114.1 lb./ac.
2. marginal means of N = 47.89 lb./ac.
3. N means at the same level of I = 95.78 lb./ac.
4. I means at the same level of N = 138.3 lb./ac.

**Crop :-Wheat (Rabi).**

**Ref :-U.P. 52(126).**

**Site :-Govt. Agri. Res. Farm, Kalyanpur.**

**Type :-'IM'.**

**Object :-To study the effect of different forms and levels of N in combination with levels of irrigation on Wheat.**

**1. BASAL CONDITIONS :**

(i) (a) Nil. (b) *Moong T<sub>1</sub>*. (c) N.A. (ii) (a) Loam. (b) N.A. (iii) 4.11.1952, (iv) (a) *Moong T<sub>1</sub>* ploughed in on 31.8.1952. Ploughings with watts plough and *Pata* on 19, 20.9.1952. Ploughings with cultivator and *Pata* on 9, 10.10.1952; 3.11.1952. *Palewa* on 20, 21.10.1952. Ploughing with *desi* plough and *pata* on 30, 31.10.1952. and 4.11.1952. (b) N.A. (c) 12.7 ch./plot. (d) and (e) N.A. (v) Nil. (vi) C-13 (medium). (vii) Irrigated. (viii) N.A. (ix) N.A. (x) 15.4.1953.

**2. TREATMENTS :****Main-plot treatments :**

4 levels of irrigation :  $I_0$ =No Irrigation,  $I_1$ =Irrigation 3 weeks after germination (at tillering),  $I_2$ = $I_1$ +irrigation 9 weeks after germination (at flowering) and  $I_3$ = $I_2$ +irrigation 12 weeks after germination (at milky stage).

**Sub-plot treatments :**

3 combinations of forms and levels of N :  $N_0$ =No manure,  $N_1$ =60 lb./ac. of N as A/S and  $N_2$ =60 lb./ac. of N as castor cake.

**3. DESIGN :**

(i) Split-plot. (ii) (a) 4 main-plots/replication and 3 sub-plots/main-plot. (iii) 4. (iv) (a) Main-plot : 57'×35'; sub-plot : 19'×35'. (b) 16'×32'. (v) 1½' ring round the net plot. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Nil. (iii) Grain and straw yield. (iv) (a) 1949-1953. (b) No. (c) N.A. (v) (a) Banaras, Faizabad, Etawah, Meerut, Kalai, Atarra, Hawalbagh, Bharari, Kunraghat and Muzaffarnagar. (b) N.A. (vi) Nil. (vii) The experiment was conducted by C.P.(R).

## 5. RESULTS :

- (i) 1786 lb./ac.  
 (ii) (a) 320.1 lb./ac.  
 (b) 175.3 lb./ac.  
 (iii) Effect of levels of N is highly significant and I x forms of N is significant. Others are not significant.  
 (iv) Av. yield of grain in lb./ac.

	N <sub>0</sub>	N <sub>1</sub>	N <sub>2</sub>	Mean
I <sub>0</sub>	1127	1871	1857	1618
I <sub>1</sub>	1231	2182	2273	1895
I <sub>2</sub>	1053	2346	1947	1782
I <sub>3</sub>	1181	2171	2199	1850
Mean	1148	2142	2069	1786

## S.E. of difference of two

1. I marginal means = 130.7 lb./ac.  
 2. N marginal means = 62.0 lb./ac.  
 3. N means at the same level of I = 124.0 lb./ac.  
 4. I means at the same level of N = 165.3 lb./ac.

Crop :-Wheat (*Rabi*).

Ref :-U.P. 53(145).

Site :-Govt. Agri. Res. Farm, Kalyanpur.

Type :-'IM'.

Object :-To study the effect of different forms and levels of N in combination with levels of irrigation on Wheat.

## 1. BASAL CONDITIONS :

(i) (a) Legume and Cereals. (b) *Lobia and Moong*. (c) Nil. (ii) (a) Loam. (b) N.A. (iii) 30.10.1953. (iv) (a) 6 ploughings followed by *pata* on 17, 19, 22.9.1953; 8 and 26.10.1953. (b) Sown by seed drill. (c) 40 to 50 srs./ac. (11 chh/plot.) (d), (e) N.A. (v) Green manure with *Lobia* (turned in). (vi) C-3 (medium). (vii) Irrigated—as per treatments. (viii) Interculturing with cultivator on 30.12.1953. (ix) N.A. (x) 17.4.1954.

## 2. TREATMENTS :

## Main-plot treatments :

4 levels of Irrigation : I<sub>0</sub>=No Irrigation, I<sub>1</sub>=Irrigation 3 weeks after germination (at tillering), I<sub>2</sub>=I<sub>1</sub>+Irrigation 9 weeks after germination (at flowering) and I<sub>3</sub>=I<sub>2</sub>+Irrigation 12 weeks after germination (at milky stage).

## Sub-plot treatments :

3 combinations of forms and levels of N : N<sub>0</sub>=Control, N<sub>1</sub>=60 lb./ac. of N as A/S and N<sub>2</sub>=60 lb./ac. of N as Castor cake.

I<sub>1</sub> given on 13.12.53, I<sub>2</sub> was not given due to rains, I<sub>3</sub> was given on 12.3.54. The experiment is analysed with I<sub>0</sub>, I<sub>1</sub> and I<sub>3</sub>; I<sub>2</sub> becoming identical with I<sub>1</sub>.

## 3. DESIGN :

(i) Split-plot. (ii) 4 main-plots/replication and 3 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) Main-plot : 57' x 35' and sub-plot 19' x 35'. (b) 16' x 32'. (v) 1½' ring round the net plot. (vi) Yes.

## 4. GENERAL :

(i) Satisfactory. Crop lodged. (ii) Black and brown rust attack. (iii) Germination per sq. yd. grain and straw yield. (iv) (a) 1949-1953. (b) No. (c) N.A. (v) (a) Banaras, Faizabad, Etawah, Atarra, Bharari, Meerut, Kunraghat, Muzaffarnagar and Kalai. (b) N.A. (vi) Plots which were manured with A/S were more damaged by rats due to greater lodging. (vii) The experiment was conducted by C.P.(R).

## 5. RESULTS :

- (i) 1198 lb./ac.  
 (ii) (a) 212.2 lb./ac.  
 (b) 198.4 lb./ac.  
 (iii) Only effect of levels of N is highly significant.  
 (iv) Av. yield of grain in lb./ac.

	N <sub>0</sub>	N <sub>1</sub>	N <sub>2</sub>	Mean
I <sub>0</sub>	916	1231	1179	1109
I <sub>1</sub>	935	1294	1369	1199
I <sub>2</sub>	1088	1348	1414	1283
Mean	968	1292	1333	1198

## S.E. of difference of

- I<sub>0</sub> and I<sub>2</sub> marginal means = 86.62 lb./ac.
- I<sub>0</sub> and I<sub>1</sub> or I<sub>1</sub> and I<sub>2</sub> marginal means = 75.01 lb./ac.
- two N marginal means = 70.16 lb./ac.
- two N means at the same level of I<sub>0</sub> or I<sub>2</sub> = 140.3 lb./ac.
- two N means at the same level of I<sub>1</sub> = 99.22 lb./ac.
- I<sub>0</sub> and I<sub>2</sub> means at the same level of N = 143.6 lb./ac.
- I<sub>0</sub> and I<sub>1</sub> or I<sub>1</sub> and I<sub>2</sub> means at the same level of N = 123.4 lb./ac.

Crop :-Wheat (*Rabi*).

Ref :-U.P. 49(83).

Site :- Govt. Agri. Res. Farm, Kalyanpur.

Type :-'IM'.

Object:—To study the effect of application of N to Wheat at different levels and at different times in combination with different levels of irrigation.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Urd.* (c) Nil. (ii) (a) Loam. (b) N.A. (iii) 24.10.1949. (iv) (a) One ploughing by watts plough, one by *dest* plough and *pata*; 4 ploughing by cultivators and 4 *pata*. (b) Drilling. (c) 45 srs./ac. (d) N.A. (e) N.A. (v) Nil. (vi) C-13 (early). (vii) Irrigated as per treatments. (viii) Interculturing on 17.12.1949. (ix) N.A. (x) 23.4.1950.

## 2. TREATMENTS :

## Main-plot treatments :

3 levels of irrigation : I<sub>1</sub>—Irrigation 3 weeks after germination (at tillering), I<sub>2</sub>—I<sub>1</sub>+Irrigation 9 weeks after germination (at flowering), I<sub>3</sub>—I<sub>2</sub>+Irrigation 12 weeks after germination (at milky stage).

## Sub-plot treatments :

All combinations of (1) and (2)+a control (N<sub>0</sub>T<sub>0</sub>=no manure).

(1) 2 levels of N as A/S : N<sub>1</sub>=30 and N<sub>2</sub>=60 lb./ac. of N.

(2) 2 times of application : T<sub>1</sub>—all at sowing and T<sub>2</sub>—Half at sowing and half at 1st irrigation.

## 3. DESIGN :

(i) Split-plot. (ii) (a) 3 main-plots/replication and 5 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) Main-plot : 22'×165' Sub-plot : 22'×33'. (b) 16'×27'. (v) 3' ring round the net-plot. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) N.A. (iii) Ht. of plant, leaf length, no. of tillers, no. of green leaves, length of roots, no. of dry leaves, wt. of shoot etc. grain and *bhusa* yield. (iv) (a) 1949—1953. (b) No. (c) N.A. (v) (a) Gorakhpur, Atarra, (Jhansi), Bharari, Meerut, Muzaffarnagar, Lucknow and Hawalbagh. (b) N.A. (vi) Nil. (vii) The experiment was conducted by C.P.

## 5. RESULTS :

- (i) 16.6 lb./ac.  
 (ii) (a) 303.1 lb./ac.  
 (b) 257.2 lb./ac.  
 (iii) None of the effects is significant.

(iv) Av. yield of grain in lb./ac.

	$N_0T_0$	$N_1T_1$	$N_2T_1$	$N_1T_2$	$N_2T_2$	Mean
$I_1$	1445	1664	1546	1697	1428	1556
$I_2$	1546	1849	1749	1680	1714	1708
$I_3$	1680	1714	1798	1748	1731	1734
Mean	1557	1742	1698	1708	1624	1666

S.E. of difference of two

1. I marginal means = 110.7 lb./ac.
2. NT marginal means = 140.1 lb./ac.
3. NT means at the same level of I = 242.6 lb./ac.
4. I means at the same level of NT = 243.6 lb./ac.

Crop :- Wheat (*Rabi*).

Ref :- U.P. 50(71).

Site :- Govt. Agri. Res. Farm, Kalyanpur.

Type :- 'IM'.

Object :- To study the effect of application of N to Wheat at different levels and at different times in combination with different levels of irrigation.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Maize and *moong*. (c) N.A. (ii) (a) Loam. (b) N.A. (iii) 26, 27.10.1950. (iv) (a) Ploughing with watts plough on 23.9.1950, tractor harrowing on 30.9.1950, *palewa* on 10, 12.10.1950, *dest* plough and *pata* on 23.10.1950 and 26.10.1950. (b) Seed drilled. (c) 43 srs./ac. (d) N.A. (e) N.A. (v) Nil. (vi) C-13 (early). (vii) Irrigated as per treatments. (viii) Nil. (ix) 3.45%. (x) N.A.

## 2. TREATMENTS :

Main-plot treatments :

4 levels of irrigation :  $I_0$  = No irrigation,  $I_1$  = Irrigation 3 weeks after germination (at tillering),  $I_2$  =  $I_1$  + Irrigation 9 weeks after germination (at flowering) and  $I_3$  =  $I_2$  + Irrigation 12 weeks after germination (at milky stage).

Sub-plot treatments :

All combination of (1) and (2) + a control ( $N_0T_0$  = no manure)(1) 2 levels of N as A/S :  $N_1$  = 30 and  $N_2$  = 60 lb./ac. of N.(2) 2 times of application :  $T_1$  = All at sowing and  $T_2$  = Half at sowing and half at 1st irrigation.

$I_1$  on 25.11.1950,  $I_2$  not given due to rains from 23.12.1950 to 16.1.1951;  $I_3$  on 3, 4.31.1951. Hence  $I_2$  becomes identical to  $I_1$ .

## 3. DESIGN :

(i) Split-plot. (ii) (a) 4 main-plots/replication and 5 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) Main-plot 175' x 19'. Sub-plot 19' x 35'. (b) 16' x 32'. (v) 1½' ring round the net-plot. (vi) Yes.

## 4. GENERAL :

(i) Fairly good. (ii) Nil. (iii) Grain yield. (iv) (a) 1949—1951. (b) No. (c) N.A. (v) (a) Kunraghat, Etawah, Muzaffarnagar, Meerut, Bharari, Atarra and Lucknow. (b) N.A. (vi) Some plots were badly damaged by rats. (vii) The experiment was conducted by C.P.

## 5. RESULTS :

(i) 1958 lb./ac.

(ii) (a) 3016 lb./ac.

(b) 2028 lb./ac.

(iii) Main effect of levels of N and control vs. treated are highly significant and interaction I x N is significant. All others are not significant.



(iv) Av. yield of grain in lb./ac.

	$N_0T_0$	$N_1T_1$	$N_2T_1$	$N_1T_2$	$N_2T_2$	Mean
$I_0$	1170	1732	2283	1677	2195	1811
$I_1$	1344	2117	2149	2106	2312	2006
$I_2$	1480	2115	2035	1995	2443	2008
Mean	1334	2020	2147	1971	2315	1958

S.E. of difference of

1.  $I_0$  and  $I_2$  marginal means = 110.1 lb./ac.
2.  $I_0$  and  $I_1$  or  $I_1$  and  $I_2$  marginal means = 95.78 lb./ac.
3. two marginal means of NT = 82.78 lb./ac.
4. two NT means at the same level of  $I_0$  or  $I_2$  = 165.6 lb./ac.
5. two NT means at the same level of  $I_1$  = 117.1 lb./ac.
6.  $I_0$  and  $I_2$  means at the same level of NT = 181.6 lb./ac.
7.  $I_0$  and  $I_1$  or  $I_1$  and  $I_2$  means at the same level of NT = 159.8 lb./ac.

Crop :-Wheat (*Rabi*).

Ref :-U.P. 51(80).

Site :-Govt. Agri. Res. Farm, Kalyanpur.

Type :-'IM'.

Object :-To study the effect of application of N to Wheat at different levels and at different times in combinations with different levels of irrigation.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fallow. (c) No. (ii) (a) Loam. (b) N.A. (iii) 28.10.1951. (iv) (a) N.A. (b) Sown behind the plough. (c) 40-50 seers/ac. (d) and (e) N.A. (v) Nil. (vi) C-13 (early). (vii) Irrigated. (viii) N.A. (ix) N.A. (x) N.A.

## 2. TREATMENTS :

Main-plot treatments :

4 levels of irrigation :  $I_0$ =No irrigation,  $I_1$ =Irrigation 3 weeks after germination (at tillering),  $I_2$ = $I_1$ +Irrigation 9 weeks after germination (at flowering) and  $I_3$ = $I_2$ +Irrigation 12 weeks after germination (at milk stage).

Sub-plot treatments :

All combinations of (1) and (2)+a control ( $N_0T_0$ =no manure)(1) 2 levels of N as A/S :  $N_1$ =30 and  $N_2$ =60 lb./ac. of N.(2) 2 times of application :  $T_1$ =All at sowing and  $T_2$ =Half at sowing and half at 1st irrigation.

## 3. DESIGN :

(i) Split-plot. (ii) (a) 4 main-plots/replication and 5 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) Main-plot size : 175' x 19' and sub-plot : 19' x 35'. (b) 16' x 32'. (v) 1½' ring round the net plot. (vi) Yes.

## 4. GENERAL :

(i) No lodging. Good. (ii) Nil. (iii) Grain yield. (iv) (a) 1949-1953. (b) No. (c) N.A. (v) (a) Hawa bagh, Etawah, Faizabad, Bharari, Atarra, Kunraghat, Muzaffarnagar, Lucknow and Meerut. (b) N.A. (vi) Nil. (vii) The expt. was conducted by C.P.

## 5. RESULTS:

- (i) 1081 lb./ac.
- (ii) (a) 309.8 lb./ac.
- (b) 206.9 lb./ac.
- (iii) Main effects of I, levels of N and control vs. treated are highly significant. Others are not significant.

(iv) Av. yield of grain in lb./ac.

	$N_0T_0$	$N_1T_1$	$N_2T_1$	$N_1T_2$	$N_2T_2$	Mean
$I_0$	150	243	561	470	459	377
$I_1$	768	1236	1488	1069	1444	1201
$I_2$	1050	1370	1425	1414	1663	1384
$I_3$	916	1324	1745	1351	1466	1360
Mean	721	1043	1305	1076	1258	1081

S.E. of difference of two

1. marginal means of I = 97.98 lb./ac.
2. marginal means of NT = 73.17 lb./ac.
3. NT means at the same level of I = 146.3 lb./ac.
4. I means at the same level of NT = 163.5 lb./ac.

Crop :-Wheat (*Rabi*).

Ref :-U.P. 52(76).

Site :-Govt. Agri. Res. Farm, Kalyanpur.

Type :-'IM'.

Object :-To study the effect of application of N to Wheat at different levels and at different times in combination with different levels of irrigation.

## 1. BASAL CONDITIONS:

(i) (a) *Moone*  $T_1$ -Wheat. (b) *Moong*  $T_1$ . (c) N.A. (ii) (a) Loam. (b) N.A. (iii) 29.10.1952. (iv) (a) 4 ploughings and *palewa*; *pata* after every ploughing and *palewa*. (b) to (e) N.A. (v) Nil. (vi) C-13 (medium). (vii) Irrigated as per treatments. (viii) N.A. (ix) N.A. (x) 16.4.1953.

## 2. TREATMENTS:

Main-plot treatments:

4 levels of irrigation:  $I_0$ =No irrigation,  $I_1$ =Irrigation 3 weeks after germination (at tillering),  $I_2=I_1$ +Irrigation 9 weeks after germination (at flowering) and  $I_3=I_2$ +Irrigation 12 weeks after germination (at milk stage).

Sub-plot treatments:

All combinations of (1) and (2)+a control ( $N_0T_0$ =no manure)(1) 2 levels of N as A/S:  $N_1=30$  and  $N_2=60$  lb./ac of N.(2) 2 times of application:  $T_1$ =all at sowing and  $T_2$ =Half at sowing and half at 1st irrigation.

## 3. DESIGN:

(i) Split-plot. (ii) (a) 4 main-plots/replication and 5 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) Main-plot: 17'5"×19' and sub-plot: 19'×35' (b) 16'×32'. (v) 1½' ring round the net plot. (vi) Yes.

## 4. GENERAL:

(i) Normal. (ii) Nil. (iii) Grain and straw yield. (iv) (a) 1949-1953. (b) No. (c) N.A. (v) (a) Etawah, Meerut, Atarra, Bharari, Fazabad, Muzaffarnagar and Kunraghat. (b) N.A. (vi) Nil. (vii) The expt. was conducted by C.P.(R).

## 5. RESULTS:

(i) 1428 lb./ac.

(ii) (a) 333.7 lb./ac.

(b) 252.2 lb./ac.

(iii) Effects of levels of N and control vs treated are highly significant. Others are not significant.

(iv) Av. yield of grain in lb./ac.

	$N_0T_0$	$N_1T_1$	$N_2T_1$	$N_1T_2$	$N_2T_2$	Mean
$I_0$	982	1540	1564	1184	1351	1324
$I_1$	1110	1463	1720	1217	1723	1447
$I_2$	1108	1559	1717	1469	1657	1502
$I_3$	1047	1438	1523	1433	1750	1438
Mean	1062	1500	1631	1326	1620	1428

S.E. of difference of two

1. I marginal means = 105.3 lb./ac.
2. NT marginal means = 89.18 lb./ac.
3. NT means at the same level of I = 178.4 lb./ac.
4. I means at the same level of NT = 191.3 lb./ac.

Crop :- Wheat (*Rabi*).

Ref :- U.P. 53(141).

Site :- Govt. Agri. Res. Farm, Kalyanpur.

Type :- 'IM'.

Object :- To study the effect of application of N to Wheat at different levels and at different times in combination with different levels of irrigation.

## 1. BASAL CONDITIONS :

(i) (a) *Legume* and cereal. (b) *Lobia* and *moong*. (c) Nil. (ii) (a) Loam. (b) N.A. (iii) 28.10.1953. (iv) (a) 7 ploughings followed by *pata* on 18, 23.9.1953, 9, 24, 25, 27, and 28.10.1953. (b) Seed drilled. (c) 40—50 srs./ac. (11 chs/plot). (d) and (e) N.A. (v) *Lobia* and *moong* turned in. (vi) C-13 (medium). (vii) Irrigated as per treatments. (viii) Interculturing with cultivator. (ix) N.A. (x) 19.4.1954.

## 2. TREATMENTS :

Main-plot treatments :

4 levels of irrigation:  $I_0$ =No irrigation,  $I_1$ =Irrigation 3 weeks after germination (at tillering),  $I_2=I_1+$  Irrigation 9 weeks after germination (at flowering) and  $I_3=I_2+$ Irrigation 12 weeks after germination (at milky stage).

Sub-plot treatments :

All combinations of (1) and (2) + a control ( $N_0T_0$ =no manure)(1) 2 levels of N as A/S :  $N_1=30$  and  $N_2=60$  lb./ac.(2) 2 times of application :  $T_1$ =all at sowing and  $T_2$ =Half at sowing and half at 1st irrigation.

$I_1$  applied on 17.12.1953 ;  $I_2$  not applied because of rains and  $I_3$  applied on 9.3.1954. Hence  $I_3$  becomes identical to  $I_1$ .

## 3. DESIGN :

(i) Split-plot. (ii) (a) 4 main-plots/replication and 5 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) Main-plot : 95'×35' and sub-plot : 19'×35' (b) 16'×32'. (v) Sub-plot border 1.5' and field border 3' around. Sown space left between main-plots 8' also to be used as irrigation channel. (vi) Yes.

## 4. GENERAL :

(i) Satisfactory. (ii) Nil. (iii) Germination per sq. yd., grain and straw yield in chhs./plot. (iv) (a) 1949—1953. (b) No. (c) N.A. (v) (a) Faizabad, Etawah, Atarra, Banda, Bharari, Meerut, Kunraghat, and Muzaffarnagar. (b) N.A. (vi) Plots with 60 lb./ac. of A/S are test of all. Average yield of crop at the farm=18 mds./ac. and in the surrounding area=15—18 mds./ac. (vii) The experiment was conducted by C.P. (R).

## 5. RESULTS :

- (i) 1175 lb./ac.
- (ii) (a) 272.1 lb./ac.
- (b) 197.5 lb./ac.
- (iii) Effects of levels of N and control vs treated are both highly significant. All others are not significant.

(iv) Av. yield of grain in lb./ac.

	N <sub>0</sub> T <sub>0</sub>	N <sub>1</sub> T <sub>1</sub>	N <sub>2</sub> T <sub>1</sub>	N <sub>1</sub> T <sub>2</sub>	N <sub>2</sub> T <sub>2</sub>	Mean
I <sub>0</sub>	818	1006	1233	1028	1146	1046
I <sub>1</sub>	975	1166	1285	1173	1504	1221
I <sub>2</sub>	878	1050	1411	1097	1622	1212
Mean	912	1097	1304	1118	1444	1175

## S.E. of difference of

1. I<sub>0</sub> and I<sub>2</sub> marginal means = 86.06 lb./ac.
2. I<sub>0</sub> and I<sub>1</sub> or I<sub>1</sub> and I<sub>2</sub> marginal means = 74.53 lb./ac.
3. two marginal means of NT = 69.82 lb./ac.
4. NT means at the same level of I<sub>1</sub> = 98.74 lb./ac.
5. NT means at the same level of either I<sub>0</sub> or I<sub>1</sub> = 139.6 lb./ac.
6. I<sub>0</sub> and I<sub>2</sub> means at the same level of NT = 151.7 lb./ac.
7. I<sub>0</sub> and I<sub>1</sub> or I<sub>1</sub> and I<sub>2</sub> means at the same level of NT = 131.4 lb./ac.

Crop :-Wheat (*Rabi*).

Ref :-U.P. 49(100).

Site :-Govt. Agri. Res. Farm, Kalyanpur.

Type :-'IM'.

Object :-To study the effect of different levels of irrigation in combination with P<sub>2</sub>O<sub>5</sub> and Gypsum on Wheat.

## 1. BASAL CONDITIONS:

(i) (a) Nil (b) *Urd*. (c) N.A. (ii) (a) Loam. (b) N.A. (iii) 14.11.1949. (iv) (a) One ploughing with *watts* plough, one tractor harrowing and *pata*, 5 ploughings by cultivator and *pata*. (b) Seed drilled. (c) 45 srs /ac. (d) and (e) N.A. (v) Nil. (vi) C-13. (vii) Irrigated. (viii) Interculture by planet Junior on 15.12.1949. (ix) N.A. (x) 24.4.1950.

## 2. TREATMENTS:

## Main-plot treatments:

2 levels of irrigation: I<sub>1</sub>=Irrigation 9 weeks after germination (at flowering), and I<sub>2</sub>=I<sub>1</sub>+Irrigation 12 weeks after germination (at milky stage).

## Sub-plot treatments:

All combinations of (1) and (2)

(1) 3 levels of P<sub>2</sub>O<sub>5</sub> as Super: P<sub>0</sub>=0, P<sub>1</sub>=20 and P<sub>2</sub>=40 lb./ac.

(2) 3 levels of Ca as Gypsum: G<sub>0</sub>=0, G<sub>1</sub>=25 and G<sub>2</sub>=50 lb./ac.

## 3. DESIGN:

(i) Split-plot. (ii) (a) 2 main-plots/block; 9 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) Main-plot: 162' x 40' and sub-plot: 18 x 40'. (b) 12' x 34'. (v) 3' ring round the net plot. (vi) Yes.

## 4. GENERAL:

(i) Good. (ii) N.A. (iii) Grain and fodder yield. (iv) (a) 1949-1953. (b) No. (c) N.A. (v) (a) Banaras, Baratanki, Bulandshahar and Lucknow. (b) N.A. (vi) Nil. (vii) The expt. was conducted by C.P.

## 5. RESULTS:

- (i) 2295 lb./ac.
- (ii) (a) 782.1 lb./ac.
- (b) 383.5 lb./ac.
- (iii) None of the effects is significant.

(iv) Av. yield of grain in lb./ac.

	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>	Mean	G <sub>0</sub>	G <sub>1</sub>	G <sub>2</sub>
I <sub>1</sub>	2312	2404	2318	2345	2398	2361	2276
I <sub>2</sub>	2367	2184	2184	2245	2166	2300	2269
Mean	2340	2294	2251	2295	2282	2330	2272
G <sub>0</sub>	2343	2196	2306	2282			
G <sub>1</sub>	2269	2480	2242	2330			
G <sub>2</sub>	2407	2205	2205	2272			

S.E. of difference of two

1. marginal means of I = 212.9 lb./ac.
2. marginal means of G or P = 127.8 lb./ac.
3. G or P means at the same level of I = 180.8 lb./ac.
4. I means at the same level of G or P = 259.0 lb./ac.
5. means in the body of G × P table = 221.4 lb./ac.

Crop :-Wheat (*Rabi*).

Ref :-U.P. 50(132).

Site :-Govt. Agri. Res. Farm, Kalyanpur.

Type :-'IM'.

Object :-To study the effect of different levels of irrigation in combination with P<sub>2</sub>O<sub>5</sub> and Gypsum on Wheat.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) N.A. (c) N.A. (ii) (a) Loam. (b) N.A. (iii) N.A. (iv) (a) and (b) N.A. (c) 45 ars./ac. (d) and (e) N.A. (v) Nil. (vi) C-13 (early). (vii) Irrigated. (viii) N.A. (ix) 3.45%. (x) N.A.

## 2. TREATMENTS :

Main-plot treatments :

2 levels of irrigation : I<sub>1</sub>=Irrigation 9 weeks after germination (at flowering) and I<sub>2</sub>=I<sub>1</sub>+Irrigation 12 weeks after germination (at milky stage).

Sub-plot treatments :

All combinations of (1) and (2)

(1) 3 levels of P<sub>2</sub>O<sub>5</sub> as Super : P<sub>0</sub>=0, P<sub>1</sub>=20 and P<sub>2</sub>=40 lb./ac.(2) 3 levels CaO as Gypsum : G<sub>0</sub>=0, G<sub>1</sub>=25 and G<sub>2</sub>=50 lb./ac.

## 3. DESIGN :

(i) Split-plot. (ii) (a) 2 main-plots/replication and 9 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) Main-plot : 171' × 35' and sub-plot : 19' × 35'. (b) 16' × 32'. (v) 1½' ring round the net plot. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) N.A. (iii) Grain yield. (iv) (a) 1949-1953. (b) No. (c) N.A. (v) (a) Barabanki, Banaras. (b) N.A. (vi) Nil. (vii) The expt. was conducted by C.P.

## 5. RESULTS :

(i) 1521 lb./ac.

(ii) (a) 265.3 lb./ac.

(b) 137.3 lb./ac.

(iii) None of the effects is significant.

(iv) Av. yield of grain in lb./ac.

	G <sub>0</sub>	G <sub>1</sub>	G <sub>2</sub>	Mean	I <sub>1</sub>	I <sub>2</sub>
P <sub>0</sub>	1526	1588	1454	1523	1449	1616
P <sub>1</sub>	1531	1545	1451	1509	1459	1559
P <sub>2</sub>	1575	1533	1489	1532	1487	1578
Mean	1544	1555	1465	1521		
I <sub>1</sub>	1458	1503	1414	1458		
I <sub>2</sub>	1630	1608	1515	1584		

S.E. of difference of two

1. I marginal means = 62.53 lb./ac.
2. G or P marginal means = 39.64 lb./ac.
3. G or P means at the same level of I = 55.06 lb./ac.
4. I means at the same level of G or P = 77.50 lb./ac.
5. means in the body of G × P table = 68.66 lb./ac.

Crop :-Wheat (Rabi).

Ref :- U.P. 51(75).

Site :-Govt. Agri. Res. Farm, Kalyanpur.

Type :-'IM'.

Object :—To study the effect of different levels of irrigation in combination with P<sub>2</sub>O<sub>5</sub> and Gypsum on Wheat.

## 1. BASAL CONDITIONS:

(i) (a) Nil. (b) *Kakun*. (c) No. (ii) (a) Loam. (b) N.A. (iii) 28.10.1951. (iv) (a) N.A. (b) Seed drilled. (c) 40-50 srs/ac. (d) and (e) N.A. (v) Nil. (vi) C-13 (early). (vii) Irrigated. (viii) N.A. (ix) N.A. (x) N.A.

## 2. TREATMENTS:

Main-plot treatments:

2 levels of irrigation: I<sub>1</sub> = Irrigation 9 weeks after germination (at flowering) and I<sub>2</sub> = I<sub>1</sub> + Irrigation 12 weeks after germination (at milky stage).

Sub-plot treatments:

All combinations of (1) and (2).

- (1) 3 levels of P<sub>2</sub>O<sub>5</sub> as Super: P<sub>0</sub>=0, P<sub>1</sub>=20 and P<sub>2</sub>=40 lb./ac.
- (2) 3 levels CaO as of Gypsum: G<sub>0</sub>=0, G<sub>1</sub>=25 and G<sub>2</sub>=50 lb./ac.

## 3. DESIGN:

(i) Split-plot. (ii) (a) 2 main-plots/replication and 9 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) Main-plot = 171' × 35' and sub-plot 19' × 35'. (b) 16' × 32'. (v) 1½' ring round the net plot. (vi) Yes.

## 4. GENERAL:

(i) Satisfactory. (ii) Nil. (iii) Grain yield. (iv) (a) 1949–1953. (b) No. (c) N.A. (v) (a) Banaras, (b) N.A. (vi) Nil. (vii) The experiment was conducted by C.P.

## 5. RESULTS:

- (i) 846.4 lb./ac.
- (ii) (a) 176.7 lb./ac.
- (b) 103.6 lb./ac.
- (iii) Main effects of I, G and P and interactions G × P, I × G × P are all significant. Others are not significant.

(iv) Av. yield of grain in lb./ac.

	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>	Mean	G <sub>0</sub>	G <sub>1</sub>	G <sub>2</sub>
I <sub>1</sub>	868.7	810.4	838.6	839.3	856.9	853.2	807.7
I <sub>2</sub>	851.4	854.1	855.1	853.5	857.8	835.9	866.9
Mean	860.0	832.3	846.8	846.4	857.3	844.6	837.3
G <sub>0</sub>	914.8	862.8	794.4	857.3			
G <sub>1</sub>	824.5	871.0	838.2	844.6			
G <sub>2</sub>	840.9	763.0	907.9	837.3			

## S.E. of difference of two

1. marginal means of I = 41.64 lb./ac.
2. marginal means of G or P = 29.90 lb./ac.
3. G or P means at the same level of I = 42.28 lb./ac.
4. I means at the same level of G or P = 54.09 lb./ac.
5. means in the body of G×P table = 51.77 lb./ac.

Crop :-Wheat (*Rabi*).

Ref :- U.P. 52(112).

Site :- Govt. Agri. Res. Farm, Kalyanpur.

Type :- 'IM'.

Object :-To study the effect of different levels of irrigation in combination with P<sub>2</sub>O<sub>5</sub> and Gypsum on Wheat.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Moong T<sub>1</sub>*. (c) N.A. (ii) (a) Loam. (b) N.A. (iii) 27.10.1952. (iv) (a) Ploughing with *watts* plough and *patta* on 21.9. 1952. Ploughing with spirial harrow and *Patta* on 22.9.1952. Ploughing with cultivator and *pata* on 6.10.1952. *Palewa* on 8, 9.10.1952. *Patta* on 15.10.1952. Ploughing with cultivator and *pata* on 16. 17.10.1952. Ploughing with *dest* plough and *pata* 24, 25, 27.10.1952. (b) N.A. (c) 12.7 lb./plot. (d) and (e) N.A. (v) Nil. (vi) C-13 (medium). (vii) Irrigated. (viii) N.A. (ix) N.A. (x) 1.4.1953.

## 2. TREATMENTS :

## Main-plot treatments :

2 levels of irrigation : I<sub>1</sub>=Irrigation 9 weeks after germination (at flowering) and I<sub>2</sub>=I<sub>1</sub>+Irrigation 12 weeks after germination (at milky stage).

## Sub-plot treatments :

All combinations of (1) and (2).

(1) 3 levels of P<sub>2</sub>O<sub>5</sub> as Super : P<sub>0</sub>=0, P<sub>1</sub>=20 and P<sub>2</sub>=40 lb./ac.

(2) 3 levels of CaO as Gypsum : G<sub>0</sub>=0, G<sub>1</sub>=25 and G<sub>2</sub>=50 lb./ac.

## 3. DESIGN :

(i) Split-plot. (ii) (a) 2 main-plots/replication and 9 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 19'×35'. (b) 16'×32' (v) 1½' ring round the net plot. (vi) Yes.

## 4. GENERAL :

(i) Fair. (ii) Nil. (iii) Grain and straw yield. (iv) (a) 1949—1953. (b) No. (c) N.A. (v) (a) Banaras. (b) N.A. (vi) Nil. (vii) The experiment was conducted by C.P. (R).

## 5. RESULTS :

(i) 869.8 lb./ac.

(ii) (a) 431.2 lb./ac.

(b) 162.2 lb./ac.

(iii) None of the effects is significant.

(iv) Av. yield of grain in lb./ac.

	G <sub>0</sub>	G <sub>1</sub>	G <sub>2</sub>	Mean	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>
I <sub>1</sub>	921.6	860.5	930.7	904.3	947.1	856.9	908.8
I <sub>2</sub>	864.2	828.6	813.1	835.3	859.6	850.5	795.8
Mean	892.9	844.6	871.9	869.8	903.4	853.7	852.3
P <sub>0</sub>	969.5	881.9	858.7	903.4			
P <sub>1</sub>	847.8	820.4	892.9	853.7			
P <sub>2</sub>	861.4	831.4	864.2	852.3			

S.E. of difference of two

1. marginal means of I = 101.6 lb./ac.
2. marginal means of G or P = 46.81 lb./ac.
3. G or P means at the same level I = 66.20 lb./ac.
4. I means at the same level of G or P = 115.1 lb./ac.
5. means of the body of G×P table = 81.08 lb./ac.

Crop :-Wheat (*Rabi*).

Ref :-U.P. 53(143).

Site :-Govt. Agri. Res. Farm, Kalyanpur.

Type :-'IM'.

Object:—To study the effect of different levels of irrigation in combination with P<sub>2</sub>O<sub>5</sub> and Gypsum on Wheat

## 1. BASAL CONDITIONS :

(i) (a) *Legume*—Cereal. (b) *Lobia* and *Moong*. (c) Nil. (ii) (a) Loam. (b) N.A. (iii) 29.10.1953  
 (iv) (a) 7 ploughings and *pata* after every ploughing. (b) N.A. (c) 40 srs./ac. (d) and (e) N.A. (v)  
*Lobia* and *moong* turned in on 2.9.1953. (vi) C-13 (medium). (vii) Irrigated. (viii) Interculturing with  
 cultivator on 1.2.1954. (ix) N.A. (x) 18.4.1954.

## 2. TREATMENTS :

Main-plot treatments :

2 levels of irrigation : I<sub>1</sub>=Irrigation 9 weeks after germination (at flowering) and I<sub>2</sub>=I<sub>1</sub>+Irrigation 12 weeks after germination (at milky stage).

Sub-plot treatments :

All combinations of (1) and (2)

- (1) 3 levels of P<sub>2</sub>O<sub>5</sub> as Super : P<sub>0</sub>=0, P<sub>1</sub>=20 and P<sub>2</sub>=40 lb./ac.
- (2) 3 levels of CaO as Gypsum : G<sub>0</sub>=0, G<sub>1</sub>=25 and G<sub>2</sub>=50 lb./ac.

## 3. DESIGN :

(i) Split-plot. (ii) (a) 2 main-plots/replication and 9 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a)  
 Main-plot : 35'×171' and sub-plot : 19'×35'. (b) 16'×32'. (v) 1½' ring round the net plot. (vi) Yes.

## 4. GENERAL :

(i) Satisfactory. (ii) Nil, slight damage by rats in few plots. (iii) Germination, grain and straw yield.  
 (iv) (a) 1949—1953. (b) No. (c) N.A. (v) (a) Banaras. (b) N.A. (vi) Nil. (vii) The expt. was conducted by C.P.(R).

## 5. RESULTS :

- (i) 1165 lb./ac.
- (ii) (a) 150.2 lb./ac.
- (b) 170.3 lb./ac.
- (iii) Only interaction I×P×G is highly significant.



(iv) Av. yield of grain in lb./ac.

	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>	Mean	I <sub>1</sub>	I <sub>2</sub>
G <sub>0</sub>	1179	1166	1098	1148	1090	1205
G <sub>1</sub>	1251	1248	1134	1211	1246	1176
G <sub>2</sub>	1094	1235	1082	1137	1126	1148
Mean	1175	1216	1105	1165		
I <sub>1</sub>	1139	1201	1122	1154		
I <sub>2</sub>	1211	1232	1087	1176		

S.E. of difference of two

1. I marginal means =35.40 lb./ac.
2. G or P marginal means =35.55 lb./ac.
3. P or G means at the same level of I =69.52 lb./ac.
4. I means at the same level of P or G =66.89 lb./ac.
5. means in the body of G×P table =61.57 lb./ac.

Crop :-Wheat (*Rabi*).

Ref :-U.P. 49(78).

Site :-Sugarcane Res. Sub-Stn., Kunraghat.

Type :-'IM'.

Object:—To study the effect of application of N to Wheat at different levels and at different times in combination with different levels of irrigation.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Sanai*. (c) No. (ii) (a) Sandy loam. (b) N.A. (iii) 12.11.1949. (iv) (a) 2 ploughings and *pata*. (b) N.A. (c) 40 seers/ac. (d) and (e) N.A. (v) G.M. by *sanai*. (vi) NP-52 (medium). (vii) Irrigated. (viii) Interculture with one harrow on 13.12.1949. (ix) N.A. (x) 4.4.1950.

## 2. TREATMENTS :

Main-plot treatments :

3 levels of irrigation : I<sub>1</sub>=Irrigation 3 weeks after germination (at tillering), I<sub>2</sub>=I<sub>1</sub>+Irrigation 9 weeks after germination (at flowering) and I<sub>3</sub>=I<sub>2</sub>+Irrigation 12 weeks after germination (at milky stage).

Sub-plot treatments :

All combinations of (1) and (2)+a control (N<sub>0</sub>T<sub>0</sub>=no manure)(1) 2 levels of N as A/S : N<sub>1</sub>=30 and N<sub>2</sub>=60 lb./ac. of N.(2) 2 times of application : T<sub>1</sub>=All at sowing and T<sub>2</sub>=Half at sowing and half at 1st irrigation.

## 3. DESIGN :

(i) Split-plot. (ii) (a) 3 main-plots/block and 5 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) Main-plot size : 22'×165' and sub-plot : 22'×33'. (b) 16'×27'. (v) 3' ring round the net plot. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) N.A. (iii) No. of tillers, length of leaves etc. Grain and *bhusa* yield. (iv) (a) to (c) No. (v) (a) Kalyanpur, Atarra, Bharari, Meerut, Muzaffarnagar, Lucknow and Hawalbagh. (b) N.A. (vi) Nil. (vii) Experiment conducted by C.P.

## 5. RESULTS :

(i) 1008 lb./ac.

(ii) (a) 166.5 lb./ac.

(b) 232.3 lb./ac.

(iii) Main effect of N and T and 'control vs treated' are all highly significant. Others are not significant.

(iv) Av. yield of grain in lb./ac.

	$N_0T_0$	$N_1T_1$	$N_2T_1$	$N_1T_2$	$N_2T_2$	Mean
$I_1$	1188	968	557	1214	925	970
$I_2$	1331	929	657	1331	959	1041
$I_3$	1374	1020	709	985	968	1011
Mean	1298	972	641	1177	951	1008

S.E. of difference of two

1. marginal means of I = 60.80 lb./ac.
2. marginal means of NT = 109.5 lb./ac.
3. NT means at the same level of I = 189.6 lb./ac.
4. I means at the same level of NT = 180.2 lb./ac.

Crop :-Wheat (*Rabi*).

Ref :-U.P. 50(77).

Site :-Sugarcane Res. Sub-Stn., Kunraghat.

Type :-'IM'.

Object :-To study the effect of application of N to Wheat at different levels and at different times in combination with different levels of irrigation.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Charl*. (c) No. (ii) (a) Loam. (b) N.A. (iii) 30.11.1950. (iv) (a) Preparation to crumpling stage by 6 ploughings and 2 harrowings and 2 harrowings for taking out grass and hand weeding after irrigation. (b) Seed drilled. (c) 40-50 srs./ac. (d) and (e) N.A. (v) Nil. (vi) NP. 52 (medium). (vii) Irrigated. (viii) One weeding. (ix) 1.69°. (x) 14 and 15.4.1951.

## 2. TREATMENTS :

Main-plot treatments :

4 levels of irrigation :  $I_0$ =No irrigation,  $I_1$ =Irrigation 3 weeks after germination (at tillering),  $I_2$ = $I_1$ +irrigation 9 weeks after germination (at flowering) and  $I_3$ = $I_2$ +irrigation 12 weeks after germination (at milky stage).

Sub-plot treatments :

All combinations of (1) and (2)+a control ( $N_0T_0$ =No manure).

(1) 2 levels of N A/S :  $N_1$ =30 and  $N_2$ =60 lb./ac. of N.

(2) 2 times of application :  $T_1$ =All at sowing and  $T_2$ =half at sowing and half at first irrigation.

## 3. DESIGN :

(i) Split-plot. (ii) (a) 4 main-plots/replication and 5 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) Main-plot 16'×175' and sub-plot 16'×35'. (b) 13'×32'. (v) 1½' around. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Stray attack of rust with negligible effect. (iii) Grain yield. (iv) (a) 1950-1953. (b), (c) N.A. (v) (a) Kalyanpur, Etawah, Muzaffarnagar, Meerut, Bharari, Atarra and Lucknow. (b) N.A. (vi) Nil. (vii) The expt. was conducted by C.P.

## 5. RESULTS :

(i) 1249 lb./ac.

(ii) (a) 144.5 lb./ac.

(b) 244.2 lb./ac.

(iii) Main effect of I is significant. 'Control vs treated' effect is highly significant. No other effect is significant.

(iv) Av. yield of grain in lb./ac.

	$N_0T_0$	$N_1T_1$	$N_2T_1$	$N_1T_2$	$N_2T_2$	Mean
$I_0$	852	1458	1404	1463	1611	1358
$I_1$	816	1261	1288	1163	1360	1178
$I_2$	633	1396	1315	1082	1207	1127
$I_3$	1015	1458	1431	1373	1387	1333
Mean	829	1393	1360	1270	1391	1249

S.E. of difference of two

1. I marginal means = 52.67 lb./ac.
2. NT marginal means = 99.68 lb./ac.
3. NT means at the same level of I = 199.4 lb./ac.
4. I means at the same level of NT = 185.9 lb./ac.

Crop :-Wheat (*Rabi*).

Ref :-U.P. 51(81).

Site :-Sugarcane Res. Sub-Stn., Kunraghat.

Type :-'IM'.

Object :-To study the effect of application of N to Wheat at different levels and at different times in combination with different levels of irrigation.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fallow. (c) No. (ii) (a) Loam. (b) N.A. (iii) 6.11.1951. (iv) (a) N.A. (b) Seed drill. (c) 40-50 srs./ac. (d) and (e) N.A. (v) Nil. (vi) NP-52 (medium). (vii) Irrigated. (viii) N.A. (ix) N.A. (x) N.A.

## 2. TREATMENTS :

Main-plot treatments :

4 levels of irrigation :  $I_0$ =No irrigation,  $I_1$ =Irrigation 3 weeks after germination (at tillering),  $I_2$ = $I_1$ +irrigation 9 weeks after germination (at flowering) and  $I_3$ = $I_2$ +irrigation 12 weeks after germination (at milky stage).

Sub-plot treatments :

All combinations of (1) and (2)+a control ( $N_0T_0$ =no manure)

(1) 2 levels of N as A/S :  $N_1$ =30 and  $N_2$ =60 lb./ac. of N.

(2) 2 times of application :  $T_1$ =All at sowing and  $T_2$ =half at sowing and half at first irrigation.

## 3. DESIGN :

(i) Split-plot. (ii) (a) 4 main-plots/replication and 5 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) Main-plot : 16'×175', sub-plot : 16'×35'. (b) 13'×32'. (v) 1½' allround.

## 4. GENERAL :

(i) Good. No lodging. (ii) Nil. (iii) Grain yield. (iv) (a) 1950-1953. (b), (c) No. (v) (a) Hawaltagh, Etawah, Fa'zabad, Muzaffarnagar, Lucknow, Meerut, Kalyanpur, Atarra and Bharari. (b) N.A. (vi) Nil. Experiment was conducted by C.P.

## 5. RESULTS :

- (i) 711 lb./ac.
- (ii) (a) 147.8 lb./ac.  
(b) 166.9 lb./ac.
- (iii) Main effects of I and N and 'control vs treated' are all highly significant. Other effects are not significant.

(iv) Av. yield of grain in lb./ac.

	$N_0T_0$	$N_1T_1$	$N_2T_1$	$N_1T_2$	$N_2T_2$	Mean
$I_0$	166	534	637	713	722	554
$I_1$	211	601	888	664	997	672
$I_2$	269	566	1346	735	991	781
$I_3$	166	790	1104	817	1301	836
Mean	203	623	994	733	1003	711

S.E. of difference of two

1. I marginal means = 53.98 lb./ac.
2. NT marginal means = 68.13 lb./ac.
4. NT means at the same level of I = 136.2 lb./ac.
3. I means at the same level of NT = 133.3 lb./ac.

Crop :-Wheat (*Rabi*).

Ref :-U.P. 52(128).

Site :- Sugarcane Res. Sub-Stn., Kunraghat.

Type :- 'IM'.

Object:—To study the effect of application N to Wheat at different levels and at different times in combination with different levels of irrigation.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Chari*. (c) Nil. (ii) (a) Loam. (b) N.A. (iii) 6.11.1952. (iv) (a) 4 ploughings. (b) N.A. (c) 40 to 50 srs/ac. (d) N.A. (e) N.A. (v) Nil. (vi) NP-52 (medium). (vii) Irrigated. (viii) N.A. (ix) 0.84". (x) 10, 12.4.1953.

## 2. TREATMENTS :

Main-plot treatments :

4 levels of irrigation :  $I_0$ =No irrigation,  $I_1$ =Irrigation 3 weeks after germination (at tillering),  $I_2=I_1+$  Irrigation 9 weeks after germination (at flowering) and  $I_3=I_2+$  Irrigation 12 weeks after germination (at milky stage).

Sub-plot treatments :

All combinations of (1) and (2)+a control ( $N_0T_0$ =no manure).(1) 2 levels of N as A/S :  $N_1=30$  and  $N_2=60$  lb./ac. of N.(2) 2 times of application :  $T_1$ =Full at the sowing and  $T_2$ =half at sowing and half at 1st irrigation.

## 3. DESIGN :

(i) Split-plot. (ii) (a) 4 main-plots/replication and 5 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) Main-plot : 16' × 175', sub-plot : 16' × 35'. (b) 13' × 32'. (v) 1½' around. (vi) Yes.

## 4. GENERAL :

(i) Poor. (ii) Nil. (iii) Grain and straw yield. (iv) (a) 1950—1953. (b) No. (c) No. (v) (a) Etawah, Kalyanpur, Meerut, Atarra, Bharari, Faizabad and Muzaffarnagar. (b) N.A. (vi) Nil. (vii) Experiment conducted by C.P. (R).

## 5. RESULTS :

- (i) 464 lb./ac.
- (ii) (a) 133.3 lb./ac.
- (b) 82.50 lb./ac.
- (iii) Only control vs. treated is highly significant.

(iv) Av. yield of grain in lb./ac.

	$N_0T_0$	$N_1T_1$	$N_2T_1$	$N_1T_2$	$N_2T_2$	Mean
$I_0$	408	462	471	413	543	460
$I_1$	346	534	489	548	579	499
$I_2$	314	449	530	485	569	469
$I_3$	323	440	440	503	426	426
Mean	348	471	482	487	530	464

S.E. of difference of two

1. marginal means of I =48.69 lb./ac.
2. marginal means of NT =33.68 lb./ac.
3. NT means at the same level of I =67.36 lb./ac.
4. I means at the same level of NT =77.46 lb./ac.

Crop :- Wheat (*Rabi*).

Ref :- U.P. 53(56).

Site :- Sugarcane Res. Sub-Stn., Kunraghat.

Type :- 'IM'.

Object :- To study the effect of application of N to Wheat at different levels and at different times in combination with different levels of irrigation.

**1. BASAL CONDITIONS :**

(i) (a) Nil. (b) Cowpea for fodder. (c) Nil. (ii) (a) Loam. (b) N.A. (iii) 2.11.1953. (iv) (a) 6 ploughings, rolling on 16.10.1953; *Palewa* on 27.10.1953. (b) Seed drill. (c) 40-50 srs/ac. (1.16 lb./plot). (d) N.A. (e) N.A. (v) N.A. (vi) NP-52 (medium). (vii) Irrigated. (viii) Weeding and hoeing are in common practice. (ix) 0.51". (x) 31.3.1954 and 1.4.1954.

**2. TREATMENTS :**

Main plot treatments :

4 levels of irrigation :  $I_0$ =No irrigation,  $I_1$ =Irrigation 3 weeks after germination (at tillering),  $I_2=I_1+$  Irrigation 9 weeks after germination (at flowering) and  $I_3=I_2+$  Irrigation 12 weeks after germination (at milky stage).

Sub-plot treatments :

All combinations of (1) and (2)+a control ( $N_0T_0$ =no manure)(1) 2 levels of N as A/S :  $N_1=30$  and  $N_2=60$  lb./ac. of N.(2) 2 times of application :  $T_1$ =Full at sowing and  $T_2$ =half at sowing and half at 1st irrigation.**3. DESIGN :**

(i) Split-plot. (ii) (a) 4 main-plot/replication and 5 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) Main-plot :  $16 \times 175'$ , sub-plot :  $16' \times 35'$ . (b)  $13' \times 32'$ . (v) Plot border 1.5' and field border 3' arounds. Sown space left between main-plots to be used as irrigation channel. (vi) Yes.

**4. GENERAL :**

(i) Good. No lodging. (ii) Nil. (iii) Grain and straw yield. (iv) (a) 1950-1953. (b) No. (c) No. (v) Faizabad, Etawah, Kalyanpur, Atarra, Bharari, Meerut and Muzaffarnagar. (b) N.A. (vi) Nil. (vii) Experiment conducted by C.P. (R).

**5. RESULTS :**

(i) 1298 lb./ac.

(ii) (a) 216.8 lb./ac.

(b) 273.2 lb./ac.

(iii) None of the effects is significant.

(iv) Av. yield of grain in lb./ac.

	N <sub>0</sub> T <sub>0</sub>	N <sub>1</sub> T <sub>1</sub>	N <sub>2</sub> T <sub>1</sub>	N <sub>1</sub> T <sub>2</sub>	N <sub>2</sub> T <sub>2</sub>	Mean
I <sub>0</sub>	1328	1292	1292	1185	1203	1260
I <sub>1</sub>	1041	1499	1427	1382	1149	1300
I <sub>2</sub>	1203	1418	1418	1239	1436	1343
I <sub>3</sub>	1221	1292	1068	1458	1418	1291
Mean	1198	1375	1301	1316	1302	1298

S.E. of the difference of two

1. marginal means of I = 79.17 lb./ac.
2. marginal means of NT = 111.5 lb./ac.
3. NT means at the same level of I = 223.1 lb./ac.
4. I means at the same level of NT = 214.6 lb./ac.

Crop :- Wheat (*Rabi*).

Ref :- U.P. 49(74).

Site :- Sugarcane Res. Sub-Stn., Kunraghat.

Type :- 'IM'.

Object :—To study the effect of different forms and levels of N in combination with levels of irrigation on Wheat.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Sanai*. (c) N.A. (ii) (a) Sandy loam. (b) N.A. (iii) 11.11.1949. (iv) (a) 8 ploughings and *pata*. (b) N.A. (c) 40 srs./ac. (d) and (e) N.A. (v) G.M. by *sanai*. (vi) NP-52 (medium). (vii) Irrigated. (viii) Harrowing on 13.12.1949. (ix) N.A. (x) 4.4.1950.

## 2. TREATMENTS :

Main-plot treatments :

3 levels of Irrigation : I<sub>1</sub> = Irrigation 3 weeks after germination (at tillering), I<sub>2</sub> = I<sub>1</sub> + irrigation 9 weeks after germination (at flowering) and I<sub>3</sub> = I<sub>2</sub> + irrigation 12 weeks after germination (at milky stage).

Sub-plot treatments :

3 combination of forms and levels of N : N<sub>0</sub> = N<sub>0</sub> manure., N<sub>1</sub> = 60 lb./ac. of N as A/S and N<sub>2</sub> = 60 lb./ac. of N as castor cake.

## 3. DESIGN :

(i) Split-plot. (ii) (a) 3 main-plots/ block, and 3 sub-plots/ main-plot. (b) N.A. (iii) 3. (iv) (a) Main-plot : 54' × 40' and sub-plot 18' × 40'. (b) 12' × 34'. (v) 3' ring round the net-plot. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) N.A. (iii) Grain yield. (iv) (a) No. (b) and (c) No. (v) (a) Banaras, Kalyanpur, Atarra Bharari, Meerut, Muzaffarnagar, Lucknow, Bulandshahr and Hawalbagh. (b) N.A. (vi) Nil (vii) The experiment was conducted by C.P.

## 5. RESULTS :

(i) 1053 lb./ac.

(ii) (a) 144.8 lb./ac.

(b) 244.8 lb./ac.

(iii) Forms of N are significant. Levels of N are highly significant. Others are not significant.

(iv) Av. yield of grain in lb./ac.

	N <sub>0</sub>	N <sub>1</sub>	N <sub>2</sub>	Mean
I <sub>1</sub>	1363	833	1144	1113
I <sub>2</sub>	1400	668	1144	1071
I <sub>3</sub>	1217	778	933	976
Mean	1327	760	1074	1053

## S.E. of difference of two

- |                                   |                 |
|-----------------------------------|-----------------|
| 1. marginal means of I            | = 68.25 lb./ac. |
| 2. marginal means of N            | = 115.4 lb./ac. |
| 3. N means at the same level of I | = 199.9 lb./ac. |
| 4. I means at the same level of N | = 176.9 lb./ac. |

Crop :-Wheat (*Rabi*).

Ref :-U.P. 50(78).

Site :-Sugarcane Res. Sub-Stn., Kunraghat.

Type :-'IM'.

Object:—To study the effect of different forms and levels of N in combination with levels of irrigation on Wheat.

## 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Loam. (b) N.A. (iii) N.A. (iv) (a) N.A. (b) Seed drill. (c) 40—50 seers/ac. (d) and (e) N.A. (v) Nil. (vi) NP-52 (medium). (vii) Irrigated. (viii) N.A. (ix) 1.69°. (x) N.A.

## 2. TREATMENTS :

## Main-plot treatments :

4 levels of irrigation :  $I_0$ =No irrigation,  $I_1$ =Irrigation 3 weeks after germination (at tillering),  $I_2$ = $I_1$ +Irrigation 9 weeks after germination (at flowering) and  $I_3$ = $I_2$ +Irrigation 12 weeks after germination (at milky stage).

## Sub-plot treatments :

3 combinations of forms and levels of N :  $N_0$ =No manure,  $N_1$ =60 lb./ac. of N as A/S and  $N_2$ =60 lb./ac. of N as castor cake.

## 3. DESIGN :

(i) Split-plot. (ii) (a) 4 main-plots/replication and 3 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) Main-plot : 162'×31' and sub-plot : 18'×31'. (b) 15'×28'. (v) 1½' around. (vi) Yes.

## 4. GENERAL :

(i) Satisfactory. (ii) Nil. (iii) Grain yield. (iv) (a) 1950—1953. (b) and (c) No. (v) (a) Banaras, Kalyanpur, Etawah, Kalai, Muzaffarragar, Meerut, Bharari, Atarra and Lucknow. (b) N.A. (vi) N.A. (vii) Experiment conducted by C.P.

## 5. RESULTS :

- (i) 1218 lb./ac.  
(ii) (a) 177.2 lb./ac.  
(b) 180.8 lb./ac.  
(iii) Forms of N and levels of N are both highly significant. Others are not significant.  
(iv) Av. yield of grain in lb./ac.

	$N_0$	$N_1$	$N_2$	Mean
$I_0$	867	1648	1222	1246
$I_1$	773	1440	1222	1145
$I_2$	836	1564	1391	1264
$I_3$	738	1551	1365	1218
Mean	804	1551	1300	1218

## S.E. of difference of two

- |                                   |                 |
|-----------------------------------|-----------------|
| 1. marginal means of I            | = 83.54 lb./ac. |
| 2. marginal means of N            | = 73.82 lb./ac. |
| 3. N means at the same level of I | = 147.6 lb./ac. |
| 4. I means at the same level of N | = 146.6 lb./ac. |

Crop :-Wheat (*Rabi*).

Ref:-U.P. 51(59).

Site :-Sugarcane Res. Sub-Stn., Kunraghat.

Type :-'IM'.

Object:—To study the effect of different forms and levels of N in combination with levels of irrigation on Wheat.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Wheat. (c) N.A. (ii) (a) Sandy loam. (b) N.A. (iii) 5.11.1951. (iv) (a) Ploughings, *pata* and harrowings. (b) to (e) N.A. (v) Nil. (vi) NP-52 (medium). (vii) Irrigated. (viii) Weeding. (ix) N.A. (x) 23 and 24.3.1952.

## 2. TREATMENTS :

Main-plot treatments :

4 levels of irrigation :  $I_0$ =No irrigation,  $I_1$ =Irrigation 3 weeks after germination (at tillering),  $I_2=I_1+$  Irrigation 9 weeks after germination (at flowering) and  $I_3=I_2+$ Irrigation 12 weeks after germination (at milky stage).

Sub-plot treatments :

3 combinations of forms and levels of N :  $N_0$ =No manure,  $N_1=60$  lb./ac. of N as A/S and  $N_2=60$  lb./ac. of N as castor cake.

## 3. DESIGN :

(i) Split-plot. (ii) (a) 4 main-plots/replication and 3 sub-plots/main-plot. (b) N.A. (iii) 2. (iv) (a) Main-plot :  $54' \times 31'$  and sub-plots :  $18' \times 31'$ . (b)  $15' \times 28'$ . (v)  $1\frac{1}{2}'$  around. (vi) Yes.

## 4. GENERAL :

(i) Good, No lodging. (ii) Nil. (iii) Grain yield. (iv) (a) 1950—1953. (b) and (c) No. (v) (a) Bararas, Faizabad, Kalianpur, Atarra, Bharari, Etawah, Kalai, Meerut, Muzaffarnagar, Hawalbagh and Lucknow. (b) N.A. (vi) Nil. (vii) Experiment conducted by C.P.

## 5. RESULTS :

- (i) 738 lb./ac.  
 (ii) (a) 151.0 lb./ac.  
 (b) 116.8 lb./ac.  
 (iii) Main effect of I is significant and forms of N and levels of N are both highly significant. Others are not significant.  
 (iv) Av. yield of grain in lb./ac.

	$N_0$	$N_1$	$N_2$	Mean
$I_0$	196	987	551	578
$I_1$	360	1111	711	727
$I_2$	325	1440	880	882
$I_3$	258	1249	786	764
Mean	285	1197	732	738

S.E. of difference of two

1. marginal means of I = 71.16 lb./ac.  
 2. marginal means of N = 47.67 lb./ac.  
 3. N means at the same level of I = 95.33 lb./ac.  
 4. I means at the same level of N = 105.5 lb./ac.

Crop :-Wheat (*Rabi*).

Ref :-U.P. 52(129).

Site :-Sugarcane Res. Sub-Stn., Kunraghat.

Type :-'IM'.

Object:—To study the effect of different forms and levels of N in combination with levels of irrigation on Wheat.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Charl*. (c) Nil. (ii) (a) Loam. (b) N.A. (iii) 7.11.1952. (iv) (a) *Palewa* on 24, 25.10.1952. ploughings on 30, 31 10.1952 and 3, 5.11.1952 Harrowings on 2, 3.11.1952. (b) N.A. (c) 40 to 50 srs/ac. (d) and (e) N.A. (v) Nil. (vi) NP. 52 (medium). (vii) Irrigated. (viii) N.A. (ix) 3.84°. (x) 12. 13.4.1953.



## 2. TREATMENTS :

## Main-plot treatments :

4 levels of irrigation :  $I_0$ =No irrigation,  $I_1$ =Irrigation 3 weeks after germination (at tillering),  $I_2=I_1$  +irrigation 9 weeks after germination (at flowering) and  $I_3=I_2$ +irrigation 12 weeks after germination (at milky stage).

## Sub-plot treatments :

3 combinations of forms and levels of N :  $N_0$ =No manure,  $N_1=60$  lb./ac. of N as A/S and  $N_2=60$  lb./ac. of N as castor cake.

## 3. DESIGN :

(i) Split-plot. (ii) (a) 4 main-plots/replication and 3 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) Main-plot  $18' \times 172'$  and sub-plot  $18' \times 40'$ . (b)  $15' \times 37'$ . (v)  $1\frac{1}{2}'$  around. (vi) Yes.

## 4. GENERAL :

(i) Poor. (ii) Nil. (iii) Grain and straw yield. (iv) (a) 1950—1953. (b), (c) No. (v) (a) Muzaffarnagar, Banaras, Faizabad, Etawah, Kalyanpur, Meerut, Kalai, Atarra, Hawalbagh and Bharari. (b) N.A. (vi) Nil. (vii) Experiment was conducted by C.P.(R).

## 5. RESULTS :

- (i) 409.0 lb./ac.  
 (ii) (a) 77.38 lb./ac.  
 (b) 143.7 lb./ac.  
 (iii) Only effect of levels of N is highly significant.  
 (iv) Av. yield of grain in lb./ac.

	$N_0$	$N_1$	$N_2$	Mean
$I_0$	255.4	642.9	433.4	443.9
$I_1$	302.4	463.7	332.6	366.2
$I_2$	329.3	508.5	413.3	417.0
$I_3$	282.2	460.3	483.8	408.8
Mean	292.3	518.8	415.8	409.0

## S.E. of difference of two

1. I marginal means = 36.47 lb./ac.  
 2. N marginal means = 58.67 lb./ac.  
 3. N means at the same level of I = 117.3 lb./ac.  
 4. I means at the same level of N = 102.51 lb./ac.

Crop :-Wheat (*Rabi*).

Ref :-U.P. 53(57).

Site :-Sugarcane Res. Sub-Stn., Kunraghat.

Type :-'IM'.

Object :-To study the effect of different forms and levels of N in combination with levels of irrigation on Wheat.

## 1. BASAL CONDITIONS :

(i) (a) Legume-Cereal. (b) Cow pea for fodder. (c) Nil. (ii) (a) Loam. (b) N.A. (iii) 10.11.1953. (iv) (a) Ploughing on 15, 16, 24 and 31.10.1953 ; 8, 9.11.1953. Rolling on 1.11.1953 and *palewa* 3.11.1953. (b) Seed drill. (c) 40-50 srs/ac. (1.28 lb./plot). (d) and (e) N.A. (v) N.A. (vi) NP. 52 (medium). (vii) Irrigated. (viii) Weeding and hoeing at the proper time. (ix) 0.51". (x) 31.3.1954 and 1.4.1954.

## 2. TREATMENTS :

## Main-plot treatments :

4 levels of irrigation :  $I_0$ =No Irrigation,  $I_1$ =Irrigation 3 weeks after germination (at tillering),  $I_2=I_1$  +9 weeks after germination (at flowering) and  $I_3=I_2$ +irrigation 12 weeks after germination (at milky stage).

## Sub-plot treatments :

3 combinations of forms and levels of N :  $N_0$ =No manure,  $N_1=60$  lb./ac. of N as A/S and  $N_2=60$  lb./ac. of N as castor cake.

## 3. DESIGN :

(i) Split-plot. (ii) (a) 4 main-plots/replication and 3 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) Main-plot : 54'×40' ; sub-plot 18'×40'. (b) 15'×37'. (v) 1½' allround. (vi) Yes.

## 4. GENERAL :

(i) Good, lodging. (ii) Nil. (iii) Grain and straw yield. (iv) (a) 1950—1953. (b), (c) No. (v) (a) Banaras, Faizabad, Etawah, Kalyanpur, Atarra, Meerut, Muzaffarnagar, Bharari and Kalai. (b) N.A. (vi) Nil. (vii) Experiment conducted by C.P.(R).

## 5. RESULTS :

- (i) 1434 lb./ac.  
 (ii) (a) 150.9 lb./ac.  
 (b) 153.3 lb./ac.  
 (iii) None of the effects is significant.  
 (iv) Av. yield of grain in lb./ac.

	N <sub>0</sub>	N <sub>1</sub>	N <sub>2</sub>	Mean
I <sub>0</sub>	1312	1467	1298	1359
I <sub>1</sub>	1352	1413	1446	1404
I <sub>2</sub>	1500	1494	1480	1491
I <sub>3</sub>	1305	1561	1581	1482
Mean	1367	1484	1451	1434

## S.E. of difference of two

1. I marginal means = 71.15 lb./ac.  
 2. N marginal means = 62.57 lb./ac.  
 3. N means at the same level of I = 125.1 lb./ac.  
 4. I means at the same level of N = 124.5 lb./ac.

Crop :- Wheat (*Rabi*).

Site :- Physiological Res. Stn., Lucknow.

Ref :- U.P. 49(79).

Type :- 'IM'.

Object :—To study the effect of application of N to Wheat at different levels and at different times in combination with different levels of irrigation.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Bhindi*. (c) Nil. (ii) (a) Sandy loam. (b) N.A. (iii) 27.10.1949. (iv) (a) Harrowing by tractor, two ploughing by mould-board plough and two by *dest* ploughs. (b) Behind *dest* plough. (c) 50 lb./ac. (d) N.A. (e) N.A. (v) T.C. at 42 mds. in whole field on 20.9.1949. (vi) C-13 (early). (vii) Irrigated. (viii) Weeding and hoeing on 6.12.1949. (ix) N.A. (x) 20.3.1950.

## 2. TREATMENTS :

## Main-plot treatments :

3 levels of irrigation : I<sub>1</sub> = Irrigation 3 weeks after germination (at tillering), I<sub>2</sub> = I<sub>1</sub> + Irrigation 9 weeks after germination (at flowering) and I<sub>3</sub> = I<sub>2</sub> + Irrigation 12 weeks after germination (at milky stage).

## Sub-plot treatments :

All combinations of (1) and (2) + a control (N<sub>0</sub>T<sub>0</sub> = no manure).

(1) 2 levels of N as A/3 : N<sub>1</sub> = 30 and N<sub>2</sub> = 60 lb./ac.

(2) 2 times of application : T<sub>1</sub> = Full at sowing and T<sub>2</sub> = half at sowing and half at 1st irrigation.

## 3. DESIGN :

(i) Split-plot. (ii) (a) 3 main-plots/block ; 5 sub-plots/main-plot. (b) N.A. (iii) 2. (iv) (a) 13'×11'. (b) 11'×10'. (v) 1'×1'. (vi) Yes.

## 4. GENERAL:

- (i) N.A. (ii) N.A. (iii) Length of plants, no. of tillers, length of main ear per average plant, no. of grains per main ear per plant, weight of grain per ear per plant. Grain and *Lhusa* yield. (iv) (a) 1949-1951. (b) No. (c) No. (v) (a) Kunraghat, Kalyanpur, Atarra, Bharari, Meerut, Muzaffarnagar and Hawalbagh. (b) N.A. (vi) Nil. (vii) Experiment conducted by C.P.

## 5. RESULTS:

- (i) 2420 lb./ac.  
 (ii) (a) 32.2 lb./ac.  
 (b) 233.3 lb./ac.  
 (iii) Main effects of I, levels of N, times of application and 'control vs. treated' are all highly significant. Others are not significant.  
 (iv) Av. yield of grain in lb./ac.

	$N_0T_0$	$N_1T_1$	$N_2T_1$	$N_1T_2$	$N_2T_2$	Mean
$I_1$	1680	1986	2291	2138	2495	2118
$I_2$	1884	2138	2648	2342	3055	2413
$I_3$	2138	2393	2851	2698	3564	2729
Mean	1901	2172	2597	2393	3038	2420

## S.E. of difference of two

1. marginal means of I = 14.4 lb./ac.  
 2. marginal means of NT = 134.7 lb./ac.  
 3. NT means at the same level of I = 233.3 lb./ac.  
 4. I means at the same level of NT = 209.2 lb./ac.

Crop :- Wheat (*Rabi*).

Ref :- U.P. 50(116)

Site :- Crop Physiological Res. Stn., Lucknow.

Type :- 'IM'.

Object :- To study the effect of application of N to Wheat at different levels and at different times in combination with different levels of irrigation.

## 1. BASAL CONDITIONS:

- (i) (a) Nil. (b) *Moong*  $T_1$ . (c) N.A. (ii) (a) Sandy loam. (b) N.A. (iii) 20.10.1950. (iv) (a) Two ploughings by mould board, two by *desi* and one by cultivator. (b) N.A. (c) 40 srs/ac. (d) N.A. (e) N.A. (v) G.M. after *moong* and the crop turned in soil. (vi) C-13 (early). (vii) Irrigated as per treatments. (viii) Interculturings on 30.11.1950. and 29.1.1951. (ix) N.A. (x) 4.4.1951.

## 2. TREATMENTS:

## Main-plot treatments:

- 4 levels of irrigation:  $I_0$ =No irrigation,  $I_1$ =Irrigation 3 weeks after germination (at tillering),  $I_2$ = $I_1$ +irrigation 9 weeks after germination (at flowering) and  $I_3$ = $I_2$ +irrigation 12 weeks after germination (at milky stage).

## Sub-plot treatments:

All combinations of (1) and (2)+a control ( $N_0T_0$ =no manure).

- (1) 2 levels of N as A/S:  $N_1$ =30 and  $N_2$ =60 lb./ac. of N.  
 (2) 2 times of application of A/S:  $T_1$ =Full at sowing and  $T_2$ =Half at sowing and half at 1st irrigation.

## 3. DESIGN:

- (i) Split-plot. (ii) (a) 4 main-plots/block; 5 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) 34'x14'. (b) 31'x11'. (v) 1½' ring round the net-plot. (vi) Yes.

## 4. GENERAL:

- (i) The germination of the crop was poor due to early stopping of rains. (ii) N.A. (iii) Grain and fodder yield. (iv) (a) 1949-1951. (b) No. (c) No. (v) (a) Etawah, Kalyanpur, Bharari, Meerut, Kunraghat, Muzaffarnagar and Atarra. (b) N.A. (vi) Nil. (vii) Experiment conducted by C.P.

## 5. RESULTS :

- (i) 874 lb./ac.  
 (ii) (a) 529.6 lb./ac.  
 (b) 464.9 lb./ac.  
 (iii) None of the effects is significant.  
 (iv) Av. yield of grain in lb./ac.

	$N_0T_0$	$N_1T_1$	$N_2T_1$	$N_1T_2$	$N_2T_2$	Mean
$I_0$	914	854	454	678	947	769
$I_1$	810	722	711	328	1029	720
$I_2$	843	1072	941	1401	930	1037
$I_3$	1018	1138	865	1018	810	970
Mean	896	947	743	856	929	874

## S.E. of difference of two

1. marginal means of I = 193.4 lb./ac.  
 2. marginal means of NT = 189.8 lb./ac.  
 3. NT means at the same level of I = 379.6 lb./ac.  
 4. I means at the same level of NT = 390.7 lb./ac.

Crop :- Wheat (*Rabi*).

Ref :- U.P.51(133).

Site :- Crop Physiological Res. Stn., Lucknow.

Type :- 'IM'.

Object :—To study the effect of application of N to Wheat at different levels and at different times in combination with different levels of irrigation.

## 1. BASAL CONDITIONS :

- (i) (a) Nil. (b) Maize. (c) N.A. (ii) (a) Loam. (b) N.A. (iii) 16.11.1951. (iv) (a) 3 ploughings (b) to (e) N.A. (v) Nil. (vi) C-13 (early). (vii) Irrigated. (viii) Intercultural operations on 3, 4.12.1951. (ix) N.A. (x) 26, 28.3.1952.

## 2. TREATMENTS :

## Main-plot treatments :

4 levels of irrigation :  $I_0$ =No irrigation,  $I_1$ =Irrigation 3 weeks after germination (at tillering),  $I_2$ = $I_1$ +irrigation 9 weeks after germination (at flowering) and  $I_3$ = $I_1$ + irrigation 12 weeks after germination (at milky stage).

## Sub-plot treatments :

All combinations of (1) and (2)+a control ( $N_0T_0$ =no manure).

(1) 2 levels of N as A/S :  $N_1$ =30 and  $N_2$ =60 lb./ac. of N.

(2) 2 times of application of A/S :  $T_1$ =full at sowing and  $T_2$ =Half at sowing and half at 1st irrigation

## 3. DESIGN :

- (i) Split-plot. (ii) (a) 4 main-plots/replication and 5 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 112'x34'. (b) 1/143.2 ac. (v) Between main plots 3' and between blocks=4'. (vi) Yes.

## 4. GENERAL :

- (i) Below normal. (ii) No. (iii) Grain yield. (iv) (a) 1949—1951. (b) and (c) No. (v) (a) Faizabad, Etawah, Kalyanpur, Atarra, Bhairi, Meerut, Kunraghat, Muzaffarnagar and Hawalbagh. (b) N.A. (vi) Nil. (vii) The experiment was conducted by C.P.

## 5. RESULTS :

- (i) 458.2 lb./ac.  
 (ii) (a) 236.1 lb./ac.  
 (b) 220.2 lb./ac.  
 (iii) None of the effects is significant.

(iv) Av. yield of grain in lb./ac.

	N <sub>0</sub> T <sub>0</sub>	N <sub>1</sub> T <sub>1</sub>	N <sub>2</sub> T <sub>1</sub>	N <sub>1</sub> T <sub>2</sub>	N <sub>2</sub> T <sub>2</sub>	Mean
I <sub>0</sub>	492.5	414.3	538.5	290.0	483.3	443.7
I <sub>1</sub>	437.3	492.5	437.3	464.9	501.7	466.7
I <sub>2</sub>	451.1	529.3	418.9	501.7	409.7	462.1
I <sub>3</sub>	566.2	428.1	345.2	455.7	506.3	460.3
Mean	486.8	466.0	435.0	428.1	475.2	458.2

S.E. of difference of two

1. marginal means of I = 74.7 lb./ac.
2. marginal means of NT = 77.9 lb./ac.
3. NT means at the same level of I = 155.7 lb./ac.
4. I means at the same level of NT = 158.0 lb./ac.

Crop :- Wheat (*Rabi*).

Ref :-U.P. 49(86).

Site :- Crop Physiological Res. Stn., Lucknow.

Type :-'1M'.

Object :-To study the effect of different forms and levels of N in combination with levels of irrigation on Wheat.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) N.A. (ii) (a) Sandy loam. (b) N.A. (iii) 26.10.1949. (iv) (a) Tractor harrowing crosswise. Three times by *desi* plough. (b) Sown behind the plough (c) 50 srs./ac. (d) and (e) N.A. (v) Basal dressing of T.C. on 20.10.49. (vi) C-13 (early). (vii) Irrigated. (viii) Ore hoeing and one weeding. (ix) N.A. (x) 17.3.1950.

## 2. TREATMENTS :

Main-plot treatments :

3 levels of irrigation : I<sub>1</sub>=Irrigation 3 weeks after germination (at tillering), I<sub>2</sub>=I<sub>1</sub>+irrigation 9 weeks after germination (at flowering) and I<sub>3</sub>=I<sub>2</sub>+irrigation 12 weeks after germination (at milky stage).

Sub-plot treatments :

3 combinations of form and levels of N : N<sub>0</sub>=No manure, N<sub>1</sub>=60 lb./ac. of N as A/S and N<sub>2</sub>=60 lb./ac. of N as castor cake.

## 3. DESIGN :

(i) Split-plot. (ii) (a) 3 main-plots/block and 3 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) 22'×12' (b) 20'×10' (v) 1' all round the net-plot. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) N.A. (iii) Grain yield. (iv) (a) 1949—1951. (b) and (c) No. (v) (a) Banaras, Kalyanpur, Atarra, Bharari, Meerut, Muzaffarnagar, Bulandshahr, Hawalbagh, and Kunraghat. (vi) Nil. (vii) The experiment was conducted by C.P.

## 5. RESULTS :

- (i) 1363 lb./ac.
- (ii) (a) 156.6 lb./ac.
- (b) 55.2 lb./ac.
- (iii) Main effect of I is significant. Effects of forms of N, levels of N and interaction I×levels of N are highly significant. Other are not significant.
- (iv) Av. yield of grain in lb./ac.

	N <sub>0</sub>	N <sub>1</sub>	N <sub>2</sub>	Mean
I <sub>1</sub>	859	1344	1419	1207
I <sub>2</sub>	971	1493	1605	1356
I <sub>3</sub>	1381	1475	1718	1525
Mean	1070	1437	1581	1363

## S.E. of difference of two

- |                                   |               |
|-----------------------------------|---------------|
| 1. marginal means of I            | =73.8 lb./ac. |
| 2. marginal means of N            | =26.0 lb./ac. |
| 3. N means at the same level of I | =45.1 lb./ac. |
| 4. I means at the same level of N | =82.5 lb./ac. |

Crop :-Wheat (*Rabi*).

Ref :-U.P. 50(120).

Site :-Crop Physiological Res. Stn., Lucknow.

Type :-'IM'.

Object :-To study the effect of different forms and levels of N in combination with levels of irrigation on Wheat.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Moong*-Maize. (c) N.A. (ii) (a) Sandy loam. (b) N.A. (iii) 26.10.1950. (iv) (a) Four ploughings by *desi* and victory plough, one by cultivator. (b) Sown behind *desi* plough. (c) 50 seers/ac. (d) and (e) N.A. (v) T.C. applied on 30.9.1950. (vi) C-13 (early). (vii) Irrigated. (viii) Date of interculturing 22.11.1950 and 1.1.1951. (ix) N.A. (x) 14.4.1951.

## 2. TREATMENTS :

## Main-plot treatments :

4 levels of irrigation :  $I_0$ =No irrigation,  $I_1$ =Irrigation 3 weeks after germination (at tillering),  $I_2=I_1$  +irrigation 9 weeks after germination (at flowering) and  $I_3=I_2$ +irrigation 12 weeks after germination (at milky stage).

## Sub-plot treatments :

3 combinations of form and levels of N :  $N_0$ =No manure,  $N_1$ =60 lb./ac. of N as A/S and  $N_2$ =60 lb./ac. of N as castor cake.

## 3. DESIGN :

(i) Split-plot. (ii) (a) 4 main-plots/block and 3 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) 20' x 12'. (b) 18' x 10'. (v) 1' all round the net plot. (vi) Yes.

## 4. GENERAL :

(i) The crop was poor due to late rains. (ii) N.A. (iii) Grain and fodder yield. (iv) (a) 1949-1951. (b) and (c) No. (v) (a) Banaras, Etawah, Kalyanpur, Atarra, Bharari, Meerut, Kunraghat, Muzaffarnagar and Kalai. (b) N.A. (vi) Nil. (vii) Experiment conducted by C.P.

## 5. RESULTS :

- (i) 985 lb./ac.  
(ii) (a) 343.5 lb./ac.  
(b) 304.7 lb./ac.  
(iii) Only main effect of forms of N is significant.  
(iv) Av. yield of grain in lb./ac.

	$N_0$	$N_1$	$N_2$	Mean
$I_0$	622	850	850	774
$I_1$	912	1161	767	947
$I_2$	1119	1410	850	1126
$I_3$	1265	1099	912	1092
Mean	980	1130	845	985

## S.E. of difference of two

- |                                   |                |
|-----------------------------------|----------------|
| 1. marginal means of I            | =162.0 lb./ac. |
| 2. marginal means of N            | =124.4 lb./ac. |
| 3. N means at the same level of I | =248.8 lb./ac. |
| 4. I means at the same level of N | =296.8 lb./ac. |

Crop :-Wheat.

Ref :-U.P. 51(78).

Site :-Crop Physiological Res. Stn., Lucknow.

Type :-'IM'.

Object :—To study the effect of different forms and levels of N in combination with levels of irrigation on Wheat.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) and (c) N.A. (ii) (a) Sandy loam. (b) N.A. (iii) N.A. (iv) (a) to (e) N.A. (v) Nil. (vi) C-13 (early). (vii) Irrigated. (viii) N.A. (ix) N.A. (x) N.A.

## 2. TREATMENTS :

Main-plot treatments :

4 levels of irrigation :  $I_0$  = No irrigation,  $I_1$  = Irrigation 3 weeks after germination (at tillering),  $I_2$  =  $I_1$  + irrigation 9 weeks after germination (at flowering) and  $I_3$  =  $I_2$  + irrigation 12 weeks after germination (at milky stage).

Sub-plot treatments :

3 combinations of forms and levels of N :  $N_0$  = No manure,  $N_1$  = 60 lb./ac. of N as A/S and  $N_2$  = 60 lb./ac. of N as castor cake.

## 3. DESIGN :

(i) Split-plot. (ii) (a) 4 main-plots/replication and 3 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 1/167 th ac. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) Satisfactory. (ii) Nil. (iii) Grain yield. (iv) (a) to (c) No. (v) (a) Banaras, Faizabad, Kunraghat, Kalyanpur, Atarra, Bharari, Etawah, Kalai, Meerut, Muzaffarnagar and Hawalbagh. (b) N.A. (vi) Nil. (vii) Experiment conducted by C.P.

## 5. RESULTS :

(i) 560.2 lb./ac.

(ii) (a) 418.9 lb./ac.

(b) 135.5 lb./ac.

(iii) Only the interaction  $I \times$  levels of N is highly significant.

(iv) Av. yield of grain in lb./ac.

	$N_0$	$N_1$	$N_2$	Mean
$I_0$	467.0	655.2	553.3	558.5
$I_1$	703.4	536.5	526.4	588.8
$I_2$	505.1	553.3	574.6	544.3
$I_3$	719.0	493.9	434.6	549.2
Mean	598.6	559.7	522.2	560.2

S.E of differences of two

1. I marginal means = 171.0 lb./ac.
2. N marginal means = 47.91 lb./ac.
3. N means at the same level of I = 95.83 lb./ac.
4. I means at the same level of N = 188.0 lb./ac.

Crop :-Wheat (Rabi).

Ref :-U.P. 49(98).

Site :-Crop Physiological Res. Stn., Lucknow.

Type :-'IM'.

Object :—To study the effect of different levels of irrigation in combination with  $P_2O_5$  and Gypsum on Wheat.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Karela* and Fallow. (c) Nil. (ii) (a) Sandy loam. (b) N.A. (iii) 28.10.1949 and resown on 7.11.1949. (iv) (a) Cross wise ploughing by tractor, two ploughings by mould board plough, two by *dest* plough and planking. (b) Sown behind *dest* plough (c) to (e) N.A. (v) T.C. at 40 lb./ac. of N on 20. 10. 1949. (vi) C-13 (early). (vii) Irrigated. (viii) Earthing up 10.12.1949. (ix) N.A. (x) 26.3.1950.

## 2. TREATMENTS :

## Main-plot treatments :

2 levels of irrigation :  $I_1$  = Irrigation 9 weeks after germination (at flowering) and  $I_2 = I_1$  + irrigation 12 weeks after germination (at milky stage).

## Sub-plot treatments :

All combinations of (1) and (2)

(1) 3 levels of  $P_2O_5$  as Super :  $P_0=0$ ,  $P_1=20$  and  $P_2=40$  lb./ac.

(2) 3 levels of CaO as Gypsum :  $G_0=0$ ,  $G_1=25$  and  $G_2=50$  lb./ac.

## 3. DESIGN :

(i) Split-plot. (ii) (a) 2 main-plots/block, 9 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a)  $15' \times 15'$ . (b)  $13' \times 13'$ . (v) 1' ring round the net plot. (vi) Yes.

## 4. GENERAL :

(i) Poor. (ii) N.A. (iii) Grain and *bhusa* yield. (iv) (a) 1949—1950. (b), (c) No. (v) (a) Banaras, Kalyanpur, Barabanki and Lucknow. (b) N.A. (vi) Nil. (vii) Experiment conducted by C.P.

## 5. RESULTS :

(i) 1175 lb./ac.

(ii) (a) 56.63 lb./ac.

(b) 137.8 lb./ac.

(iii) Levels of irrigation, doses of P and doses of C are highly significant. Others are not significant.

(iv) Av. yield of grain in lb./ac.

	$G_0$	$G_1$	$G_2$	Mean	$P_0$	$P_1$	$P_2$
$I_1$	957	1079	1237	1091	946	1083	1245
$I_2$	1072	1300	1407	1259	1094	1222	1462
Mean	1014	1189	1322	1175			
$P_0$	889	1016	1154	1020			
$P_1$	994	1187	1276	1152			
$P_2$	1160	1364	1535	1353			

## S.E. of difference of two

- |  |                 |
|--|-----------------|
| 1. marginal means of I                 | = 15.39 lb./ac. |
| 2. marginal means of G or P            | = 45.93 lb./ac. |
| 3. G or P means at the same level of I | = 112.5 lb./ac. |
| 4. I means at the same level of G or P | = 55.22 lb./ac. |
| 5. means in the body of G x P table    | = 79.56 lb./ac. |

Crop :-Wheat (*Rabi*).

Ref :-U.P. 50(119).

Site :-Crop Physiological Res. Stn., Lucknow,

Type :-'IM'.

Object :-To study the effect of different levels of irrigation in combination with  $P_2O_5$  and Gypsum on Wheat.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) N.A. (ii) (a) Sandy loam. (b) N.A. (iii) 3, 4.11.1950. (iv) (a) Two ploughings by board plough, one by *desi* plough, one by cultivator plough. (b) Sown by *desi* plough. (c) 50 srs./ac. (d) and (e) N.A. (v) stable manure on 16.1950. (vi) C-13. (vii) Irrigated. (viii) Interculturing on 8.12.1950 and 1.1.1951. (ix) N.A. (x) 16.4.1951.



## 2. TREATMENTS:

## Main-plot treatments:

3 levels of irrigation:  $I_0$ =No irrigation,  $I_1$ =Irrigation 9 weeks after germination (at flowering) and  $I_2=I_1$ +irrigation 12 weeks after germination (at milky stage).

## Sub-plot treatments:

All combinations of (1) and (2)

(1) 3 levels of  $P_2O_5$  as Super:  $P_0=0$ ,  $P_1=20$  and  $P_2=40$  lb./ac.

(2) 3 levels of CaO as Gypsum:  $G_0=0$ ,  $G_1=25$  and  $G_2=50$  lb./ac.

## 3. DESIGN:

(i) Split-plot. (ii) (a) 3 main-plots/block; 9 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) 25'×12'. (b) 23'×10'. (v) 1' ring round the net-plot. (vi) Yes.

## 4. GENERAL:

(i) Below normal. (ii) N.A. (iii) Grain and fodder yield. (iv) (a) 1949—1950. (b), (c) N.A. (v) (a) Banaras, Kalyanpur (Kanpur), Pratapgarh, Bahraich, Kalai (Aligarh) and Barabanki. (b) N.A. (vi) Nil. (vii) Expt. was conducted by C.P.

## 5. RESULTS:

(i) 566.4 lb./ac.

(ii) (a) 196.0 lb./ac.

(b) 259.6 lb./ac.

(iii) None of the effects is significant.

(iv) Av. yield of grain in lb./ac.

	$P_0$	$P_1$	$P_2$	Mean	$G_0$	$G_1$	$G_2$
$I_0$	573.6	492.4	489.7	518.6	641.2	543.8	370.7
$I_1$	522.2	595.2	579.0	565.5	573.6	560.1	562.8
$I_2$	557.3	514.1	773.8	615.1	633.1	676.4	535.7
Mean	551.0	533.9	614.2	566.4	616.0	593.4	489.7
$G_0$	611.5	660.2	576.3				
$G_1$	549.2	546.5	684.5				
$G_2$	492.4	395.0	581.7				

## S.E. of difference of two

1. marginal means of I = 53.35 lb./ac.
2. marginal means of G or P = 70.66 lb./ac.
3. G or P means at the same level of I = 122.4 lb./ac.
4. I means at the same level of G or P = 113.3 lb./ac.
5. means in the body of G×P table = 131.0 lb./ac.

Crop :- Wheat (Rabi).

Ref :- U.P. 48(45).

Site :- National Botanical Gardens, Lucknow.

Type :- 'IM'.

Object :- To study the effect of different forms and levels of N in combination with levels of irrigation on Wheat.

## 1. BASAL CONDITIONS:

(i) (a) Nil. (b) Three years old *guava* orchard. *Chari* for fodder. (c) Nil. (ii) (a) Sandy loam. (b) N.A. (iii) 15, 16.11.1943. (iv) (a) Two disc ploughings by tractor on 21.10.1948, one ploughing by *desi* plough on 9, 10.11.1948 one disc ploughing by tractor on 12.8.1948. (b) N.A. (c) 50 srs/ac. (d) N.A. (e) N.A. (v) 6 tons of municipal load on the whole field on 12.11.1943. (vi) C-13 (early). (vii) Irrigated. (viii) Weeding and hoeing. (ix) N.A. (x) 1st week of April 1949.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 3 levels of irrigation :  $I_1$  = One irrigation 3 weeks after germination (at tillering),  $I_2 = I_1 +$  one irrigation 9 weeks after germination (at flowering),  $I_3 = I_2 +$  one irrigation 12 weeks after germination (at milky stage).(2) 3 combination of forms and levels of N :  $N_0$  = No manure,  $N_1 = A/S$  at 50 lb./ac. of N,  $N_2$  = castor cake at 50 lb./ac. of N.

## 3. DESIGN :

(i)  $3 \times 3$  Fact. in R.B.D. (ii) (a) 9. (b) N.A. (iii) 3. (iv) (a)  $49' \times 23'$ . (b)  $34' \times 17'$ . (v) 3' ring round the net plot. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) Slight attack of rust in some plants. (iii) Grain yield. (iv) (a) No. (b) No. (c) No. (v) (a) No. (b) No. (vi) Nil. (vii) Experiment conducted by C.P.

## 5. RESULTS :

(i) 984 lb./ac.

(ii) 241.4 lb./ac.

(iii) Only effect of levels of N is highly significant.

(iv) Av. yield of grain in lb./ac.

	$I_1$	$I_2$	$I_3$	Mean
$N_0$	686	755	807	749
$N_1$	891	1130	1001	1007
$N_2$	1149	1246	1194	1196
Mean	909	1044	1001	984

S.E. of any marginal mean

= 80.48 lb./ac.

S.E. of body of table

= 139.4 lb./ac.

Crop:-Wheat (*Rabi*).

Ref :- U.P. 49(81)

Site :- Regional Res. Stn., Meerut.

Type :- 'IM'.

Object :- To study the effect of application of N to Wheat at different levels and at different times in combination with different levels of irrigation.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Early *moong*. (c) Nil. (ii) (a) Light loam. (b) N.A. (iii) 31.10.1949. (iv) (a) 3 ploughings by *victor* plough and *pata*, 2 by *desi* and *pata*, *palewa* on 7.8.1949, 3 ploughings by *desi* and *pata*. (b) N.A. (c) 50 lb./ac. (d) N.A. (e) N.A. (v) Nil. (vi)  $P_b-591$  (medium). (vii) Irrigated. (viii) N.A. (ix) N.A. (x) 14, 15.4.1950.

## 2. TREATMENTS :

Main-plot treatments :

3 levels of irrigation :  $I_1$  = Irrigation 3 weeks after germination (at tillering stage),  $I_2 = I_1 +$  irrigation 9 weeks after germination (at flowering stage), and  $I_3 = I_2 +$  irrigation 12 weeks after germination (at milky stage).

Sub-plot treatments :

All combinations of (1) and (2) + a control ( $N_0 T_0$  = no manure)(1) 2 levels of N as A/S :  $N_1 = 30$  and  $N_2 = 60$  lb./ac. of N.(2) 2 time of application of N :  $T_1$  = Full at sowing and  $T_2$  = half at sowing and half at 1st irrigation.

## 3. DESIGN :

(i) Split-plot. (ii) (a) 3 main-plots/block ; 5 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) Main-plot :  $22' \times 165'$ , sub-plot :  $22' \times 33'$ . (b)  $16' \times 27'$ . (v) 3' ring round the net plot. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) N.A. (iii) Height of plants, length and breadth of leaf; root length. No. of tillers, dry wt. of shoot of green and dry leaf yield of grain. (iv) (a) 1949—1953. (b) No. (c) No. (v) (a) Gorakhpur, Kalyanpur, (Kanpur), Atarra (Banda), Bharari (Jhansi), Muzaffarnagar, Lucknow and Hawalbagh. (b) N.A. (vi) Nil. (vii) Experiment conducted by C.P.

## 5. RESULTS :

- (i) 1690 lb./ac.  
 (ii) (a) 244.9 lb./ac.  
 (b) 272.2 lb./ac.  
 (iii) Effect of time of application is significant and control vs. treated is highly significant. Others are not significant.  
 (iv) Av. yield of grain in lb./ac.

	$N_0T_0$	$N_1T_1$	$N_2T_1$	$N_1T_2$	$N_2T_2$	Mean
$I_1$	1439	1759	2005	1945	2066	1843
$I_2$	1374	1461	1677	1789	1945	1649
$I_3$	1210	1491	1590	1780	1819	1578
Mean	1341	1570	1757	1838	1943	1690

S.E. of difference of two

1. marginal means of I = 89.4 lb./ac.
2. marginal means of NT = 128.3 lb./ac.
3. NT means at the same level of I = 222.3 lb./ac.
4. I means at the same level of NT = 218.0 lb./ac.

Crop :-Wheat (*Rabi*).

Ref :-U.P. 50(73).

Site :-Regional Res. Stn., Meerut.

Type :-'IM'.

Object :-To study the effect of application of N to Wheat at different levels and at different times in combination with different levels of irrigation.

## 1. BASAL CONDITIONS :

- (i) (a) to (c) N.A. (ii) (a) Loam. (b) N.A. (iii) Last week of Oct. 1950. (iv) (a) N.A. (b) Seed drill. (c) 40-50 srs./ac. (d) and (e) N.A. (v) Nil. (vi) NP.52 (medium). (vii) Irrigated. (viii) N.A. (ix) 3.61%. (x) 13 and 14.4.1951.

## 2. TREATMENTS :

Main-plot treatments :

- 4 levels of irrigation :  $I_0$ =No irrigation,  $I_1$ =Irrigation 3 weeks after germination (at tillering),  $I_2=I_1$  +irrigation 9 weeks after germination (at flowering) and  $I_3=I_2$  +irrigation 12 weeks after germination (at milky stage).

Sub-plot treatments :

All combinations of (1) and (2) + a control ( $N_0T_0$ =no manure)

(1) 2 levels of N as A/S :  $N_1=30$  and  $N_2=60$  lb./ac. of N.

(2) 2 times of application of N :  $T_1$ =full at sowing and  $T_2$ =Half at sowing and half at first irrigation.

## 3. DESIGN :

- (i) Split-plot. (ii) (a) 4 main-plots/replication ; 5 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) Main-plot :  $19' \times 110'$  ; sub-plot :  $19' \times 22'$ . (b)  $16' \times 19'$ . (v)  $1\frac{1}{2}'$  around. (vi) Yes.

## 4. GENERAL :

- (i) Good. (ii) Nil. (iii) Grain yield. (iv) (a) 1949-1954. (b), (c) No. (v) (a) Kalyanpur, Etawah, Kunraghat, Muzaffarnagar, Bharari, Atarra and Lucknow. (b) N.A. (vi) Nil. (vii) The experiment was conducted by C.P.

## 5. RESULTS :

- (i) 1873 lb./ac.  
 (ii) (a) 1050 lb./ac.  
 (b) 273.3 lb./ac.  
 (iii) Effect of 'control vs treated' and interaction I x 'control vs treated' are highly significant.

(iv) Av. yield of grain in lb./ac.

	$N_0T_0$	$N_1T_1$	$N_2T_1$	$N_1T_2$	$N_2T_2$	Mean
$I_0$	1511	1548	2112	1756	1848	1755
$I_1$	1486	1941	1904	1781	1892	1801
$I_2$	2075	2100	2125	2162	1842	2061
$I_3$	1118	2075	2149	2149	1892	1877
Mean	1548	1916	2072	1962	1868	1873

S.E. of difference of two

1. I marginal means = 383.6 lb./ac.
2. NT marginal means = 111.6 lb./ac.
3. NT means at the same level of I = 223.1 lb./ac.
4. I means at the same level of NT = 432.4 lb./ac.

Crop :-Wheat (*Rabi*).

Ref :-U.P. 51(82).

Site :-Regional Res. Stn., Meerut.

Type :-IM'.

Object :-To study the effect of application of N to Wheat at different levels and at different times in combination with different levels of irrigation.

## 1. BASAL CONDITIONS :

(i) (a) No. (b) Maize and *Moong*. (c) N.A. (ii) (a) Loam. (b) N.A. (iii) 10.11.1951. (iv) (a) N.A. (b) Sown by seed drill. (c) 40-50 srs./ac. (d) and (e) N.A. (v) Nil. (vi) Pb. 591 (medium). (vii) Irrigated. (viii) N.A. (ix) 4.15°. (x) N.A.

## 2. TREATMENTS :

Main-plot treatments :

4 levels of irrigation :  $I_0$ =No irrigation,  $I_1$ =Irrigation 3 weeks after germination (at tillering),  $I_2=I_1$  +irrigation 9 weeks after germination (at flowering) and  $I_3=I_2$ +irrigation 12 weeks after germination (at milky stage).

Sub-plot treatments :

All combinations of (1) and (2)+a control ( $N_0T_0$ =no manure)

(1) 2 levels of N as A/S :  $N_1=30$  and  $N_2=60$  lb./ac.

(2) 2 times of application of N :  $T_1$ =full at sowing and  $T_2$ =Half at sowing and half at first irrigation.

## 3. DESIGN :

(i) Split-plot. (ii) (a) 4 main-plots/replication ; 5 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) Main-plot :  $67\frac{1}{2}' \times 28'$  ; sub-plot :  $13\frac{1}{2}' \times 28'$ . (b)  $10\frac{1}{2}' \times 25'$ . (v)  $1\frac{1}{2}'$  around. (vi) Yes.

## 4. GENERAL :

(i) Good, no lodging. (ii) No. (iii) Grain yield. (iv) (a) 1949-1954. (b), (c) No. (v) (a) Hawalbagh, Etawah, Kalyanpur, Faizabad, Bharari, Atarra, Kunraghat, Muzaffarnagar and Lucknow. (b) N.A. (vi) Nil. (vii) Expt. conducted by C.P.

## 5. RESULTS :

- (i) 1558 lb./ac.
- (ii) (a) 577.9 lb./ac.  
(b) 261.0 lb./ac.
- (iii) Effect of 'control vs treated' is highly significant and interaction  $I \times$  'control vs treated' is significant. Others are not significant.

(iv) Av. yield of grain in lb./ac.

	$N_0T_0$	$N_1T_1$	$N_2T_1$	$N_1T_2$	$N_2T_2$	Mean
$I_0$	1269	1440	1408	1131	1462	1342
$I_1$	1344	1761	1514	1717	1653	1598
$I_2$	1248	1611	1728	1792	1963	1668
$I_3$	1089	1450	1931	1761	1877	1622
Mean	1238	1566	1645	1600	1739	1558

S.E. of difference of two

1. I marginal means = 182.8 lb./ac.
2. NT marginal means = 92.26 lb./ac.
3. NT means at the same level of I = 184.8 lb./ac.
4. I means at the same level of NT = 246.3 lb./ac.

Crop :-Wheat (*Rabi*).

Ref :-U.P. 52(115).

Site :-Regional Res. Stn., Meerut.

Type :-'IM'.

Object :-To study the effect of application of N to Wheat at different levels and at different times in combination with different levels of irrigation.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Moong* and Maize. (c) N.A. (ii) (a) Loam. (b) N.A. (iii) 31.10.1952. (iv) (a) One metary plough and 7 *desi* ploughings. (b) N.A. (c) 40—50 srs./ac. (d) and (e) N.A. (v) No. (vi) Pb. 591 (mid-late). (vii) Irrigated. (viii) Weeding. (ix) N.A. (x) 19 and 12.4.1953.

## 2. TREATMENTS :

Main-plot treatments :

4 levels of irrigation :  $I_0$  = No irrigation,  $I_1$  = Irrigation 3 weeks after germination (at tillering),  $I_2 = I_1$  + irrigation 9 weeks after germination (at flowering) and  $I_3 = I_2$  + irrigation 12 weeks after germination (at milky stage).

Sub-plot treatments :

All combinations of (1) and (2) + a control ( $N_0T_0$  = No manure)(1) 2 levels of N as A/S :  $N_1 = 30$  and  $N_2 = 60$  lb./ac. of N.(2) 2 times of application of N :  $T_1$  = Full at sowing and  $T_2$  = Half at sowing and half at 1st irrigation. $I_3$  was not given because of rains ; therefore  $I_2$  becomes identical with  $I_1$ .

## 3. DESIGN :

(i) Split-plot. (ii) (a) 4 main-plots/replication and 5 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a)  $19' \times 34'$ . (b)  $16' \times 31'$ . (v) 1.5' around. (vi) Yes.

## 4. GENERAL :

(i) Normal. (ii) Nil. (iii) Grain and straw yield. (iv) (a) 1949—1954. (b) and (c) No. (v) (a) Etawah, Atarra, Bharari, Faizabad, Kalianpur, Muzaffarnagar and Kunraghat. (b) N.A. (vi) Nil. (vii) Experiment conducted by C.P.(R).

## 5. RESULTS :

(i) 1617 lb./ac.

(ii) (a) 328.4 lb./ac.

(b) 126.6 lb./ac.

(iii) Only main effects of I, levels of N, times of application (T) and 'control vs treated' are highly significant.

(iv) Av. yield of grain in lb./ac.

	$N_0T_0$	$N_1T_1$	$N_2T_1$	$N_1T_2$	$N_2T_2$	Mean
$I_0$	920	1242	1406	1361	1496	1285
$I_1$	1199	1462	1711	1753	1912	1607
$I_2$	1547	1761	2140	2027	2365	1968
Mean	1216	1482	1742	1724	1921	1617

S.E. of difference of

1.  $I_0$  and  $I_2$  marginal means = 103.9 lb./ac.
2.  $I_0$  and  $I_1$  or  $I_1$  and  $I_2$  marginal means = 89.94 lb./ac.
3. two marginal means of NT = 44.76 lb./ac.
4. two NT means at the level  $I_0$  or  $I_2$  = 89.52 lb./ac.
5. two NT means at the level  $I_1$  = 63.30 lb./ac.
6.  $I_0$  and  $I_2$  means at the same level of NT = 131.1 lb./ac.
7.  $I_0$  and  $I_1$  or  $I_1$  and  $I_2$  means at the same level of NT = 127.0 lb./ac.

Crop :-Wheat (*Rabi*).

Site :-Regional Res. Stn., Meerut.

Ref :-U.P. 53(108).

Type :-'IM'.

Object :-To study the effect of application of N to Wheat at different levels and at different times in combination with different levels of irrigation.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Moong*. (c) Nil- (ii) (a) Loam. (b) N.A. (iii) 31.10.1953. (iv) (a) N.A. (b) Sown behind the plough. (c) 12 chs./plot. (d) and (e) N.A. (v) N.A. (vi) Pb. 591 (late). (vii) Irrigated. (viii) Nil. (ix) N.A. (x) 21.4.1954.

## 2. TREATMENTS :

Main-plot treatments :

4 levels of irrigation :  $I_0$ =No irrigation,  $I_1$ =Irrigation 3 weeks after germination (at flowering),  $I_2=I_1$  +irrigation 9 weeks after germination (at flowering) and  $I_3=I_2$ +irrigation 12 weeks after germination (at milky stage).

Sub-plot treatments :

All combinations of (1) and (2)+a control ( $N_0T_0$ =No manure)(1) 2 levels of N as A/S :  $N_1=30$  and  $N_2=60$  lb./ac. of N.(2) 2 times of application of N :  $T_1$ =Full at sowing and  $T_2$ =Half at sowing and half at 1st irrigation.

## 3. DESIGN :

(i) Split-plot. (ii) (a) 4 main-plots/replication and 5 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) Main-plot :  $19' \times 170'$  and sub-plot :  $19' \times 34'$ . (b)  $16' \times 31'$ . (v) 1.5' around. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) N.A. (iii) Grain yield. (iv) (a) 1949-1954. (b) and (c) No. (v) (a) Faizabad, Etawah, Kalyanpur, Atarra, Bharari, Kunraghat and Muzaffarnagar. (b) N.A. (vi) Nil. (vii) Experiment conducted by C.P.(R).

## 5. RESULTS :

(i) 1350 lb./ac.

(ii) (a) 98.56 lb./ac.

(b) 72.80 lb./ac.

(iii) Main effects of  $I$ , levels of N, times of application, 'control vs treated' and interactions  $I \times N$  and  $I \times$  'control vs treated' are highly significant. Others are not significant.

(iv) Av. yield of grain in lb./ac.

	$N_0T_0$	$N_1T_1$	$N_2T_1$	$N_1T_2$	$N_2T_2$	Mean
$I_0$	604	678	722	717	830	710
$I_1$	949	1095	1264	1208	1502	1204
$I_2$	1309	1597	1914	1621	1987	1686
$I_3$	1428	1671	2027	1790	2078	1799
Mean	1072	1260	1482	1334	1599	1350

S.E. of difference of two

1. I marginal means = 31.17 lb./ac.
2. NT marginal means = 25.74 lb./ac.
3. NT means at the same level of I = 51.48 lb./ac.
4. I means at the same level of NT = 55.60 lb./ac.

Crop :- Wheat (*Rabi*).

Ref :- U.P. 49(80).

Site :- Regional Res. Stn., Meerut.

Type :- 'IM'.

Object :- To study the effect of different forms and levels of N in combination with levels of irrigation on Wheat.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Early *moong*. (c) Nil. (ii) (a) Light loam soil. (b) N.A. (iii) 31.10.1949. (iv) (a) 3 ploughings by victory plough and *pata*, two by *desi* and *pata*, *palewa* on 7, 8.10.1949, 3 ploughings by *desi* plough and *pata*. (b) N.A. (c) 50 srs/ac. (d) N.A. (e) N.A. (v) Nil. (vi) Pb-591 (mid. late). (vii) Irrigated. (viii) N.A. (ix) N.A. (x) 16, 17.4.1950.

## 2. TREATMENTS :

Main-plot treatments :

3 levels of irrigation :  $I_1$  = Irrigation 3 weeks after germination (at tillering),  $I_2 = I_1$  + irrigation 9 weeks after germination (at flowering) and  $I_3 = I_2$  + irrigation 12 weeks after germination (at milky stage).

Sub-plot treatments :

3 combinations of forms and levels of N :  $N_0$  = No manure,  $N_1 = 60$  lb./ac. of N as A/S and  $N_2 = 60$  lb./ac. of N as castor cake.

## 3. DESIGN :

(i) Split-plot. (ii) (a) 3 main-plots/replication ; 3 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) Main-plot : 54' x 40' ; Sub-plot : 18' x 40'. (b) 12' x 34'. (v) 3' ring round the net plot. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) N.A. (iii) Height of plants, root length, shoot length, leaf length and breadth, tillers, green leaves and shoot length, ear length, wt. of shoot, no. of grains ; grain and *bhusa* yield. (iv) (a) 1949-1953. (b) N.A. (c) N.A. (v) (a) Banaras, Kalyanpur, Kurnaghat, Atarra, Bharari, Muzaffarnagar, Lucknow, Bulandshahr and Hawalbagh. (b) N.A. (vi) Nil. (vii) Experiment conducted by C.P.

## 5. RESULTS :

- (i) 1513 lb./ac.
- (ii) (a) 321.0 lb./ac.
- (b) 184.3 lb./ac.
- (iii) Only effect of levels of N is highly significant.

(iv) Av. yield of grain in lb./ac.

	N <sub>0</sub>	N <sub>1</sub>	N <sub>2</sub>	Mean
I <sub>1</sub>	1094	1633	1400	1376
I <sub>2</sub>	1240	1675	1794	1570
I <sub>3</sub>	1318	1702	1766	1595
Mean	1217	1670	1653	1513

S.E. of difference of two

1. marginal means of I = 151.3 lb./ac.
2. marginal means of N = 86.87 lb./ac.
3. N means at the same level of I = 150.5 lb./ac.
4. I means at the same level of N = 194.9 lb./ac.

Crop :- Wheat (*Rabi*).

Ref :- U.P. 50(82).

Site :- Regional Res. Stn., Meerut.

Type :- 'IM'.

Object :- To study the effect of different forms and levels of N in combination with levels of irrigation on Wheat.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Sanai*. (c) No. (ii) (a) Loam. (b) N.A. (iii) 27.10.1950. (iv) (a) 14 ploughings by *desi* plough, 2 ploughings with victory plough. (b) Seed drill. (c) 50 srs/ac. (d) N.A. (e) N.A. (v) Nil. (vi) Pb-591 (medium). (vii) Irrigated. (viii) Weeding on 15.1.1951. (ix) 3.61". (x) 14.4.1951.

## 2. TREATMENTS :

Main-plot treatments :

4 levels of irrigation : I<sub>0</sub>=No irrigation, I<sub>1</sub>=Irrigation 3 weeks after germination (at tillering), I<sub>2</sub>=I<sub>1</sub>+irrigation 9 weeks after germination (at flowering), I<sub>3</sub>=I<sub>2</sub>+irrigation 12 weeks after germination (at milky stage).

Sub-plot treatments :

3 combinations of forms and levels of N : N<sub>0</sub>=No manure, N<sub>1</sub>=60 lb./ac. of N as A/S and N<sub>2</sub>=60 lb./ac. of N as castor cake.

## 3. DESIGN :

(i) Split-plot. (ii) (a) 4 main-plots/replication ; 3 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) Main-plot 45'×24' ; Sub-plot 15'×24'. (b) 12'×21' (v) Sub-plot border 1½' around. Field border 3' around. Sown space left between main-plot 5', sown space left between blocks 8' also to be used as irrigation channel. (vi) Yes.

## 4. GENERAL :

(i) Normal. (ii) Nil. (iii) Grain yield. (iv) (a) 1949—1953. (b) No. (c) No. (v) (a) Kunraghat, Kalyanpur, Etawah, Kalai, Banaras, Muzaffarnagar, Bharari, Atarra and Lucknow. (b) N.A. (vi) Nil. (vii) Experiment conducted by C.P.

## 5. RESULTS :

- (i) 1657 lb./ac.
- (ii) (a) 261.0 lb./ac.
- (b) 244.2 lb./ac.
- (iii) Only effect of I is significant.
- (iv) Av. yield of grain in lb /ac.

	N <sub>0</sub>	N <sub>1</sub>	N <sub>2</sub>	Mean
I <sub>0</sub>	1082	1303	1689	1358
I <sub>1</sub>	1570	1777	1660	1669
I <sub>2</sub>	1926	1615	1926	1822
I <sub>3</sub>	1586	1941	1808	1778
Mean	1541	1659	1771	1657



## S.E. of difference of two

- |                                   |                 |
|-----------------------------------|-----------------|
| 1. I marginal means               | = 123.0 lb./ac. |
| 2. N marginal means               | = 99.6 lb./ac.  |
| 3. N means at the same level of I | = 199.4 lb./ac. |
| 4. I means at the same level of N | = 204.0 lb./ac. |

Crop :-Wheat (*Rabi*).

Ref :-U.P. 51(60).

Site :-Regional Res. Stn , Meerut.

Type :-'IM'.

Object :-To study the effect of different forms and levels of N in combination with levels of irrigation on Wheat.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Moong* and Maize. (c) N.A. (ii) (a) Loam. (b) N.A. (iii) 6.11.1951. (iv) (a) 8 ploughings with *desi* plough. (b) Sown by seed drill. (c) 50 srs./ac. (d) and (e) N.A. (v) Nil. (vi) Pb. 591 (medium). (vii) Irrigated. (viii) N.A. (ix) 4.15". (x) N.A.

## 2. TREATMENTS :

## Main-plot treatments :

4 levels of irrigation :  $I_0$ =No irrigation,  $I_1$ =irrigation 3 weeks after germination (at tillering),  $I_2=I_1$  +irrigation 9 weeks after germination (at flowering) and  $I_3=I_2$ +irrigation 12 weeks after germination (at milky stage).

## Sub-plot treatments :

All combinations of forms and levels of N :  $N_0$ =No manure,  $N_1$ =60 lb./ac. of N as A/S and  $N_2$ =60 lb./ac. of N castor cake.

$I_1$  given on 16.12.1951.  $I_2$  given on 1.2.1952 and  $I_3$  not given because of rains on 2.3.1952. Hence  $I_3$  becomes identical with  $I_2$ .

## 3. DESIGN :

(i) Split-plot. (ii) (a) 4 main-plots/replication ; 3 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 1/173 acre. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) Good, no lodging. (ii) No. (iii) Grain yield. (iv) (a) 1949—1953. (b), (c) No. (v) (a) Banaras, Faizabad, Kunraghat, Kalyanpur, Atarra, Bharari, Etawah, Kalai, Muzaffarnagar, Hawalbagh and Lucknow. (b) N.A. (vi) Nil. (vii) Experiment conducted by C.P.

## 5. RESULTS :

(i) 1667 lb./ac.

(ii) (a) 388.2 lb./ac.

(b) 427.4 lb./ac.

(iii) None of the effects is significant.

(iv) Av. yield of grain in lb./ac.

	$N_0$	$N_1$	$N_2$	Mean
$I_0$	1146	1835	1424	1468
$I_1$	1690	1713	1824	1742
$I_2$	1713	1652	1824	1730
Mean	1565	1713	1724	1667

## S.E. of difference of

- |  |                 |
|--|-----------------|
| 1. $I_0$ and $I_1$ marginal means                                  | = 158.5 lb./ac. |
| 2. $I_0$ and $I_2$ or $I_1$ and $I_2$ marginal means               | = 137.3 lb./ac. |
| 3. two marginal means of N   | = 151.1 lb./ac. |
| 4. two N means at the level $I_0$ or $I_1$                         | = 302.3 lb./ac. |
| 5. two N means at the same level $I_2$                             | = 213.7 lb./ac. |
| 6. $I_0$ or $I_1$ means at the level N                             | = 293.3 lb./ac. |
| 7. $I_0$ and $I_2$ or $I_1$ and $I_2$ means at the same level of N | = 254.0 lb./ac. |

Crop :-Wheat (Rabi).

Ref :-U.P. 52(125).

Site :-Regional Res. Stn., Meerut.

Type :-'IM'.

Object :-To study the effect of different forms and levels of N in combination with levels of irrigation on Wheat.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Sugarcane ratoon. (c) N.A. (ii) (a) Loam. (b) N.A. (iii) 31.10.1952. (iv) (a) Ploughing by Victory plough on 18.9.1952. ploughings by desi plough on 28.9.1952, 10, 13, 19, 26 and 29.10.1952. (b) N.A. (c) 40 to 50 srs./ac. (d) and (e) N.A. (v) 9 C.L./ac. of F.Y.M. on 17.10.1952. (vi) Pb. 591 (medium). (vii) Irrigated. (viii) N.A. (ix) N.A. (x) 14, 15.4.1953.

## 2. TREATMENTS :

Main-plot treatments .

4 levels of Irrigation :  $I_0$  = No irrigation,  $I_1$  = irrigation 3 weeks after germination (at tillering),  $I_2 = I_1$  + irrigation 9 weeks after germination (at flowering) and  $I_3 = I_2$  + irrigation 12 weeks after germination (at milky stage).

Sub-plot treatments :

3 combinations of forms and levels of N :  $N_0$  = No manure,  $N_1$  = 60 lb./ac. of N A/S and  $N_2$  = 60 lb./ac. of N castor cake.

$I_1$  given on 5.12.1952,  $I_2$  not given due to rains on 15 and 16.1.1953 and  $I_3$  given on 10.3.1953. Hence  $I_2$  becomes identical with  $I_1$ .

## 3. DESIGN :

(i) Split-plot. (ii) (a) 4 main-plots/replication ; 3 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 28' x 25'. (b) 25' x 22'. (v) 1½' around. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Nil. (iii) Grain and straw yield. (iv) (a) 1949-1953. (b), (c) No. (v) (a) Banaras, Faizabad Etawah, Kalyanpur, Kalai, Hawalbagh, Bharari, Kunraghat and Muzaffarnagar. (b) N.A. (vi) Nil. (vii) Experiment was conducted by C.P.(R).

## 5. RESULTS :

- (i) 1607 lb./ac.  
 (ii) (a) 120.6 lb./ac.  
 (b) 96.61 lb./ac.  
 (iii) Only effects of levels of I, forms of N, levels of N and I x forms of N are highly significant.  
 (iv) Av. yield of grain in lb./ac.

	$N_0$	$N_1$	$N_2$	Mean
$I_0$	1074	1609	1227	1303
$I_1$	1446	1810	1762	1673
$I_2$	1604	1858	1879	1780
Mean	1392	1772	1658	1607

## S.E. of difference of

- $I_0$  and  $I_2$  marginal means = 49.21 lb./ac.
- $I_0$  and  $I_1$  or  $I_1$  and  $I_2$  marginal means = 42.62 lb./ac.
- two N marginal means = 34.16 lb./ac.
- two N means at the level  $I_0$  or  $I_2$  = 68.31 lb./ac.
- two N means at the level  $I_1$  = 48.30 lb./ac.
- $I_0$  and  $I_2$  means at the same level of N = 74.38 lb./ac.
- $I_0$  and  $I_1$  or  $I_1$  and  $I_2$  means at the same level of N = 64.42 lb./ac.

Crop :-Wheat (*Rabi*).

Ref :-U.P. 53(115).

Site :-Regional Res. Stn., Meerut.

Type :-'IM'.

Object :- To study the effect of different forms and levels of N in combination with levels of irrigation on Wheat.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Moong*. (c) Nil. (ii) (a) Loam. (b) N.A. (iii) 7.11.1953. (iv) (a) 7 ploughings and harrowings. (b) to (e) N.A. (v) Nil. (vi) Pb. 591 (medium). (vii) Irrigated. (viii) Nil. (ix) N.A. (x) 24.4.1954.

## 2. TREATMENTS :

Main-plot treatments :

4 levels of irrigation :  $I_0$ =No irrigation,  $I_1$ =Irrigation 3 weeks after germination (at tillering),  $I_2=I_1$  +irrigation 9 weeks after germination (at flowering) and  $I_3=I_2$ +irrigation 12 weeks after germination (at milky stage).

Sub-plot treatments :

3 combinations of forms and levels of N :  $N_0$ =No manure,  $N_1$ =60 lb./ac. of N as A/S and  $N_2$ =60 lb./ac. of N as castor cake.

## 3. DESIGN :

(i) Split-plot. (ii) (a) 4 main-plots/replication and 3 sub-plots/main-plct. (b) N.A. (iii) 4. (iv) (a) Main-plot : 84'×25' and sub-plot : 28'×25'. (b) 25'×22'. (v) 1.5' around the plot. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Nil. (iii) Grain yield. (iv) (a) 1949—1954. (b) and (c) No. (v) (a) Banaras, Faizabad, Etawah, Kalyanpur, Atarra, Bharari, Muzaffarnagar, Kalai and Kunraghat. (b) N.A. (vi) Nil. (vii) Experiment conducted by C.P.(R).

## 5. RESULTS :

(i) 1334 lb./ac.

(ii) (a) 62.72 lb./ac.

(b) 59.36 lb./ac.

(iii) Main effects of I and levels of N and interactions  $I \times$  forms of N and  $I \times$  levels of N are highly significant.

(iv) Av. yield of grain in lb./ac.

	$N_0$	$N_1$	$N_2$	Mean
$I_0$	570	846	738	718
$I_1$	962	1252	1216	1143
$I_2$	1400	1776	1868	1681
$I_3$	1532	1864	1980	1792
Mean	1116	1435	1450	1334

S.E. of difference of two

- |                                   |                |
|-----------------------------------|----------------|
| 1. I marginal means               | =25.61 lb./ac. |
| 2. N marginal means               | =20.99 lb./ac. |
| 3. N means at the same level of I | =41.97 lb./ac. |
| 4. I means at the same level of N | =42.78 lb./ac. |

Crop :- Wheat (*Rabi*).

Ref :- U.P. 49(76).

Site :- Sugarcane Res. Sub-Stn., Muzaffarnagar.

Type :- 'IM'.

Object :- To study the effect of application of N to Wheat at different levels and at different times in combination with different levels of irrigation.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Sanai*. (c) No. (ii) (a) Loam. (b) Refer soil analysis. Muzaffarnagar. (iii) 14.11.1949. (iv) (a) 4 ploughing by S.T. plough, and 2 by cultivator plough, 7 plankings. (b) N.A. (c) 45 srs./ac. (d) N.A. (e) N.A. (v) N.A. (vi) Pb-591 (mid-late). (vii) Irrigated. (viii) Interculturing by using harrowing on 22.12.1949. (ix) N.A. (x) 29, 30.4.1950.

## 2. TREATMENTS :

## Main-plot treatments :

3 levels of irrigation :  $I_1$  = irrigation 3 weeks after germination (at tillering),  $I_2 = I_1$  + irrigation 9 weeks after germination (at flowering stage), and  $I_3 = I_1$  + irrigation 12 weeks after germination (at milky stage).

## Sub-plot treatments :

All combinations of (1) and (2) + a control ( $N_0 T_0$  = no manure).

(1) 2 levels of N as A/S :  $N_1 = 30$  and  $N_2 = 60$  lb./ac. of N.

(2) 2 times of application of N :  $T_1$  = Full at sowing and  $T_2$  = half at sowing and half at 1st irrigation.

## 3. DESIGN :

(i) Split-plot. (ii) (a) 3 main-plots/block ; 5 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) Main-plot  $20' \times 170'$ . Sub-plot  $20' \times 34'$ . (b)  $17' \times 31'$ . (v)  $1\frac{1}{2}$  ring round the net plot. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) N.A. (iii) Grain yield. (iv) (a) 1949-1953. (b) No. (c) No. (v) (a) Kunraghat, Kalyanpur, Atarra, Bharari, Meerut, Lucknow and Hawalbagh. (b) N.A. (vi) Nil. (vii) Experiment conducted by C.P.

## 5. RESULTS :

(i) 1566 lb./ac.

(ii) (a) 533.2 lb./ac.

(b) 208.3 lb./ac.

(iii) Effects of levels of N and 'control vs treated' are significant. Others are not significant.

(iv) Av. yield of grain in lb./ac.

	$N_0 T_0$	$N_1 T_1$	$N_2 T_1$	$N_1 T_2$	$N_2 T_2$	Mean
$I_1$	1703	1559	1396	1644	1435	1547
$I_2$	1853	1704	1477	1718	1357	1622
$I_3$	1548	1598	1392	1506	1605	1530
Mean	1701	1620	1422	1623	1466	1566

## S.E. of difference of two

- marginal means of I = 194.7 lb./ac.
- marginal means of NT = 98.17 lb./ac.
- NT means at the same level of I = 170.0 lb./ac.
- I means at the same level of NT = 247.1 lb./ac.

Crop :- Wheat (Rabi).

Ref :- U.P. 50(72).

Site :- Sugarcane Res. Sub-Stn., Muzaffarnagar.

Type :- 'IM'.

Object :- To study the effect of application of N to Wheat at different levels and at different times in combination with different levels of irrigation.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) N.A. (c) N.A. (ii) (a) Medium loam. (b) Refer soil analysis, Muzaffarnagar. (iii) N.A. (iv) (a) N.A. (b) Sown by seed drill. (c) 40-50 srs./ac. (d) N.A. (e) N.A. (v) Nil. (vi) Pb-591 (medium). (vii) Irrigated. (viii) N.A. (ix) 3.62". (x) N.A.

## 2. TREATMENTS :

## Main-plot treatments :

4 levels of irrigation :  $I_0$  = No irrigation,  $I_1$  = irrigation 3 weeks after germination (at tillering),  $I_2 = I_1$  + irrigation 9 weeks after germination (at flowering) and  $I_3 = I_2$  + irrigation 12 weeks after germination (at milky stage).

## Sub-plot treatments :

All combination of (1) and (2) + a control ( $N_0 T_0$  = no manure).

(1) 2 levels of N as A/S :  $N_1 = 30$  and  $N_2 = 60$  lb./ac. of N.

(2) 2 times of application of N :  $T_1$  = Full at sowing and  $T_2$  = half at sowing and half at 1st irrigation.

**3. DESIGN :**

(i) Split-plot. (ii) (a) 4 main-plots/replication and 5 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) Main-plot=175'×14' sub-plot=14'×35'. (b) 11'×32'. (v) 1½' around the net plot. (vi) Yes.

**4. GENERAL :**

(i) Good. (ii) Nil. (iii) Grain yield. (iv) (a) 1949—1953. (b) No. (c) No. (v) (a) Kalyanpur, Etawah, Atarra, Kunraghat, Meerut, Bharari and Lucknow. (b) N.A. (vi) Nil. (vii) Experiment conducted by C.P.

**5. RESULTS :**

- (i) 2614 lb./ac.  
 (ii) (a) 490.6 lb./ac.  
 (b) 359.5 lb./ac.  
 (iii) Main effects of I and T are highly significant. 'control vs. treated' and interaction I×'control vs. treated' are significant. Others are not significant.  
 (iv) Av. yield of grain in lb./ac.

	N <sub>0</sub> T <sub>0</sub>	N <sub>1</sub> T <sub>1</sub>	N <sub>2</sub> T <sub>1</sub>	N <sub>1</sub> T <sub>2</sub>	N <sub>2</sub> T <sub>2</sub>	Mean
I <sub>0</sub>	1628	1803	1984	2323	2222	1992
I <sub>1</sub>	2418	2551	2811	3236	2949	2793
I <sub>2</sub>	2429	2757	2790	3139	3097	2842
I <sub>3</sub>	3209	2705	2540	2811	2885	2830
Mean	2421	2454	2531	2877	2788	2614

S.E. of difference of two

1. I marginal means =179.2 lb./ac.  
 2. NT marginal means =146.7 lb./ac.  
 3. NT means at the same level of I =293.4 lb./ac.  
 4. I means at the same level of NT =318.1 lb./ac.

Crop :-Wheat (Rabi).

Ref :- U.P. 51(53).

Site :-Sugarcane Res. Sub-Stn., Muzaffarnagar.

Type :-'IM'.

Object :-To study the effect of application of N to Wheat at different levels and at different times in combination with different levels of irrigation.

**1. BASAL CONDITIONS :**

(i) (a) Nil. (b) Fallow. (c) No. (ii) (a) Loam. (b) Refer soil analysis, Muzaffarnagar. (iii) 25.10.1951. (iv) (a) N.A. (b) Sown by seed drill. (c) 40 srs./ac. (d) and (e) N.A. (v) Nil. (vi) Pb. 591 (medium). (vii) Irrigated. (viii) to (x) N.A.

**2. TREATMENTS :**

Main-plot treatments

4 levels of irrigation : I<sub>0</sub>=No irrigation, I<sub>1</sub>=Irrigation 3 weeks after germination (at tillering), I<sub>2</sub>=I<sub>1</sub>+irrigation 9 weeks after germination (at flowering) and I<sub>3</sub>=I<sub>2</sub>+irrigation 12 weeks after germination (at milky stage).

Sub-plot treatments :

All combinations of (1) and (2)+a control (N<sub>0</sub>T<sub>0</sub>=No manure)

(1) 2 levels of N as A/S : N<sub>1</sub>=30 and N<sub>2</sub>=60 lb./ac. of N.

(2) 2 times of application of N : T<sub>1</sub>=Full at sowing and T<sub>2</sub>=Half at sowing and half at 1st irrigation.

**3. DESIGN :**

(i) Split-plot. (ii) (a) 4 main-plots/replication and 5 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) Main-plot : 175'×14' and sub-plot : 14'×35'. (b) 11'×32'. (v) 1½' around. (vi) Yes.

**4. GENERAL :**

(i) Good, no lodging. (ii) Nil. (iii) Grain yield. (iv) (a) 1949—1953, (b) and (c) N.A. (v) (a) Hawalbagh, Etawah, Faizabad, Kalianpur, Meerut, Bharari, Atarra, Kunraghat and Lucknow. (b) N.A. (vi) Nil. (vii) Experiment conducted by C.P.

## 5. RESULTS :

- (i) 1816 lb./ac.  
 (ii) (a) 480.5 lb./ac.  
 (b) 282.2 lb./ac.  
 (iii) Only control vs treated is significant.  
 (iv) Av. yield of grain in lb./ac.

	$N_0T_0$	$N_1T_1$	$N_2T_1$	$N_1T_2$	$N_2T_2$	Mean
$I_0$	2116	2191	1755	1613	1989	1933
$I_1$	1751	1846	1650	1952	1443	1728
$I_2$	1861	1873	1501	1755	1702	1738
$I_3$	2243	1749	1914	1751	1665	1864
Mean	1993	1915	1705	1768	1700	1816

## S.E. of difference of two

1. I marginal means =175.8 lb./ac.  
 2. NT marginal means =115.3 lb./ac.  
 3. NT means at the same level of I =230.7 lb./ac.  
 4. I means at the same level of NT =271.0 lb./ac.

Crop :-Wheat (*Rabi*).

Ref :-U.P. 52(111).

Site :-Sugarcane Res. Sub-Stn., Muzaffarnagar.

Type :-'IM'.

Object :-To study the effect of application of N to Wheat at different levels and at different times in combination with different levels of irrigation.

## 1. BASAL CONDITIONS :

- (i) (a) Nil. (b) *Chari*. (c) Nil. (ii) (a) Medium loam. (b) Refer soil analysis, Muzaffarnagar. (iii) 26.10.1952. (iv) (a) Ploughing by K. No. 12 plough on 5.7.1952 and 6.8.1952. Ploughing by *Funn* on 6 and 8.8.1952, 8 *desi* ploughings, 4 roller and *patta*. (b) N.A. (c) 40-50 srs./ac. (d) and (e) N.A. (v) Nil. (vi) Pb. 591 (mid-late). (vii) Irrigated. (viii) and (ix) N.A. (x) 7 and 11.4.1953.

## 2. TREATMENTS :

## Main-plot treatments :

- 4 levels of irrigation :  $I_0$ =No irrigation,  $I_1$ =Irrigation 3 weeks after germination (at tillering),  $I_2=I_1$  +Irrigation 9 weeks after germination (at flowering) and  $I_3=I_2$ +irrigation 12 weeks after germination (at milky stage).

## Sub-plot treatments :

All combinations of (1) and (2) +a control ( $N_0T_0$ =No manure)

- (1) 2 levels of N as A/S :  $N_1=30$  and  $N_2=60$  lb./ac.

- (2) 2 times of application of N :  $T_1$ =Full at sowing and  $T_2$ =Half at sowing and half at 1st irrigation.

## 3. DESIGN :

- (i) Split-plot. (ii) (a) 4 main-plots/replication and 5 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) 14 × 35'. (b) 11' × 32'. (v) 1½' alround (vi) Yes.

## 4. GENERAL :

- (i) Good. (ii) Smut was seen in very mild form which was rouged out. (iii) Grain and straw yield. (iv) (a) 1949-1953. (b) and (c) No. (v) (a) Etawah, Meerut, Atarra, Bharari, Faizabad, Kalyanpur and Kunraghat. (b) N.A. (vi) Nil. (vii) Experiment conducted by C.P.

## 5. RESULTS :

- (i) 2518 lb./ac.  
 (ii) (a) 903.7 lb./ac.  
 (b) 308.0 lb./ac.  
 (iii) None of the effects is significant.

(iv) Av. yield of grain in lb./ac.

	$N_0T_0$	$N_1T_1$	$N_2T_1$	$N_1T_2$	$N_2T_2$	Mean
$I_0$	1867	2143	1994	1835	1888	1945
$I_1$	3013	3097	2439	2992	3034	2915
$I_2$	2612	2439	2461	2864	2631	2601
$I_3$	2928	2546	2334	2652	2588	2610
Mean	2605	2556	2307	2586	2535	2518

S.E. of difference of two

1. I marginal means =330.4 lb./ac.
2. NT marginal means =125.7 lb./ac.
3. NT means at the same level of I =251.5 lb./ac.
4. I means at the same level of NT =399.3 lb./ac.

Crop :- Wheat (*Rabi*).

Ref :- U.P. 53(101).

Site :- Sugarcane Res. Sub-Stn., Muzaffarnagar.

Type :- 'IM'.

Object :—To study the effect of application of N to Wheat at different levels and at different times in combination with different levels of irrigation.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) (a) Medium loam. (b) Refer soil analysis, Muzaffarnagar. (iii) 25.10.1953. (iv) (a) *Palewa* on 14.6.1953, 13 ploughings and 11 *pata*. (b) Seed drill. (c) 40—50 srs./ac. (d) and (e) N.A. (v) N.A. (vi) Pb. 591. (vii) Irrigated. (viii) Nil. (ix) N.A. (x) 18-21.4.1954.

## 2. TREATMENTS :

Main-plot treatments :

4 levels of irrigation :  $I_0$ =No irrigation,  $I_1$ =Irrigation 3 weeks after germination (at tillering),  $I_2=I_1+$  irrigation 9 weeks after germination (at flowering) and  $I_3=I_2+$  irrigation 12 weeks after germination (at milky stage).

Sub-plot treatments :

All combinations of (1) and (2)+a control ( $N_0T_0$ =no manure).

(1) 2 levels of N :  $N_1=30$  and  $N_2=60$  lb./ac. of N.

(2) 2 times of application :  $T_1$ =Full at sowing and  $T_2$ =Half at sowing and half at 1st irrigation.

$I_1$  given on 25.11.1953,  $I_2$  and  $I_3$  not given due to heavy rains in January and February. Hence  $I_2$  and  $I_3$  become identical to  $I_1$ .

## 3. DESIGN :

(i) Split-plot. (ii) (a) 4 main-plots/replication and 5 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) Main-plot : 14'×175' and sub-plot 14'×35'. (b) 11'×32' (v) Plot border 1.5' and field border 3' allround. Sown space left between main-plots and blocks= 6' which also serves as irrigation channel. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Crop effected by bunt. (iii) Grain and straw yield. (iv) (a) 1949—1953. (b) and (c) No. (v) (a) Faizabad, Etawah, Kalyanpur, Attara, Bharari, Meerut and Kunraghat. (b) N.A. (vi) Nil. (vii) Experiment conducted by C.P.

## 5. RESULTS :

(i) 2078 lb./ac.

(ii) (a) 303.8 lb./ac.

(b) 233.9 lb./ac.

(iii) Levels of irrigation are significant, others not significant.

(iv) Av. yield of grain in lb./ac.

	$N_0T_0$	$N_1T_1$	$N_2T_1$	$N_1T_2$	$N_2T_2$	Mean
$I_0$	2487	2238	2068	2249	2461	2301
$I_1$	2206	2072	1584	2231	1923	2003
Mean	2276	2114	1705	2236	2058	2078

1. S.E. for  $I_0$  marginal mean = 78.4 lb./ac.
  2. S.E. for  $I_1$  marginal mean = 45.3 lb./ac.
- S.E. of difference of two
3. NT marginal means = 95.5 lb./ac.
  4. NT means at the same level of  $I_0$  = 191.0 lb./ac.
  5. NT means at the same level of  $I_1$  = 110.2 lb./ac.
  6. I means at the same level of NT = 166.3 lb./ac.

Crop :- Wheat (*Rabi*).

Ref :- U.P. 49(73),

Site :- Sugarcane Res. Sub-Stn., Muzaffarnagar.

Type :- 'IM'.

Object :- To study the effect of different forms and levels of N in combination with levels of irrigation on Wheat.

## 1. BASAL CONDITIONS :

- (i) (a) Nil. (b) *Sanai*. (c) Nil. (ii) (a) Loam. (b) Refer soil analysis, Muzaffarnagar. (iii) 14.11.1949. (iv) (a) 4 ploughings by S.T. plough, 9 by *desi* plough and 2 by cultivator and 7 plankings. (b) to (e) N.A. (v) G.M. (*Sanai*). (vi) Pb. 591 (medium). (vii) Irrigated. (viii) Hoeing and lever harrowing on 22.12.1949 after first irrigation. (ix) N.A. (x) 27.4.1950.

## 2. TREATMENTS :

## Main-plot treatments :

- 3 levels of irrigation :  $I_1$  = Irrigation 3 weeks after germination (at tillering),  $I_2$  =  $I_1$  + irrigation 9 weeks after germination (at flowering) and  $I_3$  =  $I_2$  + irrigation 12 weeks after germination (at milky stage).

## Sub-plot treatments :

- 3 combinations of forms and levels of N :  $N_0$  = No manure,  $N_1$  = 60 lb./ac. of N as A/S and  $N_2$  = 60 lb./ac. of N as castor cake.

## 3. DESIGN :

- (i) Split-plot. (ii) (a) 3 main-plots/block and 3 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) Main-plot 54' x 30' and sub-plot 18' x 30'. (b) 12' x 24'. (v) 3' all round the net plot. (vi) Yes.

## 4. GENERAL :

- (i) N.A. (ii) N.A. (iii) Grain yield. (iv) (a) 1949—1953. (b) and (c) No. (v) (a) Banaras, Kalyanpur, Atarra, Bharari, Meerut, Kunraghat, Lucknow, Bulandshahr and Hawalbagh. (b) N.A. (vi) Nil. (vii) Experiment conducted by C.P.

## 5. RESULTS :

- (i) 2308 lb./ac.  
(ii) (a) 269.8 lb./ac.  
(b) 219.0 lb./ac.  
(iii) Effects of forms of N and levels of N are significant. Others are not significant.  
(iv) Av. yield of grain in lb./ac.

	$N_0$	$N_1$	$N_2$	Mean
$I_1$	2509	2282	2314	2368
$I_2$	2522	2087	2392	2334
$I_3$	2424	1945	2301	2223
Mean	2485	2105	2336	2308



## S.E. of difference of two

1. -J marginal mean =127.2 lb./ac.
2. N marginal means =103.3 lb./ac.
3. N means at the same level of I =178.8 lb./ac.
4. I means at the same level of N =193.5 lb./ac.

Crop :- Wheat (*Rabi*).

Ref :- U.P. 50(83).

Site :- Sugarcane Res. Sub-Stn., Muzaffarnagar.

Type :- 'IM'.

Object :- To study the effect of different forms and levels of N in combination with levels of irrigation on Wheat.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Moong*. (c) N.A. (ii) (a) Medium loam. (b) Refer soil analysis, Muzaffarnagar. (iii) 31.10.1950. (iv) (a) 2 ploughings with soil turning plough. 8 ploughings with *desi* plough and *pata*. 6 ploughings with cultivator. (b) Seed drill. (c) 40 srs./ac. (d) and (e) N.A. (v) Nil. (vi) Pb.-591 (medium). (vii) Irrigated. (viii) One harrowing by lever harrow. (ix) 3.62". (x) 17 to 19.4.1951.

## 2. TREATMENTS :

## Main-plot treatments :

4 levels of irrigation :  $I_0$ =No irrigation,  $I_1$ =Irrigation 3 weeks after germination (at tillering),  $I_2=I_1$ +irrigation 9 weeks after germination (at flowering) and  $I_3=I_2$ +irrigation 12 weeks after germination (at milky stage).

## Sub-plot treatments :

3 combinations of forms and levels of N :  $N_0$ =No manure,  $N_1$ =60 lb./ac. of N as A/S and  $N_2$ =60 lb./ac. of N as castor cake.

## 3. DESIGN :

(i) Split-Plot. (ii) (a) 4 main-plots/replication and 3 sub-plot/main-plots (b) N.A. (iii) 3. (iv) (a) Main-plot : 54' x 27'. sub-plot : 18' x 27'. (b) 15' x 24'. (v) 1½' around. (vi) Yes.

## 4. GENERAL :

(i) Satisfactory. (ii) Nothing very significant. (iii) Grain yield. (iv) (a) 1949—1953. (b) and (c) No. (v) (a) Meerut, Kunraghat, Kalyanpur, Etawah, Kalai, Banaras, Bharari, Atarra and Lucknow. (b) N.A. (vi) Nil. (vii) Experiment conducted by C.P.

## 5. RESULTS :

- (i) 2314 lb./ac.
- (ii) (a) 246.4 lb./ac.
- (b) 163.5 lb./ac.
- (iii) Only sub-plot treatments are highly significant.
- (iv) Av. yield of grain in lb./ac.

	$N_0$	$N_1$	$N_2$	Mean
$I_0$	1908	2199	2271	2126
$I_1$	2068	2386	2406	2287
$I_2$	2106	2447	2520	2358
$I_3$	2271	2603	2583	2486
Mean	2088	2409	2445	2314

## S.E. of difference of two

1. I marginal means =116.5 lb./ac.
2. N marginal means = 67.2 lb./ac.
3. N means at the same level of I =133.3 lb./ac.
4. I means at the same level of N =159.0 lb./ac.

Crop :- Wheat (*Rabi*).

Ref :- U.P. 51(54).

Site :- Sugarcane Res. Sub-Stn., Muzaffarnagar.

Type :- 'IM'.

Object :- To study the effect of different forms and levels of N in combination with levels of irrigation on Wheat.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fallow. (c) No. (ii) (a) Medium loam. (b) Refer soil analysis, Muzaffarnagar. (iii) 25.10.1951. (iv) (a) 10 ploughings. (b) Seed drill. (c) 40 srs./ac. (d) and (e) N.A. (v) Nil. (vi) Pb.591 (medium). (vii) Irrigated. (viii) N.A. (ix) N.A. (x) N.A.

## 2. TREATMENTS :

## Main-plot treatments :

4 levels of irrigation:  $I_0$ =No irrigation,  $I_1$ =Irrigation 3 weeks after germination (at tillering),  $I_2$ = $I_1$ +irrigation 9 weeks after germination (at flowering) and  $I_3$ = $I_2$ +irrigation 12 weeks after germination (at milky stage).

## Sub-plot treatments :

3 combinations of forms and levels of N:  $N_0$ =No manure,  $N_1$ =60 lb./ac. of N as A/S and  $N_2$ =60 lb./ac. of N as castor cake.

## 3. DESIGN :

(i) Split-plot. (ii) (a) 4 main-plots/replication and 3 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) Main-plot: 54'x27'. Sub-plot: 18'x27'. (b) 12'x21'. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) Very good. (ii) Nil. (iii) Grain yield. (iv) (a) 1949—1953. (b) and (c) No. (v) (a) Banaras, Faizabad, Kunraghat, Kalyanpur, Atarra, Bharari, Etawah, Kalai, Meerut, Hawalbagh and Lucknow. (b) N.A. (vi) Nil. (vii) Experiment conducted by C.P.

## 5. RESULTS :

(i) 2619 lb./ac.

(ii) (a) 282.2 lb./ac.

(b) 389.8 lb./ac.

(iii) Main effect of I is highly significant and effect of levels of N is significant. Others are not significant.

(iv) Av. yield of grain in lb./ac.

	$N_0$	$N_1$	$N_2$	Mean
$I_0$	3111	3111	2933	3052
$I_1$	2460	1816	2874	2383
$I_2$	2986	2349	2312	2549
$I_3$	2800	2201	2482	2494
Mean	2839	2369	2650	2619

S.E. of difference of two

1. I marginal means = 133.3 lb./ac.

2. N marginal means = 159.0 lb./ac.

3. N means at the same level of I = 318.1 lb./ac.

4. I means at the same level of N = 292.3 lb./ac.

Crop :-Wheat (*Rabi*).

Ref :-U.P. 52(110).

Site :-Sugarcane Res. Sub-Stn., Muzaffarnagar.

Type :-'IM'.

Object :- To study the effect of different forms and levels of N in combination with levels of irrigation on Wheat.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Charl*. (c) Nil. (ii) (a) Medium loam. (b) Refer soil analysis, Muzaffarnagar. (iii) 26.10.1952. (iv) (a) 2 ploughings by K. No. 12 plough and 1 ploughing by *funn* plough on 6.8.1952. 9 ploughings by *dest* plough and *pata*, 4 rollings and *pata*. (b) N.A. (c) 40-50 srs./ac. in general. (d) and (e) N.A. (v) Nil. (vi) Pb.591 (mid-late). (vii) Irrigated. (viii) N.A. (ix) N.A. (x) 7 to 11.4.1953.

**2. TREATMENTS :****Main-plot treatments :**

4 levels of irrigation :  $I_0$ =No irrigation,  $I_1$ =Irrigation 3 weeks after germination (at tillering),  $I_2=I_1$  +irrigation 9 weeks after germination (at flowering),  $I_3=I_2$ +irrigation 12 weeks after germination (at milky stage).

**Sub-plot treatments :**

3 combinations of forms and levels of N :  $N_0$ =No manure,  $N_1=60$  lb./ac. of N as A/S and  $N_2=60$  lb./ac. of N as castor cake.

**3. DESIGN :**

(i) Split-plot. (ii) (a) 4 main-plots/replication ; 3 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) 18'×27'. (b) 15'×24'. (v) 1½' around. (vi) Yes.

**4. GENERAL :**

(i) Good. (ii) Smut was seen in very mild form which was rouged out. (iii) Grain and straw yield. (iv) (a) 1949-1953. (b), (c) No. (v) (a) Kunraghat, Banaras, Faizabad, Etawah, Kalyanpur, Meerut, Kalai, Atarra, Hawalbagh and Bharari. (b) N.A. (vi) Nil. (vii) Experiment conducted by C.P.

**5. RESULTS :**

- (i) 2429 lb./ac.  
 (ii) (a) 653.2 lb./ac.  
 (b) 305.8 lb./ac.  
 (iii) Only effect of N is highly significant.  
 (iv) Av. yield of grain in lb./ac.

	$N_0$	$N_1$	$N_2$	Mean
$I_0$	2220	2364	2116	2233
$I_1$	3257	2759	2427	2814
$I_2$	2883	2096	2261	2413
$I_3$	2593	1970	2199	2254
Mean	2738	2297	2251	2429

**S.E. of difference of two**

1. I marginal means =307.9 lb./ac.  
 2. N marginal means =124.3 lb./ac.  
 3. N means at the same level of I =249.8 lb./ac.  
 4. I means at the same level of N =369.6 lb./ac.

**Crop :-Wheat (Rabi).**

**Ref :-U.P. 53(102).**

**Site :-Sugarcane Res. Sub-Stn., Muzaffarnagar.**

**Type :-'IM'.**

**Object :-To study the effect of different forms and levels of N in combination with levels of irrigation on Wheat.**

**1. BASAL CONDITIONS :**

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) (a) Medium loam. (b) Refer soil analysis, Muzaffarnagar. (iii) 25.10.1953. (iv) (a) 12 ploughings. (b) Seed drill. (c) 40-50 srs./ac. (6.3 chh./plot). (d) and (e) N.A. (v) Nil. (vi) Pb. 591. (vii) Irrigated. (viii) Nil. (ix) Heavy rain in the month of January. Details N.A. (x) 13 to 21.4.1954.

**2. TREATMENTS :****Main-plot treatments :**

4 levels of irrigation :  $I_0$ =No Irrigation,  $I_1$ =Irrigation 3 weeks after germination (at tillering),  $I_2=I_1$ +irrigation 9 weeks after germination (at flowering),  $I_3=I_2$ +irrigation 12 weeks after germination (at milky stage).

**Sub-plot treatments :**

3 combinations of forms and levels of N :  $N_0$ =No manure,  $N_1=60$  lb./ac. of N as A/S and  $N_2=60$  lb./ac. of N as castor cake.

## 3. DESIGN :

(i) Split-plot. (ii) (a) 4 main-plots/replication and 3 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) Main-plot : 27'×54' ; sub-plot : 18'×27'. (b) 15'×24'. (v) 1½' around. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Crop affected by *bunt*. (iii) Grain and straw yield. (iv) (a) 1949—1953. (b), (c) No. (v) (a) Faizabad, Kunraghat, Etawah, Kalyanpur, Atarra, Bharari, Meerut, Kalai and Varanasi. (b) N.A. (vi) Nil. (vii) Experiment conducted by C.P.

## 5. RESULTS :

- (i) 1902 lb./ac.  
 (ii) (a) 473.8 lb./ac.  
 (b) 229.6 lb./ac.  
 (iii) Only effect of N is significant.  
 (iv) Av. yield of grain in lb./ac.

	N <sub>0</sub>	N <sub>1</sub>	N <sub>2</sub>	Mean
I <sub>0</sub>	2344	2106	2157	2202
I <sub>1</sub>	2001	1587	1628	1739
I <sub>2</sub>	1940	1524	1857	1774
I <sub>3</sub>	1929	1814	1940	1894
Mean	2054	1758	1896	1902

## S.E. of difference of two

1. I marginal means = 223.3 lb./ac.  
 2. N marginal means = 93.7 lb./ac.  
 3. N means at the same level of I = 187.5 lb./ac.  
 4. I means at the same level of N = 270.7 lb./ac.

Crop :-Wheat (*Rabi*).

Ref :-U.P. 50(134).

Site :- Govt. Agri. Farm, Pratapgarh.

Type :-'IM'.

Object :-To study the effect of different levels of irrigation in combination with P<sub>2</sub>O<sub>5</sub> and Gypsum on Wheat.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Sugarcane. (c) N.A. (ii) (a) Loam. (b) N.A. (iii) 14.11.1950. (iv) (a) *Palewa* and 3 ploughings by *desi* plough. (b) N.A. (c) 40 srs./ac. (d) N.A. (e) N.A. (v) Manuring by G.M. on 12.11.1950. (vi) N.P.52 (mid-late). (vii) Irrigated. (viii) Nil. (ix) 3.19". (x) 24, 25.4.1951.

## 2. TREATMENTS :

## Main-plot treatments :

3 levels of irrigation : I<sub>0</sub>=No irrigation, I<sub>1</sub>=Irrigation 3 weeks after germination (at tillering), I<sub>2</sub>=I<sub>1</sub>+irrigation 9 weeks after germination (at flowering).

## Sub-plot treatments :

All combinations of (1) and (2)

- (1) 3 levels of P<sub>2</sub>O<sub>5</sub> as Super : P<sub>0</sub>=0, P<sub>1</sub>=20 and P<sub>2</sub>=40 lb./ac.  
 (2) 3 levels of Ca as Gypsum : G<sub>0</sub>=0, G<sub>1</sub>=25 and G<sub>2</sub>=50 lb./ac.

## 3. DESIGN :

(i) Split-plot. (ii) (a) 3 main-plots/replication and 9 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) Main-plot 153'×39' sub-plot 17'×39'. (b) 14'×36'. (v) 1½' around. (vi) Yes.

## 4. GENERAL :

(i) Satisfactory. (ii) Nil. (iii) Grain yield. (iv) (a) 1950—1953. (b) No. (c) No. (v) (a) Kalai and Baharaich. (b) N.A. (vi) Nil. (vii) Experiment conducted by C.P.

## 5. RESULTS :

- (i) 1787 lb./ac.  
 (ii) (a) 209.7 lb./ac.  
 (b) 347.8 lb./ac.  
 (iii) None of the effects and their interactions is significant.  
 (iv) Av. yield of grain in lb./ac.

	G <sub>0</sub>	G <sub>1</sub>	G <sub>2</sub>	Mean	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>
I <sub>0</sub>	1561	1867	1916	1781	1748	1714	1882
I <sub>1</sub>	1892	1684	1758	1778	1734	1734	1867
I <sub>2</sub>	1806	1934	1664	1801	1973	1674	1757
Mean	1753	1828	1779	1787	1818	1707	1835
P <sub>0</sub>	1773	1909	1773				
P <sub>1</sub>	1645	1753	1723				
P <sub>2</sub>	1841	1822	1842				

## S.E. of difference of two

1. I marginal means = 57.1 lb./ac.  
 2. P or G marginal means = 94.6 lb./ac.  
 3. I means at the same level of P or G = 145.5 lb./ac.  
 4. P or G means at the same level of I = 163.9 lb./ac.  
 5. means in the body of P×G table = 163.9 lb./ac.

Crop :- Wheat (*Rabi*).

Ref :- U.P. 51(74).

Site :- Govt. Agri. Farm, Pratapgarh.

Type :- 'IM'.

Object :- To study the effect of different levels of irrigation in combination with P<sub>2</sub>O<sub>5</sub> and Gypsum on Wheat.

## 1. BASAL CONDITIONS :

(i) (a) *Sanai*-wheat. (b) *Sanai* for fibre. (c) No. (ii) (a) Sandy loam. (b) N.A. (iii) Last week of October 1951. (iv) (a) N.A. (b) Seed drill. (c) 40-50 srs/ac. (d) N.A. (e) N.A. (v) Nil. (vi) Pb.591 (mid-late). (vii) Irrigated. (viii) N.A. (ix) N.A. (x) N.A.

## 2. TREATMENTS :

## Main-plot treatments :

3 levels of irrigation : I<sub>0</sub>=No irrigation, I<sub>1</sub>=Irrigation 3 weeks after germination (at tillering), I<sub>2</sub>=I<sub>1</sub>+irrigation 9 weeks after germination (at flowering).

## Sub-plot treatments :

All combinations of (1) and (2)

- (1) 3 levels of P<sub>2</sub>O<sub>5</sub> as Super : P<sub>0</sub>=0, P<sub>1</sub>=20 and P<sub>2</sub>=40 lb./ac.  
 (2) 3 levels of CaO as Gypsum : G<sub>0</sub>=0, G<sub>1</sub>=25 and G<sub>2</sub>=50 lb./ac.

## 3. DESIGN :

(i) Split-plot. (ii) (a) 3 main-plots/replication and 9 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) Main-plot 36'×153'. sub-plot 36'×17'. (b) 33'×14'. 1½' around. (vi) Yes.

## 4. GENERAL :

(i) Poor stand. (ii) Nil. (iii) Grain yield. (iv) (a) 1950-1953. (b) No. (c) No. (v) (a) Baharaich and Kalai. (b) N.A. (vi) Nil. (vii) Experiment conducted by C.P.

## 5. RESULTS :

- (i) 850.1 lb./ac.  
 (ii) (a) 405.0 lb./ac.  
 (b) 189.5 lb./ac.  
 (iii) Only the effect of I is significant. All others are not significant.

(iv) Av. yield of grain in lb./ac.

	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>	Mean	G <sub>0</sub>	G <sub>1</sub>	G <sub>2</sub>
I <sub>0</sub>	606	631	681	640	639	607	673
I <sub>1</sub>	830	921	1006	919	966	887	905
I <sub>2</sub>	976	964	1035	991	986	996	992
Mean	804	839	907	850	863	830	857
G <sub>0</sub>	816	897	877	863			
G <sub>1</sub>	806	797	887	830			
G <sub>2</sub>	790	822	958	857			

S.E. of difference of two

1. I marginal means = 95.5 lb./ac.
2. P or G marginal means = 44.7 lb./ac.
3. P or G means at the same level of I = 77.4 lb./ac.
4. I means at the same level of P or G = 114.5 lb./ac.
5. means in body of P×G table = 77.4 lb./ac.

Crop :- Wheat (*Rabi*).

Ref :- U P. 52(120).

Site :- Govt. Agri. Farm, Pratapgarh.

Type :- 'IM'.

Object :- To study the effect of different levels of irrigation in combination with P<sub>2</sub>O<sub>5</sub> and Gypsum on Wheat.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Chari*. (c) N.A. (ii) (a) Loam. (b) N.A. (iii) 8.11.1952. (iv) (a) 4 ploughings. *Palewa* on 25, 26.10.1952. (b) N.A. (c) 12 ch $\bar{k}$ /plot. (d) and (e) N.A. (v) Nil. (vi) C-13 (medium). (vii) Irrigated. (viii) N.A. (ix) N.A. (x) 1, 2.4.1953.

## 2. TREATMENTS :

Main-plot treatments :

3 levels of irrigation : I<sub>1</sub>=Irrigation 3 weeks after germination (at tillering), I<sub>2</sub>=I<sub>1</sub>+irrigation 9 weeks after germination (at flowering) and I<sub>3</sub>=I<sub>2</sub>+irrigation 12 weeks after germination (at milky stage).

Sub-plot treatments :

All combinations of (1) and (2)

- (1) 3 levels of P<sub>2</sub>O<sub>5</sub> as Super : P<sub>0</sub>=0, P<sub>1</sub>=20 and P<sub>2</sub>=40 lb./ac.
- (2) 3 levels of Ca as Gypsum : G<sub>0</sub>=0, G<sub>1</sub>=25 and G<sub>2</sub>=50 lb./ac.

## 3. DESIGN :

(i) Split-plot. (ii) (a) 3 main-plots/replication and 9 sub-plots/main-plot. (iii) 4. (iv) (a) 36'×17'. (b) 33'×14'. (v) 1½' around. (vi) Yes.

## 4. GENERAL :

(i) Damage about 10%. (ii) Nil. (iii) Grain and straw yield. (iv) (a) 1950-1953. (b) and (c) No. (v) (a) Baharaich and Aligarh. (b) N.A. (vi) Nil. (vii) Experiment conducted by C.P. (R).

## 5. RESULTS :

- (i) 953.3 lb./ac.
- (ii) (a) 227.5 lb./ac.
- (b) 97.3 lb./ac.
- (iii) Main effects of I, P and G and interactions I×P, I×G are highly significant.

(iv) Av. yield of grain in lb./ac.

	G <sub>0</sub>	G <sub>1</sub>	G <sub>2</sub>	Mean	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>
I <sub>1</sub>	492	502	607	534	541	510	550
I <sub>2</sub>	743	883	1192	940	838	978	1002
I <sub>3</sub>	1332	1366	1462	1387	1278	1435	1448
Mean	856	917	1087	953	886	974	1000
P <sub>0</sub>	798	827	1032				
P <sub>1</sub>	858	954	1111				
P <sub>2</sub>	912	970	1117				

S.E. of difference of two

1. I marginal means = 53.6 lb./ac.
2. P or G marginal means = 22.9 lb./ac.
3. P or G means at the same level of I = 39.7 lb./ac.
4. I means at the same level of P or G = 62.6 lb./ac.
5. means in body of P or G table = 39.7 lb./ac.

Crop :- Wheat (*Rabi*).

Ref :- U.P. 53(52).

Site :- Govt. Agri. Farm, Pratapgarh.

Type :- 'IM'.

Object :- To study the effect of different levels of irrigation in combination with P<sub>2</sub>O<sub>5</sub> and Gypsum on Wheat.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) G.M. (c) Nil. (ii) (a) Loam. (b) N.A. (iii) 24.10.1953. (iv) (a) 6 ploughings and harrowings. (b) Sown behind *desi* plough. (c) 40—50 srs./ac. (d) and (e) N.A. (v) N.A. (vi) Pb. 591 (medium). (vii) Irrigated. (viii) Weeding on 5.12.1953 and 18.12.1953. Hoeing on 9.12.1953. (ix) Rained in February 1954, amount N.A. (x) 29.3.1954.

## 2. TREATMENTS :

Main-plot treatments :

3 levels of irrigation : I<sub>0</sub>=No Irrigation, I<sub>1</sub>=Irrigation 3 weeks after germination (at tillering), I<sub>2</sub>=I<sub>1</sub>+irrigation 9 weeks after germination (at flowering).

Sub-plot treatments :

All combinations of (1) and (2)

(1) 3 levels of P<sub>2</sub>O<sub>5</sub> as Super : P<sub>0</sub>=0, P<sub>1</sub>=20 and P<sub>2</sub>=40 lb./ac.(2) 3 levels of Ca as Gypsum : G<sub>0</sub>=0, G<sub>1</sub>=25 and G<sub>2</sub>=50 lb./ac.

## 3. DESIGN :

(i) Split-plot. (ii) (a) 3 main-plots/replication and 9 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) Main-plot : 36' × 153' and sub-plot : 36' × 17'. (b) 33' × 14'. (v) 1.5' around. (vi) Yes.

## 4. GENERAL :

(i) Good. Nil. (ii) Nil. (iii) Grain yield only. (iv) (a) 1950—1953. (b) and (c) No. (v) (a) Kala and Baharaich. (b) N.A. (vi) Nil. (vii) Experiment conducted by C.P. (R).

## 5. RESULTS :

(i) 1107 lb./ac.

(ii) (a) 307.2 lb./ac.

(b) 107.0 lb./ac.

(iii) Effects of I and C are highly significant. Others are not significant.

(iv) Av. yield of grain in lb./ac.

	G <sub>0</sub>	G <sub>1</sub>	G <sub>2</sub>	Mean	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>
I <sub>0</sub>	757	817	797	790	785	786	800
I <sub>1</sub>	1206	1205	1296	1236	1185	1241	1282
I <sub>2</sub>	1183	1322	1376	1294	1281	1288	1312
Mean	1049	1115	1156	1107	1084	1105	1131
P <sub>0</sub>	1047	1099	1105				
P <sub>1</sub>	1088	1085	1142				
P <sub>2</sub>	1011	1161	1222				

S.E. of difference of two

1. I marginal means =72.4 lb./ac.
2. P or G marginal means =25.2 lb./ac.
3. P or G means at the same level of I =43.7 lb./ac.
4. I means at the same level of P or G =80.7 lb./ac.
5. means in body of P×G table =43.7 lb./ac.

Crop :-Wheat (*Rabi*).

Ref :-U.P. 49(67).

Site :-Regional Res. Stn., Varanasi.

Type :-'IM'.

Object :-To study the effect of different forms and levels of N in combination with levels of irrigation on Wheat.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) (a) Clay loam. (b) Refer soil analysis, Varanasi. (iii) 29.10.1949. (iv) (a) 4 ploughings and 1 harrowing. (b) N.A. (c) 50 seers/ac. (d) and (e) N.A. (v) Nil. (vi) N.P.52 (medium). (vii) Irrigated. (viii) 2 weedings on 5.12.1949 and 19.12.1949. (ix) N.A. (x) 4 and 6.4.1950

## 2. TREATMENTS :

Main-plot treatments :

3 levels of irrigation: I<sub>1</sub>=Irrigation 3 weeks after germination (at tillering), I<sub>2</sub>=I<sub>1</sub>+irrigation 9 weeks after germination (at flowering) and I<sub>3</sub>=I<sub>2</sub>+irrigation 12 weeks after germination (at milky stage).

Sub-plot treatments :

3 combinations of forms and levels of N: N<sub>0</sub>=No manure, N<sub>1</sub>=60 lb./ac. of N as A/S and N<sub>2</sub>=60 lb./ac. of N as castor cake.

## 3. DESIGN :

(i) Split-plot. (ii) (a) 3 main-plots/block and 3 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) Main-plot: 54'×40' and sub-plot: 18'×40'. (b) 12'×34'. (v) 3' all round the net plot. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) N.A. (iii) Height of plants, length of leaves, no. of tillers etc. Grain and *bhusa* yield. (iv) (a) 1949-1953. (b) and (c) No. (v) (a) Kalyanpur, Atarra, Bharari, Meerut, Kunraghat, Muzaffarnagar, Lucknow, Bulandshahr and Hawalbagh. (b) N.A. (vi) Nil. (vii) Experiment conducted by C.P.

## 5. RESULTS :

- (i) 1456 lb./ac.
- (ii) (a) 105.7 lb./ac.
- (b) 59.4 lb./ac.
- (iii) Effects of forms and levels of N are highly significant and interaction I×levels of N is significant.



(iv) Av. yield of grain in lb./ac.

	N <sub>0</sub>	N <sub>1</sub>	N <sub>2</sub>	Mean
I <sub>1</sub>	1139	1428	1620	1396
I <sub>2</sub>	1194	1647	1835	1559
I <sub>3</sub>	1080	1446	1711	1412
Mean	1138	1507	1722	1456

S.E. of difference of two

1. I marginal means =49.8 lb./ac.
2. N marginal means =28.0 lb./ac.
3. N means at the same level of I =48.5 lb./ac.
4. I means at the same level of N =63.6 lb./ac.

Crop :-Wheat (*Rabi*).

Ref :-U.P. 50(79).

Site :-Regional Res. Stn., Varanasi.

Type :-'IM'.

Object :-To study the effect of different forms and levels of N in combination with levels of irrigation on Wheat.

## 1. BASAL CONDITIONS:-

(i) (a) to (c) N.A. (ii) (a) Clay loam. (b) Refer soil analysis, Varanasi. (iii) Last week of October. (iv) (a) N.A. (b) Sown by seed drill. (c) 40-50 seers/ac. (d) and (e) N.A. (v) Nil. (vi) N.P.52. (medium). (vii) Irrigated. (viii) N.A. (ix) N.A. (x) N.A.

## 2. TREATMENTS :

Main-plot treatments :

4 levels of irrigation : I<sub>0</sub>=No irrigation, I<sub>1</sub>=Irrigation 3 weeks after germination (at tillering), I<sub>2</sub>=I<sub>1</sub>+irrigation 9 weeks after germination (at flowering) and I<sub>3</sub>=I<sub>2</sub>+irrigation 12 weeks after germination (at milky stage).

Sub-plot treatments :

3 combinations of forms and levels of N : N<sub>0</sub>=No manure, N<sub>1</sub>=60 lb./ac. of N as A/S and N<sub>2</sub>=60 lb./ac. of N as castor cake.

## 3. DESIGN :

(i) Split-plot. (ii) (a) 4 main-plots/replication and 3 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) Main-plot : 60'×40' and sub-plot : 20'×40'. (b) 17'×37'. (v) 1½' around. (vi) Yes.

## 4. GENERAL :

(i) No lodging. For I<sub>0</sub> and I<sub>1</sub> treatments plants were yellowish and poor in growth. (ii) Nil. (iii) Grain yield. (iv) (a) 1949-1953. (b) and (c) No. (v) (a) Kunraghat, Kalyanpur, Etawah, Kalai, Muzaffarnagar, Meerut, Bharari, Atarra and Lucknow. (b) N.A. (vi) Nil. (vii) Experiment conducted by C.P.

## 5. RESULTS :

- (i) 1244 lb./ac.
- (ii) (a) 241.5 lb./ac.
- (b) 226.9 lb./ac.
- (iii) None of the effects is significant.
- (iv) Av. yield of grain in lb./ac.

	N <sub>0</sub>	N <sub>1</sub>	N <sub>2</sub>	Mean
I <sub>0</sub>	1113	982	1169	1088
I <sub>1</sub>	1344	1190	1365	1300
I <sub>2</sub>	1232	1353	1134	1240
I <sub>3</sub>	1264	1484	1300	1349
Mean	1238	1252	1242	1244

S.E. of difference of two	
1. marginal means of I	=113.8 lb./ac.
2. marginal means of N	= 92.6 lb./ac.
3. N means at the same level of I	=185.2 lb./ac.
4. I means at the same level of N	=189.3 lb./ac.

Crop :-Wheat (Rabi).

Ref :-U.P. 51(56).

Site :-Regional Res. Stn., Varanasi.

Type :-'IM'

Object :-To study the effect of different forms and levels of N in combination with levels of irrigation on Wheat.

### 1. BASAL CONDITIONS :

(i) (a) No. (b) Fallow. (c) No. (ii) (a) Clay loam. (b) Refer soil analysis, Varanasi. (iii) 3.11.1951.  
(iv) (a) N.A. (b) Sown by seed drill. (c) 40-50 srs./ac. (d) and (e) N.A. (v) Nil. (vi) N.P. 52 (medium).  
(vii) Irrigated. (viii) N.A. (ix) 1.1". (x) N.A.

### 2. TREATMENTS :

Main-plot treatments :

4 levels of irrigation :  $I_0$ =No irrigation,  $I_1$ =Irrigation 3 weeks after germination (at tillering),  
 $I_2=I_1$ +irrigation 9 weeks after germination (at flowering) and  $I_3=I_2$ +irrigation 12 weeks after germination (at milky stage).

Sub-plot treatments :

3 combinations of forms and levels of N :  $N_0$ =No manure,  $N_1$ =60 lb./ac. of N as A/S and  $N_2$ =60 lb./ac. of N as castor cake.

### 3. DESIGN :

(i) Split-plot. (ii) (a) 4 main-plots/replication and 3 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) Main-plot : 60'×40'; sub-plot : 20'×40'. (b) 17'×37'. (v) 1½' around. (vi) Yes.

### 4. GENERAL :

(i) Normal, no lodging. (ii) Nil. (iii) Grain yield. (iv) (a) 1949—1953. (b), (c) No. (v) (a) Faizabad, Kunraghat, Kalyanpur, Bharari, Etawah, Kalai, Meerut, Muzaffarnagar, Hawalbagh and Lucknow. (b) N.A. (vi) Nil. (vii) Experiment conducted by C.P.

### 5. RESULTS :

- (i) 950 lb./ac.  
(ii) (a) 307.3 lb./ac.  
(b) 189.7 lb./ac.  
(iii) Effects of I, forms of N, levels of N and interaction I×forms of N are all highly significant.  
(iv) Av. yield of grain in lb./ac.

	$N_0$	$N_1$	$N_2$	Mean
$I_0$	505	777	577	620
$I_1$	808	982	859	883
$I_2$	841	1487	1273	1200
$I_3$	879	1594	824	1099
Mean	758	1210	883	950

S.E. of difference of two

1. marginal means of I	=125.4 lb./ac.
2. marginal means of N	= 67.1 lb./ac.
3. N means at the same level of I	=134.2 lb./ac.
4. I means at the same level of N	=166.5 lb./ac.

Crop :-Wheat (*Rabi*).  
Site :-Regional Res. Stn , Varanasi.

Ref :-U.P. 52(127).  
Type :-'IM'.

Object :-To study the effects of different forms and levels of N in combination with levels of irrigation on Wheat.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Sugarcane. (c) N.A. (ii) (a) Clay loam. (b) Refer soil analysis, Varanasi. (iii) 5.11.1952. (iv) (a) 2 ploughings by victory plough, 7 ploughings by *desi* plough. (b) N.A. (c) 40-50 srs./ac. (d) and (e) N.A. (v) Nil. (vi) N.P. 52. (medium). (vii) Irrigated. (viii) N.A. (ix) N.A. (x) 2.4.1953.

2. TREATMENTS :

Main-plot treatments :

4 levels of irrigation :  $I_0$ =No irrigation,  $I_1$ =Irrigation 3 weeks after germination (at tillering),  $I_2=I_1$  +irrigation 9 weeks after germination (at flowering),  $I_3=I_2$ +irrigation 12 weeks after germination (at milky stage).

Sub-plot treatments :

3 combinations of forms and levels of N :  $N_0$ =No manure,  $N_1=60$  lb./ac. of N as A/S and  $N_2=60$  lb./ac. N as castor cake.

3. DESIGN :

(i) Split-plot. (ii) (a) 4 main-plots/replication ; 3 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a)  $18' \times 40'$ . (b)  $15' \times 37'$ . (v)  $1\frac{1}{2}'$  around. (vi) Yes.

4. GENERAL :

(i) Good. (ii) No. (iii) Grain and straw yield. (iv) (a) 1949-1953. (b), (c) No. (v) (a) Faizabad, Etawah, Kalyanpur, Kalai, Atarra, Hawalbagh, Bharari, Kunraghat and Muzaffarnagar. (b) N.A. (vi) Nil. (vii) Experiment conducted by C.P.(R).

5. RESULTS :

- (i) 1617 lb./ac.  
(ii) (a) 322.9 lb./ac.  
(b) 229.0 lb./ac.  
(iii) Effects of I and levels of N are highly significant and interaction  $I \times$  levels of N is significant.  
(iv) Av. yield of grain in lb./ac.

	$N_0$	$N_1$	$N_2$	Mean
$I_0$	822	709	840	790
$I_1$	1413	1983	1993	1796
$I_2$	1559	1912	1968	1813
$I_3$	1794	2220	2195	2070
Mean	1397	1706	1749	1617

S.E. of difference of two

1. marginal means of I =131.8 lb./ac.  
2. marginal means of N = 80.9 lb./ac.  
3. N means at the same level of I =161.9 lb./ac.  
4. I means at the same level of N =186.7 lb./ac.

Crop :- Wheat (*Rabi*).  
Site :- Regional Res. Stn., Varanasi.

Ref :- U.P. 53(151).  
Type :- 'IM'.

Object :-To study the effect of different forms and levels of N in combination with levels of irrigation on Wheat.

1. BASAL CONDITIONS :

(i) (a) Fallow—Sugarcane—Sugarcane—Sugarcane, *mccong*—wheat. (b) *Mccong*. (c) Nil. (ii) (a) Loam. (b) Refer soil analysis, Varanasi. (iii) 13.11.1953. (iv) (a) 6 ploughings. (b) Sown by seed drill. (c) 40 srs/ac. (d) N.A. (e) N.A. (v) Nil. (vi) N.P.52 (mid-late). (vii) Irrigated. (viii) N.A. (ix) N.A. (x) 29.3.1954.

## 2. TREATMENTS :

## Main-plot treatments :

4 levels of irrigation :  $I_0$  = No irrigation,  $I_1$  = Irrigation 3 weeks after germination (at tillering),  $I_2 = I_1 +$  irrigation 9 weeks after germination (at flowering),  $I_3 = I_2 +$  irrigation 12 weeks after germination (at milky stage).

## Sub-plot treatments :

3 combinations of forms and levels of N :  $N_0$  = No manure,  $N_1 = 60$  lb./ac of N as A/S.  $N_2 = 60$  lb./ac. of N as castor cake.

## 3. DESIGN :

(i) Split-plot. (ii) (a) 4 main-plots/replication ; 3 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) Main-plot 54' x 49'. sub-plot 18' x 49'. (b) 15' x 37'. (v) 1½' around. (vi) Yes.

## 4. GENERAL :

(i) Satisfactory. (ii) Attack of rust and hail storm. (iii) Grain and straw yield. (iv) (a) 1949-1953. (b) No. (c) No. (v) (a) Faizabad, Etawah, Kalyanpur, Atarra, Bharari, Meerut, Kunraghat, Muzaffarnagar and Kalai. (b) N.A. (vi) Nil. (vii) Experiment conducted by C.P. (R).

## 5. RESULTS :

- (i) 1734 lb./ac.  
 (ii) (a) 243.2 lb./ac.  
 (b) 179.8 lb./ac.  
 (iii) Main effect of I and interaction 'I x forms of N' are highly significant. Effects of forms of N and levels of N are both significant. Other effects are not significant.  
 (iv) Av. yield of grain in lb./ac.

	$N_0$	$N_1$	$N_2$	Mean
$I_0$	1100	1398	1110	1203
$I_1$	1700	2016	2119	1945
$I_2$	1947	1645	2084	1892
$I_3$	1801	1731	2160	1897
Mean	1637	1698	1868	1734

## S.E. of difference of two

1. marginal means of I = 99.3 lb./ac.  
 2. marginal means of N = 63.6 lb./ac.  
 3. N means at the same level of I. = 127.2 lb./ac.  
 4. I means at the same level of N = 143.6 lb./ac.

Crop :- Wheat (Rabi).

Site :- Regional Res. Stn., Varanasi.

Ref :- U.P. 49(99).

Type :- 'IM'.

Object :- To study the effect of different levels of irrigation in combination with  $P_2O_5$  and Gypsum on Wheat.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Sanaï*. (c) N.A. (ii) (a) Clay loam. (b) Refer soil analysis, Varanasi. (iii) 2.11.1949. (iv) (a) 4 ploughings. (b) to (e) N.A. (v) G.M. of *Sanaï*. (vi) N.P.52. (vii) Irrigated. (viii) Weedings on 5, and 19.12.1949. (ix) N.A. (x) 7, and 12.4.1950.

## 2. TREATMENTS :

## Main-plot treatments:

2 levels of irrigation :  $I_1$  = Irrigation 9 weeks after germination (at flowering),  $I_2 = I_1 +$  irrigation 12 weeks after germination (at milky stage).

## Sub-plot treatments :

All combinations of (1) and (2)

- (1) 3 levels of  $P_2O_5$  as Super :  $P_0 = 0$ ,  $P_1 = 20$  and  $P_2 = 40$  lb./ac.  
 (2) 3 levels of Ca as Gypsum :  $G_0 = 0$ ,  $G_1 = 25$  and  $G_2 = 50$  lb./ac.

## 3. DESIGN :

(i) Split-plot. (ii) (a) 2 main-plots/block ; 9 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) Main-plot 162' x 40' sub-plot : 18' x 40'. (b) 12' x 34'. (v) 3' all round the net plot. (vi) Yes.

## 4. GENERAL :

(i) Poor. (ii) N.A. (iii) Grain and fodder yield. (iv) (a) 1949—1953. (b) No. (c) No. (v) (a) Kalyanpur, Barabanki, Bulandshahr and Lucknow. (b) N.A. (vi) Nil. (vii) Experiment conducted by C.P.

## 5. RESULTS :

- (i) 1030 lb./ac.  
 (ii) (a) 22.05 lb./ac.  
 (b) 16.07 lb./ac.  
 (iii) Main effect of I is significant, main effect of P and G and interactions P x G and I x P x G are all highly significant. Interactions I x P and I x G are not significant.  
 (iv) Av. yield of grain in lb./ac.

	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>	Mean	G <sub>0</sub>	G <sub>1</sub>	G <sub>2</sub>
I <sub>1</sub>	915	993	1101	1003	936	997	1075
I <sub>2</sub>	961	1052	1158	1057	990	1061	1119
Mean	938	1023	1129	1030	963	1029	1097
G <sub>0</sub>	901	952	1036	963			
G <sub>1</sub>	933	1034	1121	1029			
G <sub>2</sub>	979	1082	1231	1097			

## S.E. of difference of two

1. marginal means of I = 6.00 lb./ac.
2. marginal means of G or P = 5.36 lb./ac.
3. G or P means at the same level of I = 7.58 lb./ac.
4. I means at the same level of G or P = 8.62 lb./ac.
5. means in body of G x P table = 9.28 lb./ac.

Crop :-Wheat (*Rabi*).

Ref :-U.P. 50(131).

Site :-Regional Res. Stn., Varanasi,

Type :-'IM'.

Object :-To study the effect of different levels of irrigation in combination with P<sub>2</sub>O<sub>5</sub> and Gypsum on Wheat.

## 1. BASAL CONDITIONS :

(i) (a) No. (b) and (c) N.A. (ii) (a) Clay loam. (b) Refer soil analysis, Varanasi. (iii) N.A. (iv) (a) N.A. (b) Sown by seed drill. (c) 50 srs./ac. (d) and (e) N.A. (v) Nil. (vi) N.P.52 (mid-late). (vii) Irrigated. (viii) N.A. (ix) .A. (x) N.A.

## 2. TREATMENTS :

## Main-plot treatments :

2 levels of irrigation : I<sub>1</sub>=Irrigation 9 weeks after germination (at flowering) and I<sub>2</sub>=I<sub>1</sub>+irrigation 12 weeks after germination (at milky stage).

## Sub-plot treatments :

All combinations of (1) and (2)

- (1) 3 levels of P<sub>2</sub>O<sub>5</sub> as Super : P<sub>0</sub>=0, P<sub>1</sub>=20 and P<sub>2</sub>=40 lb./ac.
- (2) 3 levels of Ca as Gypsum : G<sub>0</sub>=0, G<sub>1</sub>=25 and G<sub>2</sub>=50 lb./ac.

## 3. DESIGN :

(i) Split-plot. (ii) (a) 2 main-plots/replication and 9 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) Main-plot : 171' x 40'. and sub-plot : 19' x 40'. (b) 16' x 37'. (v) 1½' around. (vi) Yes.

## 4. GENERAL :

(i) Slight lodging (ii) Nil. (iii) Grain yield. (iv) (a) 1949-1953. (b) and (c) No. (v) (a) Kalyanpur and Barabanki. (b) N.A. (vi) Nil. (vii) Experiment conducted by C.P.

## 5. RESULTS :

- (i) 1101 lb./ac.  
 (ii) (a) 448.1 lb./ac.  
 (b) 154.5 lb./ac.  
 (iii) None of the effects is significant.  
 (iv) Av. yield of grain in lb./ac.

	G <sub>0</sub>	G <sub>1</sub>	G <sub>2</sub>	Mean	I <sub>1</sub>	I <sub>2</sub>
P <sub>0</sub>	1146	1119	1082	1116	1060	1171
P <sub>1</sub>	1028	1116	1041	1062	1090	1033
P <sub>2</sub>	1170	1136	1068	1125	1102	1147
Mean	1115	1124	1064	1101		
I <sub>1</sub>	1079	1107	1067	1084		
I <sub>2</sub>	1150	1141	1060	1117		

## S.E. of difference of two

- |  |                 |
|--|-----------------|
| 1. I marginal means                    | =105.6 lb./ac.  |
| 2. P or G marginal means               | = 44.6 lb./ac.  |
| 3. P or G means at the same level of I | = 63.1 lb./ac.  |
| 4. I means at the same level of P or G | = 83.1 lb./ac.  |
| 5. means in body of P×G table          | = 77.26 lb./ac. |

Crop :-Wheat (*Rabi*).

Site :-Regional Res. Stn., Varanasi.

Ref :-U.P. 51(73).

Type :-'IM'.

Object :-To study the effect of different levels of irrigation in combination with P<sub>2</sub>O<sub>5</sub> and Gypsum on Wheat.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fallow. (c) No. (ii) (a) Loam. (a) Refer soil analysis, Varanasi. (iii) Last week of October, 1951 (iv) (a) N.A. (b) Sown by seed drill. (c) 40-50 seers/ac. (d) and (e)N.A. (v) Nil. (vi) N.P.52 (mid-early). (vii) Irrigated. (viii) to (x) N.A.

## 2. TREATMENTS :

## Main-plot treatments :

2 levels of irrigation : I<sub>1</sub>=Irrigation 9 weeks after germination (at flowering) and I<sub>2</sub>=I<sub>1</sub>+ irrigation 12 weeks after germination (at milky stage).

## Sub-plot treatments :

All combinations of (1) and (2)

- (1) 3 levels of P<sub>2</sub>O<sub>5</sub> as Super : P<sub>0</sub>=0, P<sub>1</sub>=20 and P<sub>2</sub>=40 lb./ac.  
 (2) 3 levels of Ca as Gypsum : G<sub>0</sub>=0, G<sub>1</sub>=25 and G<sub>2</sub>=50 lb./ac.

## 3. DESIGN :

(i) Split-plot. (ii) (a) 2 main-plots/replication and 9 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) Main-plot : 171'×40'. and sub-plot : 19'×40'. (b) 16'×37'. (v) 1½' around. (vi) Yes.

## 4. GENERAL :

(i) Satisfactory. No lodging. (ii) Nil. (iii) Grain yield. (iv) (a) 1949-1953. (b) and (c) No. (v) (a) Kalyanpur. (b) N.A. (vi) Nil. (vii) Experiment conducted by C.P.

## 5. RESULTS :

- (i) 1041 lb./ac.  
 (ii) (a) 447.1 lb./ac.  
 (b) 242.1 lb./ac.  
 (iii) None of the effects is significant.  
 (iv) Av. yield of grain in lb./ac.

	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>	Mean	I <sub>1</sub>	I <sub>2</sub>
G <sub>0</sub>	1012	1008	1116	1045	1086	1005
G <sub>1</sub>	935	951	996	961	1101	821
G <sub>2</sub>	1076	1109	1168	1118	1233	1003
Mean	1008	1023	1093	1041	1140	943
I <sub>1</sub>	1082	1157	1180			
I <sub>2</sub>	934	888	1007			

## S.E. of difference of two

1. marginal means of I = 105.4 lb./ac.
2. marginal means of P or G = 69.90 lb./ac.
3. P or G means at the level of I = 98.86 lb./ac.
4. I means at the same level of P or G = 132.7 lb./ac.
5. means in the body of P×G table = 121.0 lb./ac.

Crop :- Wheat (*Rabi*).

Ref :- U.P. 52(122).

Site :- Regional Res. Stn., Varanasi.

Type :- 'IM'.

Object :- To study the effect of different levels of irrigation in combination with P<sub>2</sub>O<sub>5</sub> and Gypsum on Wheat.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Sugarcane and wheat (field in two parts). (c) N.A. (ii) (a) Loam. (b) Refer soil analysis, Varanasi. (iii) 9.11.1952. (iv) (a) Ploughed by *victory* plough 9 times. (b) N.A. (c) 40-50 srs./ac. (d) and (e) N.A. (v) Nil. (vi) NP-52 (mid-early). (vii) Irrigated. (viii) N.A. (ix) N.A. (x) 1.4.1953.

## 2. TREATMENTS :

Main-plot treatments :

2 levels of irrigation : I<sub>1</sub>=Irrigation 9 weeks after germination (at flowering) and I<sub>2</sub>=I<sub>1</sub>+irrigation 12 weeks after germination (at milky stage).

Sub-plot treatments :

All combinations of (1) and (2)

(1) 3 levels of P<sub>2</sub>O<sub>5</sub> as Super : P<sub>0</sub>=0, P<sub>1</sub>=20 and P<sub>2</sub>=40 lb./ac.(2) 3 levels of CoO as Gypsum : G<sub>0</sub>=0, G<sub>1</sub>=25 and G<sub>2</sub>=50 lb./ac.

## 3. DESIGN :

(i) Split-plot. (ii) (a) 2 main-plots/replication and 9 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 19'×35'. (b) 16'×32'. (v) 1.5' around. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) No. (iii) Grain and straw yield. (iv) (a) 1949-1953. (b) and (c) No. (v) (a) Kalyanpur. (b) N.A. (vi) Nil. (vii) Experiment conducted by C.P.

## 5. RESULTS :

- (i) 1628 lb./ac.  
 (ii) (a) 208.9 lb./ac.  
 (b) 131.1 lb./ac.  
 (iii) Main effects of P and G and interaction P×G are highly significant. All others are not significant

(iv) Av. yield of grain in lb./ac.

	G <sub>0</sub>	G <sub>1</sub>	G <sub>2</sub>	Mean	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>
I <sub>1</sub>	1588	1603	1727	1639	1555	1588	1774
I <sub>2</sub>	1564	1545	1744	1618	1542	1577	1734
Mean	1576	1574	1735	1628	1549	1583	1754
P <sub>0</sub>	1418	1411	1817				
P <sub>1</sub>	1551	1566	1631				
P <sub>2</sub>	1760	1745	1757				

S.E. of difference of two

1. I marginal means =49.25 lb./ac.
2. G or P marginal means =37.84 lb./ac.
3. G or P means at the same level of I =53.52 lb./ac.
4. I means at the same level of G or P =65.83 lb./ac.
5. means in the body of P × G table =65.54 lb./ac.

Crop :- Wheat (*Rabi*).

Ref :- U.P. 53(149).

Site :- Regional Res. Stn., Varanasi.

Type :- 'IM'.

Object :—To study the effect of different levels of irrigation in combination with P<sub>2</sub>O<sub>5</sub> and Gypsum on Wheat.

## 1. BASAL CONDITIONS :

(i) (a) Fallow—Sugarcane—Sugarcane, Fallow—Wheat. (b) Fallow. (c) No. (ii) (a) Loam. (b) Refer soil analysis, Varanasi. (iii) 9.11.1953. (iv) (a) 13 ploughings. (b) Sown by seed drill. (c) to (e) N.A. (v) N.A. (vi) NP-12. (vii) Irrigated. (viii) N.A. (ix) N.A. (x) 31.3.1954.

## 2. TREATMENTS :

Main-plot treatments :

2 levels of irrigation : I<sub>1</sub>=Irrigation 9 weeks after germination (at flowering) and I<sub>2</sub>=I<sub>1</sub>+irrigation 12 weeks after germination (at milky stage).

Sub-plot treatments :

All combinations of (1) and (2)

- (1) 3 levels of P<sub>2</sub>O<sub>5</sub> as Super : P<sub>0</sub>=0, P<sub>1</sub>=20 and P<sub>2</sub>=40 lb./ac.
- (2) 3 levels of CaO as Gypsum : G<sub>0</sub>=0, G<sub>1</sub>=25 and G<sub>2</sub>=50 lb./ac.

## 3. DESIGN :

(i) Split-plot. (ii) (a) 2 main-plots/replication and 9 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) Main-plot : 35'×17' and sub-plot 19'×35'. (b) 16'×32'. (v) 1½' around. (vi) Yes.

## 4. GENERAL :

(i) Satisfactory. (ii) Attacked by rust. Damaged by hail storm. (iii) Grain and straw yield. (iv) (a) 1949–1953. (b) and (c) No. (v) (a) Kalyanpur. (b) N.A. (vi) Nil. (vii) Experiment conducted by C.P. (R).

## 5. RESULTS :

- (i) 1695 lb./ac.
- (ii) (a) 267.0 lb./ac.
- (b) 146.0 lb./ac.
- (iii) Effect of P and interactions P×G and P×I are significant, while interaction I×G is highly significant. Others are not significant.



(iv) Av. yield of grain in lb./ac.

	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>	Mean	G <sub>0</sub>	G <sub>1</sub>	G <sub>2</sub>
I <sub>1</sub>	1677	1568	1773	1673	1555	1674	1789
I <sub>2</sub>	1668	1737	1750	1718	1757	1695	1703
Mean	1673	1652	1761	1695	1656	1685	1746
G <sub>0</sub>	1572	1586	1810				
G <sub>1</sub>	1655	1739	1660				
G <sub>2</sub>	1791	1633	1814				

S.E. of difference of two

1. I marginal means =62.93 lb./ac.
2. P or G marginal means =42.14 lb./ac.
3. P or G means at the same level of I =59.60 lb./ac.
4. I means at the same level of P or G =79.55 lb./ac.
5. means in the body of P×G table =72.98 lb./ac.

Crop :- Wheat.

Ref :- Complex experiments (T.C:M.), 1953.

Centre :- Varanasi (U.P.). Type :- 'IM'.

Object :-VII-To study the effect of irrigation along with manures.

**1. BASAL CONDITIONS :**

(i) (a) to (c) N.A. (ii) (a) Loam in texture, brownish in colour and neutral in reaction. (b) Refer soil analysis, Varanasi. (iii) 16.11.1953. (iv) N.A. (v) N.A. (vi) P. 52. (vii) Irrigated. (viii) N.A. (ix) 39.75°. (x) 7.4.1954.

**2. TREATMENTS :**

All combinations of (1), (2) and (3)

- (1) 3 levels of N : N<sub>0</sub>=0, N<sub>1</sub>=20 and N<sub>2</sub>=40 lb./ac.
- (2) 3 levels of P<sub>2</sub>O<sub>5</sub> : P<sub>0</sub>=0, P<sub>1</sub>=20 and P<sub>2</sub>=40 lb./ac.
- (3) 3 irrigations : I<sub>1</sub>=1, I<sub>2</sub>=2 and I<sub>3</sub>=3 times.

N as A/S and P<sub>2</sub>O<sub>5</sub> as Triple Super.

A/S broadcast before sowing and Triple super [placed in bands behind a plough with the help of a fertilizer drill.

**3. DESIGN :**

(i) 3<sup>3</sup> fact. confd. (ii) (a) 9 plots/block and 3 blocks/replication. (b) N.A. (iii) 1. (iv) (a) N.A. (b) 20'×37'. (v) N.A. (vi) Yes.

**4. GENERAL :**

(i) Normal, no lodging. (ii) Nil. (iii) Yield data. (iv) (a) 1953—1956. (b) No. (c) N.A. (v) (a) Kotah, Pura, Santa, Paliad and Obdullaganj. (b) N.A. (vi) Nil. (vii) Nil.

**5. RESULTS :**

- (i) 470 lb./ac.
- (ii) 61.22 lb./ac.
- (iii) Main effects of N and I are highly significant. Interaction I×N is significant. Others are not significant.

(iv) Av. yield of grain in lb./ac.

	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>	Mean	I <sub>1</sub>	I <sub>2</sub>	I <sub>3</sub>
N <sub>0</sub>	324	285	360	323	235	373	360
N <sub>1</sub>	500	481	491	491	265	618	589
N <sub>2</sub>	549	625	613	596	341	726	721
Mean	458	464	488	470	280	572	557
I <sub>1</sub>	275	302	265	280			
I <sub>2</sub>	574	554	589	572			
I <sub>3</sub>	525	535	611	557			

S.E. of any marginal mean = 20.40 lb./ac.

S.E. of any mean in body of table = 35.34 lb./ac.

Crop :- Wheat.

Ref :- Complex experiments (T.C.M.), 1953.

Centre :- Pura.

Type :- 'IM',

Object :- VII-To study the effect of irrigation along with manures.

## 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Loam in texture—grey in colour. (b) pH 7.5. (iii) 12.11.1953. (iv) N.A. (v) N.A. (vi) C-13. (vii) Irrigated. (viii) N.A. (ix) 38.18°. (x) 9.4.1954.

## 2. TREATMENTS :

All combinations of (1), (2) and (3)

- (1) 3 levels of N : N<sub>0</sub>=0, N<sub>1</sub>=20 and N<sub>2</sub>=40 lb./ac.  
 (2) 3 levels of P<sub>2</sub>O<sub>5</sub> : P<sub>0</sub>=0, P<sub>1</sub>=20 and P<sub>2</sub>=40 lb./ac.  
 (3) 3 irrigations : I<sub>1</sub>=1, I<sub>2</sub>=2 and I<sub>3</sub>=3 times.

N as A/S and P<sub>2</sub>O<sub>5</sub> as Triple Super.

A/S applied by broadcast before sowing and Triple Super placed deep in bands behind a plough with the help of fertilizer drill.

## 3. DESIGN :

(i) 3<sup>3</sup> fact. confd. (ii) (a) 9 plots block and 3 blocks/replication. (b) N.A. (iii) 1. (iv) (a) N.A. (b) 44'×16.5'. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) Normal. Lodging was observed in plots treated with N<sub>2</sub>P<sub>2</sub>, N<sub>2</sub>P<sub>1</sub> and N<sub>2</sub>P<sub>0</sub>. (ii) Slight damage by rats. (iii) Yield of grain. (iv) (a) 1953—1956. (b) No. (c) N.A. (v) (a) Kotah, Banaras, Satna, [Paliad and Obedullaganj. (b) N.A. (vi) Nil. (vii) Nil.

## 5. RESULTS :

- (i) 1039 lb./ac.  
 (ii) 140.4 lb./ac.  
 (iii) Main effects of N and P are highly significant. Other effect and interactions are not significant.

(iv) Av. yield of grain in lb./ac.

	N <sub>0</sub>	N <sub>1</sub>	N <sub>2</sub>	Mean	I <sub>1</sub>	I <sub>2</sub>	I <sub>3</sub>
P <sub>0</sub>	494	792	1111	799	967	597	833
P <sub>1</sub>	833	1183	1326	1114	1080	1152	1111
P <sub>2</sub>	926	1316	1367	1203	1111	1244	1255
Mean	751	1097	1268	1039	1053	998	1066
I <sub>1</sub>	741	1152	1265	1053			
I <sub>2</sub>	689	1019	1285	998			
I <sub>3</sub>	823	1121	1255	1066			

S.E. of any marginal mean

=46.8 lb./ac.

S.E. of any mean in the body of table

=81.1 lb./ac.

Crop :-Wheat (*Rabi*).

Ref --U.P. 48(127).

Site :-B.R. College Res. Farm, Bichpuri (Agra).

Type :-'IMV'.

Object : To study the response of three varieties of Wheat to three forms of Nitrogen in three different doses at three levels of irrigation.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Jowar* fodder. (c) Nil. (ii) (a) Light loam, medium texture. (b) Refer soil analysis, Bichpuri (Agra). (iii) 5.11.1948. (iv) (a) Ploughing by *Meston* plough on 5.8.1948. Seven more ploughings by *Meston* plough and 4 ploughings applied to mix and bury the organic manures. (Castor cake and compost) (b) Sown by *Nai* behind the plough. (2" thick soil fell from the sides of the furrow). (c) 50 srs./ac. (d) and (e) N.A. (v) Nil. (vi) As per treatments. (vii) Irrigated. (viii) Harrowing was done on 13.12.1948. (ix) 20°. (x) N.A.

## 2. TREATMENTS :

All combinations of (1), (2), (3) and (4)

- (1) 3 irrigations :- I<sub>1</sub>=low, I<sub>2</sub>=medium and I<sub>3</sub>=high.
- (2) 3 varieties :- V<sub>1</sub>=C-13, V<sub>2</sub>=Pb. 591 and V<sub>3</sub>=Local.
- (3) 3 sources of N :- S<sub>1</sub>=Compost, S<sub>2</sub>=Castor cake and S<sub>3</sub>=A/S.
- (4) 3 doses of N :- N<sub>1</sub>=30, N<sub>2</sub>=60 and N<sub>3</sub>=90 lb./ac.

Organic manures were applied 15 days before sowing (*i.e.* castor cake on 17.10.1948. and compost on 18.10.1948). After application, the field was ploughed 4 times to mix these manures completely with the soil. A/S was applied as top-dressing on 24.10.1948. followed by 2nd irrigation on 28.10.1948.

## 3. DESIGN :

(i) 3 × (3<sup>3</sup>) half plaid square in 9 × 9 square in which whole of each column is subjected to same irrigational treatment. (ii) (a) 9 × 9. (b) N.A. (iii) 1. (iv) (a) N.A. (b) 36' × 15'. (v) 3' × 2'. (vi) Yes.

## 4. GENERAL :

(i) Satisfactory. (ii) Nil. (iii) Germination, ht. of the plant, tillers, green and dry leaves in the bush, fresh and dry wt. of the plant, studies of ear emergence. No. of grains per main shoot ear, wt. of grain per main shoot ear, yield and *bhusa*. (iv) (a) No. (b) No. (c) Nil. (v) (a) and (b) Nil. (vi) Nil. (vii) The expt. was conducted by B.R.C.

## 5. RESULTS :

- (i) 1419 lb./ac.
- (ii) (a) 265.1 lb./ac.
- (b) 331.3 lb./ac.
- (iii) Main effects of S is highly significant and that of V is significant. Others are not significant.

(iv) Av. yield of grain in lb./ac.

	I	V	S	N
(1)	1386	1557	1601	1531
Level (2)	1470	1419	1536	1414
(3)	1402	1282	1120	1313
S.E./mean	72.12		90.13	

Crop :-Wheat (*Rabi*).

Ref :-U.P. 53(368).

Site :-Agricultural Institute, Allahabad.

Type :-'D'.

Object :-To test the effect of chemical herbicides on weeds and the Wheat crop in comparison with hand weeding.

## 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) and (b) Refer soil analysis, Allahabad. (iii) N.A. (iv) (a) to (c) N.A. (v) N.A. (vi) N.P. 720. (vii) N.A. (viii) N.A. (ix) 1.00". (x) N.A.

## 2. TREATMENTS :

- No weeding (control).
- 1½ lb. of Esteron 245 (an ester of 2, 4, 5-T) in 163 gallons of water per acre.
- 2.4 lb. of Dicotox in 163 gallons of water per acre.
- Hand weeding.

Hand weeding on 11.12.1953 and sprayings on 14.12.1953.

## 3. DESIGN :

(i) Latin square. (ii) (a) 4. (b) N.A. (iii) 4. (iv) (a) N.A. (b) Plot size : 10'x10'. (v) N.A. (vi) N.A.

## 4. GENERAL :

(i) N.A. (ii) N.A. (iii) Grain yield. (iv) (a) No. (b) No. (c) Nil. (v) (a), (b) No. (vi) Nil. (vii) Information collected from the "Allahabad Farmer". No original records or the plotwise yield data were available. The Av. yield of grain and weeds corresponding to the different treatments were given in mds./ac. The Av. yield of grain as given above have been converted from the yields given in mds./ac. S.E. of the experiment or S.E. per treatment mean were not given in the "Allahabad Farmer". Experiment conducted by the Head Agronomy Department, Allahabad Agricultural Institute, Allahabad.

## 5. RESULTS :

- 933.9 lb./ac.
- N.A.
- Treatment differences are not significant.
- Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	954.5
2.	872.2
3.	946.3
4.	962.7
S.E./mean	N.A.

Crop :- Wheat (*Rabi*).

Ref :- U.P. 48(90).

Site :- Govt. Res. Farm, Kanpur.

Type :- 'D'.

Object :-To determine the efficacy of fungus sulphur in controlling rust of Wheat.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) N.A. (c) N.A. (ii) (a) Loam. (b) Refer soil analysis, Kanpur. (iii) 29.10.1948. (iv) (a) to (e) N.A. (v) N.A. (vi) NP-126. (vii) N.A. (viii) N.A. (ix) N.A. (x) N.A.

## 2. TREATMENTS :

1. Control (undusted).
2. Sulphur dusted at 4 days interval ; total number of dustings—10.
3. Sulphur dusted at 7 days interval ; total number of dustings—6.
4. Sulphur dusted at 10 days interval ; total number of dustings—4.  
Sulphur dusted at 30 lb./ac. Starting on 24.1.1949.

## 3. DESIGN :

- (i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 8. (iv) (a) N.A. (b) 75'×9'. (v) N.A. (vi) Yes.

## 4. GENERAL :

- (i) N.A. (ii) Under study. (iii) % infection (100 leaves examined) and yield of grain. (iv) (a) 1948—1950. (b) No. (c) N.A. (v) (a) No. (b) N.A. (vi) Nil. (vii) The experiment was conducted by P.P. Transformation has been applied as suggested by the chief statistician to Govt., U.P.

## 5. RESULTS :

- (i) 16.62°  
 (ii) 2.8°  
 (iii) Treatment differences are highly significant.  
 (iv) Mean of angle corresponding to % infection in degree.

Treatments	Mean angle	Transformed back mean percentages of infection after applying bias correction.
1. Control	= 9.60°	2.27
2. Sulphur dusted at 4 days interval	=13.92°	6.24
3. Sulphur dusted at 7 days interval	=16.52°	8.52
4. Sulphur dusted at 10 days interval	=26.43°	20.10
S.E. /mean	= 0.99°	

Crop :- Wheat (*Rabi*).

Ref :- U.P. 49(193).

Site :- Govt. Res. Farm, Kanpur.

Type :- 'D'.

Object :- To determine the efficacy of fungus sulphur in controlling rusts of Wheat.

## 1. BASAL CONDITIONS :

- (i) (a) to (c) N.A. (ii) (a) Loam. (b) Refer soil analysis, Kanpur. (iii) 15.11.1949. (iv) (a) to (c) N.A. (v) N.A. (vi) N-P 125. (vii) N.A. (viii) N.A. (ix) N.A. (x) 3.4.1950.

## 2. TREATMENTS :

1. Control (undusted).
2. Sulphur dusted at 4 days interval, starting from 23 February 1950 [subsequently dusted on 27, 3, 7, 11, 15.3.1950].
3. Sulphur dusted at 7 days interval, starting from 23.2.1950 [subsequently on 2, 9, 16.3.1950].
4. Sulphur dusted at 10 days interval, starting from 23.2.1950 [subsequently on 5, 15.3.1950].  
Dusting at 30 lb./ac.

## 3. DESIGN :

- (i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 8. (iv) (a) N.A. (b) 60'×12'. (v) N.A. (vi) Yes.

## 4. GENERAL :

- (i) Good. (ii) Mild rust pustule started appearing on 21.2.1950 ; Pustules of brown rust appeared on 23.2.1950. (iii) Grain yield. (iv) (a) 1948—1950. (b) No. (c) Nil. (v) (a) No. (b) No. (vi) Nil (vii) The experiment was conducted by P.P.

## 5. RESULTS :

- (i) 2386 lb./ac.  
 (ii) 146.8 lb./ac.  
 (iii) Treatment differences are not significant.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	2765
2.	2901
3.	2956
4.	2921
S.E./mean	=51.92 lb./ac.

Crop :-Wheat (*Rabi*).

Ref :-U.P. 50(254).

Site :-Govt. Res. Farm, Kanpur.

Type :-'IM'.

Object :-To determine the efficacy of fungus sulphur dusting in controlling rusts on Wheat.

## 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Loam. (b) Refer soil analysis, Kanpur. (iii) 2.11.1950. (iv) (a) and (b) N.A. (c) 25 lb./ac. (d) and (e) N.A. (v) N.A. (vi) NP-125. (vii) Irrigated. (viii) to (x) N.A.

## 2. TREATMENTS :

1. Control.
2. Dusting at 4 days intervals. (Number of dusting—12)
3. Dusting at 7 days intervals. (Number of dusting—7)
4. Dusting at 10 days intervals. (Number of dusting—6)  
Dusting at 30 lb./ac. (6 oz./plot).

## 3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 8. (iv) (a) N.A. (b) 45' x 12'. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) Appearance of rust, only one pustule was found. (iii) Grain yield. (iv) (a) 1948—1950. (b) No. (c) N.A. (v) (a) No. (b) N.A. (vi) Nil (vii) The expt. was conducted by P.P.

## 5. RESULTS :

- (i) 3390 lb./ac.
- (ii) 268.4 lb./ac.
- (iii) Treatment differences are not significant.
- (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	3356
2.	3408
3.	3373
4.	3422
S.E./mean	=94.90 lb./ac.

Crop :-Wheat (*Rabi*).

Ref :-U.P. 50(50).

Site :-Govt. Res. Farm, Kanpur.

Type :-'D'.

Object :-To study the effect of spraying trace elements on the yield of Wheat.

## 1. BASAL CONDITIONS :

(i) (a) Wheat—*Moong*. (b) *Moong*. (c) N.A. (ii) (a) Loam. (b) Refer soil analysis, Kanpur. (iii) 4.11.1950. (iv) (a) and (b) N.A. (c) 50 seers/ac. (d) and (e) N.A. (v) N.A. (vi) C-13 (early). (vii) Irrigated. (viii) N.A. (ix) N.A. (x) 25.4.1951.

## 2. TREATMENTS :

1. 5 lb./ac. of Manganese chloride.
2. 5 lb./ac. of Zinc sulphate.
3. 5 lb./ac. of Copper sulphate.
4. 1 lb./ac. of Boric acid.
5. Control.

Date 19.12.1950

## 3. DESIGN :

(i) R.B.D. (ii) (a) Wheat (b) *Moong*. (iii) 4. (iv) (a) N.A. (b) 36.3' x 20'. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) N.A. (iii) Grain yield. (iv) (a) 1950—1954. (b) Yes. (c) N.A. (v) (a) No. (b) N.A. (vi) Nil. (vii) The expt. was conducted by A.C.

## 5. RESULTS :

- (i) 2291 lb./ac.  
 (ii) 431.3 lb./ac.  
 (iii) Treatment differences are not significant.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	2530
2.	2214
3.	1970
4.	2259
5.	2484
S.E./mean	= 215.6 lb./ac.

Crop :- Wheat (*Rabi*).

Ref :- U.P. 51(99).

Site :- Govt. Res. Farm, Kanpur.

Type :- 'D'.

Object :- To study the effect of spraying trace elements on the yield of Wheat.

## 1. BASAL CONDITIONS :

- (i) (a) Wheat—*Moong*. (b) *Moong*. (c) Nil. (ii) (a) Loam. (b) Refer soil analysis, Kanpur. (iii) 27.10.1951. (iv) (a) and (b) N.A. (c) 40 srs./ac. (d) and (e) N.A. (v) A/S at 50 lb./ac. of N on 27.11.1952. (vi) C-13 (early). (vii) N.A. (viii) N.A. (ix) N.A. (x) 15.4.1952.

## 2. TREATMENTS :

1. 5 lb./ac. of Manganese chloride.
2. 5 lb./ac. of Zinc sulphate.
3. 5 lb./ac. of Copper sulphate.
4. 1 lb./ac. of Boric acid.
5. Control—no spraying.

Date of spraying : 10.1.1952.

## 3. DESIGN :

- (i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 36.3' x 20'. (v) N.A. (vi) Yes.

## 4. GENERAL :

- (i) Good. (ii) N.A. (iii) Grain yield. (iv) (a) 1950--1954. (b) Yes. (c) N.A. (v) (a) No. (b) N.A. (vi) Nil. (vii) The experiment was conducted by A.C.

## 5. RESULTS :

- (i) 1224 lb./ac.  
 (ii) 325.9 lb./ac.  
 (iii) Treatment differences are not significant.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	1407
2.	1287
3.	954
4.	1206
5.	1268
S.E./mean	= 162.9 lb./ac.

Crop :- Wheat (*Rabi*).

Ref :- U.P. 52(153).

Site :- Govt. Res. Farm, Kanpur.

Type :- 'D'.

Object :- To study the effect of spraying trace elements on the yield of Wheat.

## 1. BASAL CONDITIONS :

- (i) (a) Wheat—*Moong*. (b) *Moong*. (c) N.A. (ii) (a) Loam. (b) Refer soil analysis, Kanpur. (iii) 3.11.1952. (iv) (a) and (b) N.A. (c) 40 srs./ac. (d) and (e) N.A. (v) F.Y.M. and G.M. (vi) C-13 (early). (vii) Irrigated. (viii) N.A. (ix) N.A. (x) 14.4.1953.

**2. TREATMENTS :**

1. 5 lb./ac. of Manganese chloride.
  2. 5 lb./ac. of Zinc sulphate.
  3. 5 lb./ac. of Copper sulphate.
  4. 1 lb./ac. of Boric acid.
  5. Control—No spraying.
- Date of spraying : 7.1.1953.

**3. DESIGN :**

- (i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 36.3'×20'. (v) N.A. (vi) Yes.

**4. GENERAL :**

- (i) Good. (ii) N.A. (iii) Grain yield. (iv) (a) 1950—1954. (b) Yes. (c) N.A. (v) (a) No. (b) N.A. (vi) Nil. (vii) The experiment was conducted by A.C.

**5. RESULTS :**

- (i) 1158 lb./ac.
- (ii) 325.6 lb./ac.
- (iii) Treatment differences are not significant.
- (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	1317
2.	1172
3.	906
4.	1194
5.	1200
S.E./mean	= 162.8 lb./ac.

Crop :-Wheat (*Rabi*).

Ref :-U.P. 53(196).

Site :-Govt. Res. Farm, Kanpur.

Type :-'D'.

Object :—To study the effect of spraying trace elements on the yield of Wheat.

**1. BASAL CONDITIONS :**

- (i) (a) Wheat—*Moong*. (b) *Moong*. (c) Top dressing with A/S at 50 lb./ac. of N on 13.8.1953. (ii) (a) Loam. (b) Refer soil analysis, Kanpur. (iii) 4.11.1953. (iv) (a), (b) N.A. (c) 50 srs./ac. (d) and (e) N.A. (v) N.A. (vi) C-13 (early). (vii) Irrigated. (viii) N.A. (ix) N.A. (x) 11.4.1954.

**2. TREATMENTS :**

1. 5 lb./ac. of Manganese chloride.
  2. 5 lb./ac. of Zinc sulphate.
  3. 5 lb./ac. of Copper sulphate.
  4. 1 lb./ac. of Boric acid.
  5. Control—No spraying.
- Date of spraying 29.12.1953.

**3. DESIGN :**

- (i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 36.3'×20'. (v) Distance between plots=4' Distance between blocks=4'. (vi) Yes.

**4. GENERAL :**

- (i) Satisfactory. (ii) N.A. (iii) Grain yield. (iv) (a) 1950—1954. (b) Yes. (c) N.A. (v) (a) No. (b) N.A. (vi) Nil. (vii) The experiment was conducted by A.C.

**5. RESULTS :**

- (i) 927.3 lb./ac.
- (ii) 427.3 lb./ac.
- (iii) Treatment differences are not significant.



(iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	1021.5
2.	916.5
3.	732.0
4.	972.0
5.	994.5
S.E./mean	=213.6 lb./ac.

Crop :-Wheat (*Rabi*).

Ref :-U.P. 50(142).

Site :-Govt. Res. Farm, Kanpur.

Type :-'D'.

Object :-To study the effect of sulphur dusting and spraying on rust attack of wheat.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) N.A. (c) N.A. (ii) (a) Loam. (b) Refer soil analysis, Kanpur. (iii) 13.11.1950. (iv) (a) One ploughing by victory plough and two ploughings by *desi* plough. (b) N.A. (c) 80 srs./ac. (d) Spraying between rows—9° (19 rows). (e) N.A. (v) A/S at 6 srs./plot. (vi) NP. 125 (medium). (vii) Irrigated. (viii) N.A. (ix) N.A. (x) 4, 5.5.1951.

## 2. TREATMENTS :

- Control.
- Sulphur dusting at 6 oz./plot.
- Sulphur spraying (spraying on leaves).

## 3. DESIGN :

(i) R.B.D. (ii) (a) 3. (b) N.A. (iii) 8. (iv) (a) 30'×14'.3". (b) 26'×12'.9". (v) 2'×3/4'. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) N.A. (iii) Grain yield. (iv) (a) No. (b) No. (c) N.A. (v) (a) No. (b) N.A. (vi) Nil. (vii) The expt. was conducted by E.B.(R).

## 5. RESULTS :

- 1830 lb./ac.
- 143.2 lb./ac.
- The treatments do not differ significantly.
- Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	1802
2.	1891
3.	1796
S.E./mean	=50.64 lb./ac.

Crop :-Wheat (*Rabi*).

Ref :-U.P. 48(20).

Site :-Govt. Res. Farm, Kanpur.

Type :-'D'.

Object :- To study the effect of Methoxone as weed killer [against *Cyperus rotundus* and *Asphodelus Teninfolius* of Wheat.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Sanai*. (c) Nil. (ii) (a) Loam. (b) Refer soil analysis, Kanpur. (iii) 27.10.1948. (iv) (a) and (b) N.A. (c) 80 lb./ac. (d) and (e) N.A. (v) *Sanai* as G.M. (vi) C-13 (early). (vii) N.A. (viii) N.A. (ix) N.A. (x) 26.4.1949.

## 2. TREATMENTS :

- 1% dust at the rate of 200 lb./ac.
- 10% spray at 1 gallon/ac. diluted with 30 gallons of water.
- 10% spray at 2 gallons/ac. diluted with 30 gallons of water.
- Control.

Date of application of Methoxone 27.12.1948.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 6. (iv) (a) 26'×8'-3". (b) 23'×8'-3". (v) 1½' at either end of length. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Only rust was visible in traces. (iii) Grain and straw yield. (iv) (a) 1946—1948. (b) No. (c) N.A. (v) (a) No. (b) N.A. (vi) Nil. (vii) The expt. was conducted by E.B.(R).

## 5. RESULTS :

(i) 1982 lb./ac.  
 (ii) 188.3 lb./ac.  
 (iii) Treatment differences are not significant.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	1970
2.	1999
3.	2037
4.	1923
S.E./mean	=76.86 lb./ac.

Crop :-Wheat (*Rabi*).

Ref :-U.P. 53(96).

Site :-Govt. Res. Farm, Kanpur.

Type :-'DV'.

Object :-To study the effect of hormone treatment of seed on the Wheat yield.

## 1. BASAL CONDITIONS :

(i) (a) Wheat followed by *sanai*. (b) *Sanai* for G.M. (c) Nil. (ii) (a) Loam. (b) Refer soil analysis, Kanpur. (iii) 12.11.1953. (iv) (a) Turning of *sanai* on 6 and 7.9.1953 ; *palewa* on 21.10.1953 ; *desi* plough on 12.11.1953 ; cultivator on 29.9.1953 and cultivator and *pata* on 1.11.1953. (b) Sown behind the plough. (c) 80 lb./ac. (d) 9" apart. (e) N.A. (v) Nil. (vi) As per treatments. (vii) Irrigated. (viii) Weeding on 22.1.1954 with *khurpi*. (ix) N.A. (x) 12.4.1954.

## 2. TREATMENTS :

All combination of (1) and (2)

(1) 2 varieties :  $V_1=NP-125$  and  $V_2=NP-710$ .

(2) 4 hormone levels :  $C_0=Control$ ,  $C_1=0.01$  p.p.m. for 20 hours,  $C_2=0.10$  p.p.m. for 20 hours and  $C_3=10.00$  p.p.m. for 20 hours.

Seed soaked in hormone solution.

## 3. DESIGN :

(i) 4×2 Fact. in R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a) 17'×12'. (b) 13'×10.5'. (v) 2'×½'. (vi) Yes.

## 4. GENERAL :

(i) Good. No lodging. (ii) Nil. (iii) Germination, grain, straw and dry grain yield. (iv) (a) 1953—continued. (b) No. (c) N.A. (v) (a) No. (b) N.A. (vi) Nil. (vii) The expt. was conducted by E.B.(R). Due to unsatisfactory results the experiment is to be repeated next year. Maturing date of N.P.-125 is 21.3.1954 and that of N.P.-710 is 14.3.1954.

## 5. RESULTS :

(i) 1487 lb./ac.  
 (ii) 389.0 lb./ac.  
 (iii) Only the effect of V is highly significant.  
 (iv) Av. yield of grain in lb./ac.

	$C_0$	$C_1$	$C_2$	$C_3$	Mean
$V_1$	1569	1672	1744	1518	1626
$V_2$	1477	1405	1169	1344	1349
Mean	1523	1538	1456	1431	1487

S.E. of difference of two

- C marginal means =137.5 lb./ac.
- V marginal means =194.5 lb./ac.
- means in the body of table =275.0 lb./ac.

Crop :-Wheat (*Rabi*).

Ref :-U.P. 50(323).

Site :- Agri. College Farm, Varanasi.

Type :-'D'.

Object :-To study the effect of electro-chemical treatment of Wheat on its yield and quality.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Sanai*. (c) Nil. (ii) (a) Medium loam. (b) Refer soil analysis, Varanasi. (iii) 12.11.1950. (iv) (a) 6 ploughings with *desi* plough followed each time by a *planker* in order to crush lumps. (b) By *Lyallpur* seed drill. (c) 40 srs/ac. (d) N.A. (e) —. (v) *Sanai* ploughed in on 27.7.1950. (vi) As per treatments. (vii) Irrigated. (viii) 2 hand hoeings. (ix) N.A. (x) 25.3.1951.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 2 varieties :  $V_1 = \text{I.P. 52}$  and  $V_2 = \text{C-13}$ .

(2) 9 seed treatments :  $T_1 = \text{Soaked for 6 hours in 2.5\% sodium chloride solution and later treated for 5 minutes}$ ,  $T_2 = \text{Soaked for 6 hours in 2.5\% Na Cl and later treated electro-chemically for 10 minutes}$ ,  $T_3 = \text{Soaked for 6 hours in 5\% Na Cl and later treated electro-chemically for 5 minutes}$ ,  $T_4 = \text{Soaked for 6 hours in 5\% Na Cl and later treated electro-chemically for 10 minutes}$ ,  $T_5 = \text{Soaked for 6 hours in 2.5\% calcium chloride solution and later treated electro-chemically for 5 minutes}$ ,  $T_6 = \text{Soaked for 6 hours in 2.5\% CaCl}_2$  and later electro-chemically treated for 10 minutes,  $T_7 = \text{Soaked for 6 hours in 5\% CaCl}_2$  and treated electro-chemically for 5 minutes,  $T_8 = \text{Soaked for 6 hours in 5\% CaCl}_2$  and later treated electro-chemically for 10 minutes,  $T_9 = \text{Control—Soaked for 6 hours in water}$ .

## 3. DESIGN :

(i)  $2 \times 9$  Fact. in R.B.D. (ii) (a) 18. (b)  $205.5' \times 49.5'$ . (iii) 4. (iv) (a)  $19\frac{1}{2}' \times 23\frac{1}{2}'$ , (b)  $17\frac{1}{2}' \times 21\frac{1}{2}'$ . (v) 2' wide strip on each side of the plot and 4' all round the field. Water channel 4' wide. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) N.A. (iii) Grain yield. (iv) (a) No. (b) No. (c) Nil. (v) (a) Nil. (b) Nil. (vi) Nil. (vii) The experiment was conducted by B.H.U.

## 5. RESULTS :

(i) 1423 lb./ac.

(ii) 115.6 lb./ac.

(iii) Main effect V and of T are both highly significant. Interaction  $V \times T$  is not significant.

(iv) Av. yield of grain in lb./ac.

	$T_1$	$T_2$	$T_3$	$T_4$	$T_5$	$T_6$	$T_7$	$T_8$	$T_9$	Mean
$V_1$	1405	1458	1569	1256	1246	1427	1481	1134	1350	1370
$V_2$	1479	1497	1669	1473	1432	1396	1605	1303	1434	1476
Mean	1442	1478	1619	1364	1339	1412	1543	1218	1392	1423

S.E. of marginal mean of V

=19.62 lb./ac.

S.E. of marginal mean of T

=40.87 lb./ac.

S.E. of body of table

=57.80 lb./ac.

Crop :- Wheat (*Rabi*).

Ref :- U.P. 48(128).

Site :- Kandhari Farm, B.R. College, Agra.

Type :- 'ID'.

Object :-To study the effect of pre-sowing seed treatments on the germination and yield of Pb. 591 Wheat under different irrigations.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Early *guar* for fodder. (c) Nil. (ii) (a) and (b) N.A. (iii) 10.11.1948. (iv) (a) Punjab plough on 16.8.1948, ploughing 5" deep and 6 *desi* ploughings, harrowing on 19.8.1948. *Palewa* on 29.10.1948 to only irrigated plots. Cross ploughing on 8.11.1948 followed by *pata*. (b) By country seed drill 3" to 4" deep in furrows. (c) 43.6 srs./ac. (d) and (e) N.A. (v) 100 mds. of M.C. on 27 and 28.10.1948. mixed by hand with soil. (vi) Pb. 591. (vii) Irrigated, as per treatments. (viii) Weeding done after the first irrigation. (ix) N.A. (x) 26.3.1949.

## 2. TREATMENTS :

## Main-plot treatments :

3 levels of irrigation :  $I_0$ =rainfed (no irrigation),  $I_1$ =Canal irrigation and  $I_2$ =Well irrigation (saline water).

## Sub-plot treatments :

3 pre-treatments of seed :  $T_1$ =control,  $T_2$ =continuous soaking and  $T_3$ =repeated soaking.

## 3. DESIGN :

(i) Split-plot. (ii) (a) 3 main-plots/replication and 3 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) N.A. (b)  $34' \times 19'$ . (v) Block border 4', plot border 2' and breadth of irrigation channel 3'. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) N.A. (iii) Grain and *bhusa* yield. (iv) (a) No. (b) —. (c) Nil. (v) (a) and (b) Nil. (vi) Nil. (vii) The experiment was conducted by B.R.C.

## 5. RESULTS :

- (i) 1155 lb./ac.  
 (ii) (a) 341.3 lb./ac.  
 (b) 108.7 lb./ac.  
 (iii) Main-effect of I is highly significant and T is significant, while interaction is not significant.  
 (iv) Av. yield of grain in lb./ac.

	$T_1$	$T_2$	$T_3$	Mean
$I_0$	244	358	366	323
$I_1$	1424	1695	1819	1646
$I_2$	1302	1599	1590	1497
Mean	990	1217	1258	1155

## S.E. of difference of two

1. I marginal means = 139.4 lb./ac.  
 2. T marginal means = 44.39 lb./ac.  
 3. T means at the same level of I = 76.87 lb./ac.  
 4. I means at the same level of T = 152.9 lb./ac.

Crop :- Jowar (*Kharif*).

Ref :- U.P. 53(364).

Site :- Agri. Institute, Allahabad.

Type :- 'M'.

Object :- To test the effect of N manures and fertilizers on the yield of *Jowar* (sorghum) green fodder.

## 1. BASAL CONDITIONS :

(i) (a) No. (b) Barley. (c) N.A. (ii) (a) Fine sandy loam. (b) Refer soil analysis, Allahabad. (iii) 29 and 30.6.1953. (iv) (a) and (b) N.A. (c) 12 lb./ac. (d) Rows 2' apart. (e) —. (v) N.A. (vi) Farm selection (N.A.) (vii) N.A. (viii) Weeding on 16.7.1953, interculture (cultivator used) on 18 and 20.7.1953 and interculture and earthing (cultivator used) on 30.7.1953. (ix) N.A. (x) 19.9.1953.

## 2. TREATMENTS :

- Control (no manure).
  - 40 lb./ac. of N as A/S.
  - 40 lb./ac. of N as C/N.
  - 40 lb./ac. of N as Castor cake.
  - 40 lb./ac. of N as Farm compost.
  - 20 lb./ac. of N as A/S + 20 lb./ac. of N as Castor cake.
  - 20 lb./ac. of N as A/S + 20 lb./ac. of N as Farm compost.
  - 20 lb./ac. of N as C/N + 20 lb./ac. of N as Castor cake.
  - 20 lb./ac. of N as C/N + 20 lb./ac. of N as Farm compost.
  - 20 lb./ac. of N as Farm compost + 20 lb./ac. of N as Castor cake.
- Castor cake applied on 25.7.1953 and others applied on 21.7.1953.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 10. (b) 180'×45'. (iii) 6. (iv) (a) 45'×18'. (b) 41'×14'. (v) 2' around the net plot. (vi) Yes.

## 4. GENERAL :

(i) Germination and stand very thin due to water logging in treatment 8 (block I) and treatment 9 (block VI). The yields of these two plots have been estimated. (ii) N.A. (iii) Height, stand and yield of green fodder. (iv) (a) and (b) No. (c) Nil. (v) (a) Nil. (b) N.A. (vi) Nil. (vii) The land for the above experiment was for the first time being used for experimental purposes. In the previous year this plot received a heavy application of farm compost. It seems from the growth of the crop and the yield data that there was a high residual effect of compost this year bringing in the yield figure of all the treatments to a uniform level. Field record register and the "Allahabad Farmer" were consulted. Expt. conducted by Agronomy Dept. A.A.I., Allahabad.

## 5. RESULTS :

- (i) 36514 lb./ac.  
 (ii) 4206.9 lb./ac.  
 (iii) Treatment differences are not significant.  
 (iv) Av. yield of green fodder in lb./ac.

Treatment	Av. yield	Treatment	Av. yield
1.	35438	6.	34320
2.	36050	7.	35282
3.	39537	8.	36594
4.	36427	9.	39110
5.	35751	10.	36635
S.E./mean excluding treatment 8 and 9		= 1717.46 lb./ac.	
S.E./mean of treatment 8 and 9		= 1898.73 lb./ac.	

Crop :- Jowar (*Kharif*).

Ref :- U.P. 51(93).

Site :- Govt. Agri. Farm, Atarra.

Type :- 'M'.

Object :- To study the effect of N and P<sub>2</sub>O<sub>5</sub> fertilizers, alone and in combination on the yield of Jowar.

## 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) *Parwa*. (b) N.A. (iii) 10.7.1951. (iv) (a) 3 ploughings by watts' plough were given to the field for preparation. (b) Sown behind the *desi* plough. (c) to (e) N.A. (v) Nil. (vi) to (ix) N.A. (x) 17.11.1951.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 3 levels of N: N<sub>0</sub>=0, N<sub>1</sub>=15 and N<sub>2</sub>=30 lb./ac.

(2) 3 levels of P<sub>2</sub>O<sub>5</sub>: P<sub>0</sub>=0, P<sub>1</sub>=30 and P<sub>2</sub>=60 lb./ac.

N as A/S applied by broadcast and P<sub>2</sub>O<sub>5</sub> as Super placed 3"-4" deep in furrows behind *desi* plough and then *para* applied. Date of manuring 9.7.1951.

## 3. DESIGN :

(i) 3×3 Fact. in R.B.D. (ii) (a) 9. (b) N.A. (iii) 6. (iv) (a) N.A. (b) 38'×28'-8". (v) A distance of 1' to 3' from plot to plot and 3' to 4' from block to block was left out. (vi) Yes.

## 4. GENERAL :

(i) Normal. (ii) Nil. (iii) Grain yield. (iv) (a) 1950-1952. (b) No. (c) N.A. (v) (a) Kanpur, Raya, Kalai, Banaras, Partapgarh, Chirgaon and Bharari. (b) N.A. (vi) Nil. (vii) Conducted by Agricultural chemist. Experiment failed in the year 1950.

## 5. RESULTS :

- (i) 476.1 lb./ac.  
 (ii) 34.63 lb./ac.  
 (iii) Main effects of N and P are highly significant. Interaction N×P is not significant.

(iv) Av. yield of grain in lb./ac.

	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>	Mean
N <sub>0</sub>	373.2	426.5	499.8	433.2
N <sub>1</sub>	453.2	453.2	526.5	464.3
N <sub>2</sub>	479.9	526.5	586.5	531.0
Mean	422.1	468.7	537.6	476.1

S.E. of any marginal mean = 8.16 lb./ac.  
S.E. of body of table = 14.14 lb./ac.

Crop :- Jowar (*Kharif*).  
Site :- Govt. Agri. Farm, Atarra.

Ref :- U.P. 52(4).  
Type :- 'M'.

Object :- To study the effect of N and P<sub>2</sub>O<sub>5</sub> fertilizer, alone and in combination on the yield of *Jowar*.

#### 1. BASAL CONDITIONS :

(i) (a) N.A. (b) Fallow. (c) Nil. (ii) (a) *Parwa*. (b) N.A. (iii) 6.7.1952. (iv) (a) 2 ploughings with watts plough (1 before and 1 after breakage of monsoon). (b) Sown behind *desi* plough. (c) N.A. (d) In lines 2' apart. (e) N.A. (v) Nil. (vi) N.A. (vii) N.A. (viii) N.A. (ix) N.A. (x) 30.11 to 2.12.1952.

#### 2. TREATMENTS :

All combinations of (1) and (2)

(1) 3 levels of N : N<sub>0</sub>=0, N<sub>1</sub>=15 and N<sub>2</sub>=30 lb./ac.

(2) 3 levels of P<sub>2</sub>O<sub>5</sub> : P<sub>0</sub>=0, P<sub>1</sub>=30 and P<sub>2</sub>=60 lb./ac.

N as A/S applied as surface dressing by broadcast and P<sub>2</sub>O<sub>5</sub> as Super drilled in furrows 4' deep behind the plough. Date of manuring 5.7.1952.

#### 3. DESIGN :

(i) 3×3 Fact. in R.B.D. (ii) (a) 9. (b) N.A. (iii) 6. (iv) (a) 38'×28.67'. (b) 38'×28.67'. (v) Between plots 1' and between blocks 3'. (vi) Yes.

#### 4. GENERAL :

(i) Poor. (ii) Damaged by birds. (iii) Grain and straw yield. (iv) (a) 1950—1952. (b) Yes. (c) N.A. (v) (a) Kalyanpur, Partapgarh, Nawabganj, Bharari, Banaras and Matkota. (b) N.A. (vi) Nil. (vii) The experiment conducted by Agricultural Chemist.

#### 5. RESULTS :

(i) 199.9 lb./ac.

(ii) 54.39 lb./ac.

(iii) Main effect of N alone is highly significant.

(iv) Av. yield of grain in lb./ac.

	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>	Mean
N <sub>0</sub>	116.6	153.3	196.6	155.5
N <sub>1</sub>	189.9	166.6	193.3	183.3
N <sub>2</sub>	259.9	246.6	276.6	261.0
Mean	188.8	188.8	222.2	199.9

S.E. of any marginal mean = 12.82 lb./ac.  
S.E. of body of table = 22.20 lb./ac.

Crop :- Jowar (*Kharif*).

Ref :- U.P. 50(59).

Site :- State Mechanised Farm, Bharari.

Type :- 'M'.

Object :- To study the effect of N and  $P_2O_5$  fertilizers applied alone and in combination on the yield of *Jowar* crop.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) N.A. (c) N.A. (ii) (a) *Parwa* (Bundelkhand type 2). (b) N.A. (iii) 17.7.1950. (iv) (a) One hot weather ploughing and one harrowing was given by tractor. (b) to (e) N.A. (v) Nil. (vi) N.A. (vii) N.A. (viii) Thinning one and weeding one. (ix) N.A. (x) 22 to 28.11.1950.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 3 level of N :  $N_0=0$ ,  $N_1=15$  and  $N_2=30$  lb./ac.

(2) 3 levels of  $P_2O_5$  :  $P_0=0$ ,  $P_1=30$  and  $P_2=60$  lb./ac.

N as A/S applied by broadcast and  $P_2O_5$  as Super placed in bands 3"-4" deep in the soil and 1"-2" below the seed.

## 3. DESIGN :

(i) 3×3 Fact. in R.B.D. (ii) (a) 9. (b) N.A. (iii) 6. (iv) (a) N.A. (b) 1/40 ac. (v) One foot from plot to plot and three feet from block to block was left out. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) No. (iii) Grain yield. (iv) (a) 1950—1952. (b) No. (c) No. (v) (a) Kalyanpur, Partapgarh and Varanasi. (b) N.A. (vi) Nil. (vii) The experiment was conducted by Agricultural Chemist.

## 5. RESULTS :

(i) 1553 lb./ac.

(ii) 380.0 lb./ac.

(iii) None of the effects is significant.

(iv) Av. yield of grain in lb./ac.

	$P_0$	$P_1$	$P_2$	Mean
$N_0$	1420	1560	1307	1429
$N_1$	1420	1767	1493	1560
$N_2$	1773	1467	1767	1669
Mean	1538	1598	1522	1553

S.E. of any marginal mean = 89.6 lb./ac.

S.E. of body of table = 155.1 lb./ac.

Crop :- Jowar (*Kharif*).

Ref :- U.P 51(89).

Site :- State Mechanised Farm, Bharari.

Type :- 'M'.

Object :- To study the effect of N and  $P_2O_5$  fertilizers applied alone and in combination on the yield of *Jowar*.

## 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) *Parwa* (Bundelkhand type 2). (b) N.A. (iii) 5.7.1951. (iv) (a) The field was ploughed by tractor during hot weather and after rains, it was harrowed. (b) Seeds sown in lines two feet apart, behind *desi* plough. (c) to (e) N.A. (v) Nil. (vi) N.A. (vii) N.A. (viii) N.A. (ix) N.A. (x) 15.12.1951.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 3 levels of N :  $N_0=0$ ,  $N_1=15$  and  $N_2=30$  lb./ac.

(2) 3 levels of  $P_2O_5$  :  $P_0=0$ ,  $P_1=30$  and  $P_2=60$  lb./ac.

N as A/S applied by broadcast and  $P_2O_5$  as Super placed 3"-4" deep in furrows behind the plough and then *paisa* applied. Date of manuring 3.7.1951.

**3. DESIGN :**

(i) 3×3 Fact. in R.B.D. (ii) (a) 9. (b) N.A. (iii) 6. (iv) (a) N.A. (b) 33'×33'. (v) A distance of 1' to 3' from plot to plot and 3' to 4' from block to block was left out. (vi) Yes.

**4. GENERAL :**

(i) Good. (ii) No. (iii) Grain yield. (iv) (a) 1950—1952. (b) and (c) No. (v) (a) Kanpur, Raya, Kalai, Varanasi, Partapgarh, Atarra, and Chirgaon. (b) N.A. (vi) Nil. (vii) Experiment conducted by Agricultural Chemist.

**5. RESULTS :**

- (i) 2198 lb./ac.  
 (ii) 237.1 lb./ac.  
 (iii) Main effects of N and P are highly significant. Interaction N×P is not significant.  
 (iv) Av. yield of grain in lb./ac.

	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>	Mean
N <sub>0</sub>	1867	1987	2087	1980
N <sub>1</sub>	2000	2280	2347	2209
N <sub>2</sub>	2233	2433	2547	2404
Mean	2033	2233	2327	2198

S.E. of any marginal mean = 55.89 lb./ac.  
 S.E. of body of table = 96.79 lb./ac.

Crop :- Jowar (*Kharif*).

Ref :- U.P. 52(7).

Site :- State Mechanised Farm, Bharari.

Type :- 'M'.

Object :- To study the effect of N and P<sub>2</sub>O<sub>5</sub> fertilizers applied alone and in combination on the yield of *Jowar*.

**1. BASAL CONDITIONS :**

(i) (a) N.A. (b) Fallow. (c) Nil. (ii) (a) *Rakar* and *parwa*. (b) N.A. (iii) 10.7.1952. (iv) (a) 1 ploughing and harrowing by tractor. (b) Sown behind plough in lines 2' apart. (c) to (c) N.A. (v) Nil. (vi) N.A. (vii) N.A. (viii) N.A. (ix) N.A. (x) 21 to 24.11.1952.

**2. TREATMENTS :**

All combinations of (1) and (2)

(1) 3 levels of N : N<sub>0</sub>=0, N<sub>1</sub>=15 and N<sub>2</sub>=30 lb./ac.

(2) 3 levels of P<sub>2</sub>O<sub>5</sub> : P<sub>0</sub>=0, P<sub>1</sub>=30 and P<sub>2</sub>=60 lb./ac.

N as A/S applied as surface dressing by broadcast and P<sub>2</sub>O<sub>5</sub> as Super drilled in furrows 4' deep behind the plough. Date of manuring 4,5,7.1952.

**3. DESIGN :**

(i) 3×3 Fact. in R.B.D. (ii) (a) 9. (b) N.A. (iii) 6. (iv) (a) 33'×33'. (b) 33'×33'. (v) Distance between plots 1' and between blocks 3'. (vi) Yes.

**4. GENERAL :**

(i) Normal. Water logging in 2 replications which stunted the growth of the crop. (ii) Nil. (iii) Grain and straw yield. (iv) (a) 1950—1952. (b) and (c) No. (v) (a) Varanasi, Partapgarh, Nawabganj, Matkota, Atarra and Kalyanpur. (b) N.A. (vi) Nil. (vii) Experiment conducted by Agricultural Chemist.

**5. RESULTS :**

- (i) 1018 lb./ac.  
 (ii) 92.35 lb./ac.  
 (iii) Main effects of N and P are highly significant. Interaction N×P is not significant.



(iv) Av. yield of grain in lb./ac.

	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>	Mean
N <sub>0</sub>	767	873	1020	887
N <sub>1</sub>	807	1053	1213	1024
N <sub>2</sub>	980	1153	1300	1144
Mean	851	1026	1178	1018

S.E. of any marginal mean = 21.77 lb./ac.

S.E. of body of table = 37.70 lb./ac.

Crop :- Jowar (*Kharif*).

Ref :- U.P. 51(96).

Site :- Govt. Agri. Farm, Chirgaon.

Type :- 'M'.

Object :- To study the effect of N and P<sub>2</sub>O<sub>5</sub> fertilizer applied alone and in combination on the yield of Jowar.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) N.A. (c) N.A. (ii) (a) Light *kabar*. (b) Refer soil analysis, Chirgaon. (iii) 25.7.1951.  
 (iv) (a) Ploughed twice by *bakhar*, during rainy season. (b) Sown in lines 2' apart behind *desi* plough. (c) to (e) N.A. (v) Nil. (vi) N.A. (vii) N.A. (viii) One interculture by cultivator and one thinning was done. (ix) N.A. (x) 27 and 28.11.1951.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 3 levels of N : N<sub>0</sub>=0, N<sub>1</sub>=15 and N<sub>2</sub>=30 lb./ac.(2) 3 levels of P<sub>2</sub>O<sub>5</sub> : P<sub>0</sub>=0, P<sub>1</sub>=30 and P<sub>2</sub>=60 lb./ac.N as A/S applied by broadcast and P<sub>2</sub>O<sub>5</sub> as Super placed 3"-4" deep in furrows behind the *desi* plough and then *pata* applied. Date of manuring 15.7.1951.

## 3. DESIGN :

(i) 3×3 Fact. in R.B.D. (ii) (a) 9. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 46.5'×23.5'. (v) A distance of 1' to 3' from plot to plot and 3' to 4' from block to block was left out. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Nil. (iii) Grain yield. (iv) (a) No. (b) No. (c) No. (v) (a) Kanpur, Raya, Kalai, Varanasi, Pratapgarh, Atarra and Bharari. (b) N.A. (vi) Nil. (vii) Experiment conducted by Crop Physiologist (Research).

## 5. RESULTS :

(i) 1355 lb./ac.

(ii) 278.4 lb./ac.

(iii) Main effect of N alone is highly significant.

(iv) Av. yield of grain in lb./ac.

	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>	Mean
N <sub>0</sub>	1036	1216	1266	1173
N <sub>1</sub>	1206	1286	1385	1292
N <sub>2</sub>	1385	1684	1734	1601
Mean	1209	1395	1462	1355

S.E. of any marginal mean = 80.4 lb./ac.

S.E. of body of table = 139.2 lb./ac.

Crop :- Jowar (*Kharif*).

Ref :- U.P. 53(327).

Site :- Regional Training Institute, Gazipur.

Type :- 'M'.

Object :—To study the effects of N and  $P_2O_5$  fertilizer applied alone and in combination on the yield of *Jowar*.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) Barley and Pea. (c) N.A. (ii) (a) Light sandyloam. (b) N.A. (iii) 14.7.1953. (iv) (a) 3 ploughings. (b) to (e) N.A. (v) Nil. (vi) N.A. (vii) Nil. (viii) Weeding and thinning between 31.7.53 and 5.8.1953. (ix) 37.53°. (x) 21, 22 and 23.11.1953.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 3 levels of N :  $N_0=0$ ,  $N_1=15$  and  $N_2=30$  lb./ac.

(2) 3 levels of  $P_2O_5$  :  $P_0=0$ ,  $P_1=30$  and  $P_2=60$  lb./ac.

N as A/S broadcast and  $P_2O_5$  as Super placed in 4" deep bands 9" apart.  $P_2O_5$  placed in about 1" to 2" below the seed.

## 3. DESIGN :

(i) 3×3 Fact. in R.B.D. (ii) (a) 9. (b) N.A. (iii) 6. (iv) (a) and (b) 25'×42'. (v) Nil. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) N.A. (iii) Grain and straw yield. (iv) (a) 1953—N.A. (b) N.A. (c) Nil. (v) (a) and (b) Nil. (vi) Nil. (vii) Experiment conducted by A.C.

## 5. RESULTS :

(i) 926 lb./ac.

(ii) 221.1 lb./ac.

(iii) Interaction N×P alone is highly significant.

(iv) Av. yield of grain in lb./ac.

	$P_0$	$P_1$	$P_2$	Mean
$N_0$	809	1196	837	947
$N_1$	989	871	906	922
$N_2$	1093	761	871	908
Mean	964	943	871	926

S.E. of any marginal mean = 52.1 lb./ac.

S.E. of body of table = 90.2 lb./ac.

Crop :- Jowar (*Kharif*).

Ref :- U.P. 51(91).

Site :- Govt. Agri. Farm, Kalai.

Type :- 'M'.

Object :—To study the effects of N and  $P_2O_5$  fertilizers applied alone and in combination on the yield of *Jowar*.

## 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Loam, type 3. (b) N.A. (iii) 9.7.1951. (iv) (a) Two ploughings, one with *desi* plough in the middle of June, and another with turnwrest plough in the first week of July, 2 *desi* ploughings for application of phosphatic fertilizer. (b) to (e) N.A. (v) Nil. (vi) N.A. (vii) Irrigated. (viii) One weeding and hoeing was done. (ix) N.A. (x) 25.11.1951 to 9.12.1951.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 3 levels of N :  $N_0=0$ ,  $N_1=15$  and  $N_2=30$  lb./ac.

(2) 3 levels of  $P_2O_5$  :  $P_0=0$ ,  $P_1=30$  and  $P_2=60$  lb./ac.

N as A/S applied by broadcast and  $P_2O_5$  as Super placed 3"—4" deep in furrows behind the *desi* plough and then *pata* applied. Date of manuring 8.7.1951.

## 3. DESIGN :

(i) 3×3 Fact. in R.B.D. (ii) (a) 9. (b) N.A. (iii) 6. (iv) (a) N.A. (b) 40.3'×27'. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) Due to drought conditions, because of the absence of rains, proper grain formation did not take place and the crop was harvested at green stage. (ii) Nil. (iii) Fodder yield. (iv) (a) 1950—1951. (b) No. (c) N.A. (v) (a) Kanpur, Raya, Varanasi, Pratapgarh, Atarra, Chirgaon and Bharari. (b) N.A. (vi) Experiment failed in the year 1950. (vii) The experiment was conducted by Agricultural Chemist.

## 5. RESULTS :

- (i) 18486 lb./ac.  
 (ii) 1928.4 lb./ac.  
 (iii) All effects are highly significant.  
 (iv) Av. yield of green fodder in lb./ac.

	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>	Mean
N <sub>0</sub>	9194	18622	10429	12748
N <sub>1</sub>	13304	19149	24760	19071
N <sub>2</sub>	21544	22358	27009	23637
Mean	14681	20043	20733	18486

S.E. of any marginal mean =454.58 lb./ac.  
 S.E. of body of table =787.26 lb./ac.

Crop :- Jowar (*Kharif*).  
 Site :- Govt. Agri. Farm, Kalai.

Ref :- U.P. 53(349).  
 Type :- 'M'.

Object :- To study the residual effect of N and P<sub>2</sub>O<sub>5</sub> applied to previous Wheat crop on *Jowar*.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) Wheat. (c) As per treatments. (ii) (a) Aligarh type 2. (b) N.A. (iii) 3.6.1953. (iv) (a) One ploughing and one *palewa*. (b) Broadcast. (c) to (e) N.A. (v) Nil. (vi) N.A. (vii) N.A. (viii) N.A. (ix) 19°. (x) 29.9.1953.

## 2. TREATMENTS :

## Main-plot treatments :

2 levels of N as A/S : N<sub>0</sub>=0 and N<sub>1</sub>=30 lb./ac.

## Sub-plot treatments :

All combinations of (1) and (2)+a control (P<sub>0</sub>=no P<sub>2</sub>O<sub>5</sub>).

(1) 2 levels of P<sub>2</sub>O<sub>5</sub> : P<sub>1</sub>=60 and P<sub>2</sub>=120 lb./ac.

(2) 2 sources of P<sub>2</sub>O<sub>5</sub> : S<sub>1</sub>=Super and S<sub>2</sub>=B.M.

These manures were applied in the *rabi* season of 1952—1953 to wheat crop.

## 3. DESIGN :

(i) Split-plot. (ii) (a) 2 main-plots/block and 5 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 51.9'×21'. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) N.A. (iii) Yield of green matter only. (iv) (a) 1953—N.A. (b) N.A. (c) Nil. (v) (a) Varanasi. (b) N.A. (vi) Nil. (vii) Experiment was conducted by Agricultural Chemist.

## 4. RESULTS :

- (i) 11855 lb./ac.  
 (ii) (a) 2369.5 lb./ac.  
 (b) 1733.4 lb./ac.  
 (iii) None of the effects is significant.

(iv) Av. yield of green fodder in lb./ac.

	P <sub>0</sub>	S <sub>1</sub> P <sub>1</sub>	S <sub>2</sub> P <sub>1</sub>	S <sub>1</sub> P <sub>2</sub>	S <sub>2</sub> P <sub>2</sub>	Mean
N <sub>0</sub>	11122	10002	10812	12481	12980	11479
N <sub>1</sub>	11751	13000	12051	12051	12301	12231
Mean	11436	11501	11432	12266	12640	11855

S.E. of difference of two

1. main-plot treatment marginal means = 749.3 lb./ac.
2. sub-plot treatment marginal means = 866.7 lb./ac.
3. sub-plot means at a level of main-plot treatment = 1225.7 lb./ac.
4. main-plot means at a level of sub-plot treatment = 1327.9 lb./ac.

Crop :-Jowar (*Kharif*).

Ref :-U.P. 50(57).

Site :-Govt. Agri. Res. Farm, Kalyanpur.

Type :-'M'.

Object :-To study the effect of N and P<sub>2</sub>O<sub>5</sub> applied alone and in combination on the yield of *Jowar*.

## 1. BASAL CONDITIONS :

(i) N.A. (b) N.A. (c) N.A. (ii) (a) Loam (Kanpar Type 2). (b) N.A. (iii) 12.7.1950. (iv) (a) to (c) N.A. (v) Nil. (vi) N.A. (vii) N.A. (viii) N.A. (ix) N.A. (x) 28 to 30.11.1950.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 3 levels of N: N<sub>0</sub>=0, N<sub>1</sub>=15 and N<sub>2</sub>=30 lb./ac.(2) 3 levels of P<sub>2</sub>O<sub>5</sub>: P<sub>0</sub>=0, P<sub>1</sub>=30 and P<sub>2</sub>=60 lb./ac.N as A/S broadcast before sowing and P<sub>2</sub>O<sub>5</sub> as Super placed in bands 3" to 4" deep in the soil. Manures applied on 11.7.1950.

## 3. DESIGN :

(i) 3×3 Fact. in R.B.D. (ii) (a) 9. (b) N.A. (iii) 6. (iv) (a) N.A. (b) 55'×20'. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) The crop in some fields of the first 2 blocks was very patchy due to the presence of saline patches in this portion of the field. On the whole, a good crop was obtained. (ii) No. (iii) Grain yield. (iv) (a) 1950—1952. (b) No. (c) N.A. (v) (a) Bharari, Pratapgarh, Varanasi, Kalai, Aligarh and Atarra. (vi) Nil. (vii) The expt. conducted by A.C.

## 5. RESULTS :

- (i) 1239 lb./ac.
- (ii) 240.3 lb./ac.
- (iii) None of the effects is significant.
- (iv) Av. yield of grain in lb./ac.

	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>	Mean
N <sub>0</sub>	1373	1307	1188	1289
N <sub>1</sub>	1234	1294	1340	1289
N <sub>2</sub>	1049	1201	1162	1137
Mean	1219	1267	1230	1239

S.E. of any marginal mean  
S.E. of body of table

=56.6 lb./ac.  
=98.1 lb./ac.

Crop :- Jowar (*Kharif*).

Ref :- U.P. 51(94).

Site :- Govt. Agri. Res. Farm, Kalyanpur.

Type :- 'M'.

Object :- To study the effects of N and  $P_2O_5$  applied alone and in combination on the yield of *Jowar*.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) N.A. (c) N.A. (ii) (a) Loam (Kanpur type 2). (b) N.A. (iii) 20.7.1951. (iv) (a) Tractor used during hot weather. In second week of July it was ploughed by Punjab plough. Field levelled. (b) Sown behind *desi* plough. (c) N.A. (d) N.A. (e) N.A. (v) Nil. (vi) N.A. (vii) Irrigated. (viii) Thinning and interculture operation were done towards the end of August. Earthing on 25th August. (ix) N.A. (x) 25 and 26.11.1951.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 3 levels of N :  $N_0=0$ ,  $N_1=15$  and  $N_2=30$  lb./ac.(2) 3 levels of  $P_2O_5$  :  $P_0=0$ ,  $P_1=30$  and  $P_2=60$  lb./ac.N as A/S was broadcast before sowing and  $P_2O_5$  as Super was placed 3" to 4" deep in furrows behind the plough and then *pata* applied. Date of manuring 13.7.1951.

## 3. DESIGN :

(i)  $3 \times 3$  Fact. in R.B.D. (ii) (a) 9. (b) N.A. (iii) 6. (iv) (a) N.A. (b)  $33' \times 33'$ . (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) Germination was good. (ii) No. (iii) Grain yield. (iv) (a) 1950-1952. (b) No. (c) N.A. (v) (a) Raya, Kalai, Varanasi, Pratappgarh, Atarra, Chirgaon and Bharari. (b) N.A. (vi) Nil. (vii) The expt. was conducted by A.C.

## 5. RESULTS :

(i) 911 lb./ac.

(ii) 73.65 lb./ac.

(iii) Main effects of N and P are highly significant. Interaction  $N \times P$  is not significant.

(iv) Av. yield of grain in lb./ac.

	$P_0$	$P_1$	$P_2$	Mean
$N_0$	727	800	807	778
$N_1$	847	920	1007	925
$N_2$	1013	1007	1067	1029
Mean	862	909	960	911

S.E. of any marginal mean

= 17.36 lb./ac.

S.E. of body of table

= 30.07 lb./ac.

Crop :- Jowar (*Kharif*).

Ref :- U.P. 52(6).

Site :- Govt. Res. Farm, Kalyanpur.

Type :- 'M'.

Object :- To study the effect of N and  $P_2O_5$  applied alone and in combination on yield of *Jowar*.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) Barley. (c) N.A. (ii) (a) Loam (Kanpur type 2). (b) N.A. (iii) 6.7.1952. (iv) (a) Ploughing 1st with watts plough and then with *desi* plough. (b) Sown behind the plough. (c) N.A. (d) Lines 2' apart running parallel to fertilized bands. (e) N.A. (v) Nil. (vi) N.A. (vii) Irrigated. (viii) and (ix) N.A. (x) 21 to 25.11.1952.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 3 levels of N :  $N_0=0$ ,  $N_1=15$  and  $N_2=30$  lb./ac.(2) 3 levels of  $P_2O_5$  :  $P_0=0$ ,  $P_1=30$  and  $P_2=60$  lb./ac.N as A/S applied as surface dressing by broadcast and  $P_2O_5$  as Super drilled in furrows 4" deep behind the plough. Date of application 4.7.1953.

**3. DESIGN :**

(i) 3×3 Fact. in R.B.D. (ii) (a) 9. (b) N.A. (iii) 6. (iv) (a) and (b) 50'×21.8'. (v) Nil. (vi) Yes.

**4. GENERAL :**

(i) Good, except for low lying plots where growth was patchy and stunted due to water logging. (ii) Nil. (iii) Grain yield. (vi) (a) 1950—1952. (b) Yes. (c) N.A. (v) (a) Varanasi, Pratapgarh, Nawabganj, Matkota, Bharari and Atarra. (b) N.A. (vi) Nil. (vii) The expt. was conducted by A.C.

**5. RESULTS :**

(i) 1806 lb./ac.

(ii) 154.1 lb./ac.

(iii) Main effects of N and P are highly significant. Interaction N×P is not significant.

(iv) Av. yield of grain in lb./ac.

	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>	Mean
N <sub>0</sub>	1192	1385	1565	1381
N <sub>1</sub>	1792	1858	2051	1900
N <sub>2</sub>	1992	2145	2271	2136
Mean	1659	1796	1962	1806

S.E. of any marginal mean =36.3 lb./ac.  
S.E. of body of table =62.9 lb./ac.

Crop :-Jowar (*Kharif*).

Ref :-U.P. 48(38).

Site :-Govt. Dairy Farm, Kanpur.

Type :-'M'.

Object :-To study the residual effect of Super applied to wheat at different depths on subsequent *Jowar* fodder crop.

**1. BASAL CONDITIONS :**

(i) (a) *Jowar*—Wheat. (b) Wheat. (c) As per treatments. (ii) (a) Loam. (b) N.A. (iii) 19.6.1948. (iv) (a) and (b) N.A. (c) 25 srs./ac. (d) and (e) N.A. (v) Nil. (vi) *Jowar—dest* (N.A.). (vii) to (ix) N.A. (x) 3 and 4.8.1948.

**2. TREATMENTS :**

All combinations of (1) and (2)+a control (no P<sub>2</sub>O<sub>5</sub>).

(1) 2 levels of Super : P<sub>1</sub>=125 and P<sub>2</sub>=250 lb./ac.

(2) 3 methods of application of Super : M<sub>1</sub>=applied at surface, M<sub>2</sub>=applied at 2½" deep and M<sub>3</sub>=applied at 4½" deep.

Super applied to wheat crop in *Rabi* and residual effect studied this year.

**3. DESIGN :**

(i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 52'×21'. (v) N.A. (vi) Yes.

**4. GENERAL :**

(i) N.A. (ii) No. (iii) Yield of fodder. (iv) (a) 1948—1949. (b) Yes. (c) No. (v) (a) No. (b) N.A. (vi) Nil. (vii) The expt. was conducted by A.C.

**5. RESULTS :**

(i) 18127 lb./ac.

(ii) 2381.1 lb./ac.

(iii) None of the effects is significant.

(iv) Av. yield of fodder in lb./ac.

Control=18080 lb./ac.

	M <sub>1</sub>	M <sub>2</sub>	M <sub>3</sub>	Mean
P <sub>1</sub>	17691	18210	16534	17478
P <sub>2</sub>	18519	19067	18788	18791
Mean	18105	18638	17661	18135

S.E. of marginal mean of M = 841.9 lb./ac.  
 S.E. of marginal mean of P = 687.5 lb./ac.  
 S.E. of body of table = 1190.5 lb./ac.

Crop :- Jowar (*Kharif*).

Ref :- U.P. 43(88)/48(38).

Site :- Govt. Dairy Farm, Kanpur.

Type :- 'M'.

Object :- To study the residual effect of Super applied to wheat at different depths on subsequent crop.

## 1. BASAL CONDITIONS :

(i) (a) *Jowar* fodder-wheat. (b) Wheat. (c) As per treatments. (ii) (a) Loam. (b) N.A. (iii) 15.6.1949.  
 (iv) (a) and (b) N.A. (c) 25 srs./ac. (d) and (e) N.A. (v) Nil. (vi) *Jowar* local (N.A.) (vii) N.A. (viii) N.A. (ix) N.A. (x) 16 and 17.9.1949.

## 2. TREATMENTS :

All combinations of (1) and (2) + a control (no P<sub>2</sub>O<sub>5</sub>)(1) 2 levels of Super : P<sub>1</sub>=125 and P<sub>2</sub>=250 lb/ac.(2) 3 methods of application of Super : M<sub>1</sub>=applied at surface, M<sub>2</sub>=applied 2½" deep and M<sub>3</sub>=applied 4½" deep.Super applied to wheat crop in *Rabi* and residual effect studied this year.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 52'×21'. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) No. (iii) Fodder yield. (iv) (a) 1948-1949. (b) Yes. (c) N.A. (v) (a) No. (b) N.A. (vi) Nil. (vii) The experiment was conducted by Agricultural Chemist.

## 5. RESULTS :

(i) 15379 lb./ac.  
 (ii) 2999.0 lb./ac.  
 (iii) None of the effects is significant.  
 (iv) Av. yield of fodder in lb./ac.

Control=16275 lb./ac.

	M <sub>1</sub>	M <sub>2</sub>	M <sub>3</sub>	Mean
P <sub>1</sub>	14311	17811	14909	15677
P <sub>2</sub>	13692	13214	17442	14783
Mean	14002	15512	16175	15230

S.E. of marginal mean of M = 1060.8 lb./ac.  
 S.E. of marginal mean of P = 865.6 lb./ac.  
 S.E. of body of table = 1500.0 lb./ac.

Crop :- Jowar (*Kharif*).

Ref :- U.P. 48 (33)

Site :- Govt. Dairy Farm, Kanpur.

Type :- 'M'.

Object :—To study the residual effect of different N manures applied to wheat during the previous *Rabi*, on subsequent *Jowar* fodder crop.

## 1. BASAL CONDITIONS :

(i) (a) Wheat—*Jowar* fodder. (b) Wheat. (c) As per treatments. (ii) (a) Loam (b) N.A. (iii) 19.6.1948 resown on 4.7.1948 (iv) (a) to (e) N.A. (v) Nil. (vi) Local (late). (vii) N.A. (viii) N.A. (ix) N.A. (x) 14 to 16.9.1948.

## 2. TREATMENTS :

1. Control (no manure). 5. F.Y.M. at 50 lb./ac. of N.  
2. Castor cake at 50 lb./ac. of N. 6. Castor cake at 25 lb./ac. of N. +A/S at 25 lb./ac. of N.  
3. G.N.C. at 50 lb./ac. of N. 7. G.N.C. at 25 lb./ac. of N. +A/S at 25 lb./ac. of N.  
4. A/S at 50 lb./ac. of N. 8. F.Y.M. at 25 lb./ac. of N. +A/S at 25 lb./ac. of N.  
Applied to the wheat crop (*Rabi*) in the previous year and residual effect is studied this year.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a) and (b) 1/40 ac. (v) No. (vi) Yes.

## 4. GENERAL :

(i) Normal (ii) No. (iii) Fodder yield. (iv) (a) 1946-1949. (b) Yes. (c) N.A. (v) (a) No. (b) N.A. (vi) Nil (vii) The experiment was conducted by A.C.

## 5. RESULTS :

(i) 12,338 lb./ac.  
(ii) 1,588.2 lb./ac.  
(iii) Treatment differences are not significant.  
(iv) Av. yield of fodder in lb./ac.

Treatment	Av. yield	Treatment	Av. yield
1.	12150	5.	12280
2.	14030	6.	11510
3.	10510	7.	13100
4.	12550	8.	12570

S.E./mean=794.1 lb./ac.

Crop :- Jowar (*Kharif*).

Ref :- U.P. 49(89).

Site :- Govt. Res. Farm, Kanpur.

Type :- 'M'.

Object :—To study the residual effect of optimum doses of F.Y.M., compost and A/S applied to Wheat crop in *rabi*, on *Jowar* fodder

## 1. BASAL CONDITIONS :

(i) (a) *Jowar* fodder-Wheat. (b) Wheat. (c) As per treatments. (ii) (a) Loam. (b) N.A. (iii) 13.7.1949. (iv) (a) to (e) N.A. (v) Nil. (vi) N.A. (vii) N.A. (viii) N.A. (ix) N.A. (x) N.A.

## 2. TREATMENTS :

1. Control. 5. Compost at 100 lb./ac. of N.  
2. F.Y.M. at 100 lb./ac. of N. 6. Compost at 150 lb./ac. of N.  
3. F.Y.M. at 150 lb./ac. of N. 7. Compost at 200 lb./ac. of N.  
4. F.Y.M. at 200 lb./ac. of N. 8. A/S at 50 lb./ac. of N.

These treatments were applied to Wheat crop.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 29'×25'. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) No. (iii) Fodder yield. (iv) 1949—1954 (modified in 1951). (b) Yes. (c) N.A. (v) (a) No. (b) N.A. (vi) Nil. (vii) The expt. was conducted by A.C.



## 5. RESULTS :

- (i) 11080 lb./ac.  
(ii) 4077.0 lb./ac.  
(iii) Treatment differences are not significant.  
(iv) Av. yield of fodder in lb./ac.

Treatment	Av. yield	Treatment	Av. yield
1.	7901	5.	8832
2.	12212	6.	10364
3.	10484	7.	14345
4.	13083	8.	11416

S.E./mean = 2038.0 lb./ac.

Crop :- Jowar (*Kharif*).

Ref :- U.P. 50(52)/49(89).

Site :- Govt. Res. Farm, Kanpur.

Type :- 'M'.

Object :- To study the residual effect of F.Y.M., compost and A/S, applied to Wheat crop in *Rabi*, on *Jowar* fodder

## 1. BASAL CONDITIONS :

- (i) (a) *Jowar* fodder—Wheat. (b) Wheat. (c) As per treatments. (ii) (a) Loam. (b) N.A. (iii) 8.7.1950.  
(iv) (a), (b) N.A. (c) 25 srs./ac. (d) and (e) N.A. (v) No. (vi) N.A. (vii) N.A. (viii) N.A. (ix) N.A.  
(x) 8 and 9.9.1950.

## 2. TREATMENTS:

- |                                |                                 |
|--------------------------------|---------------------------------|
| 1. Control.                    | 5. Compost at 100 lb./ac. of N. |
| 2. F.Y.M. at 100 lb./ac. of N. | 6. Compost at 150 lb./ac. of N. |
| 3. F.Y.M. at 150 lb./ac. of N. | 7. Compost at 200 lb./ac. of N. |
| 4. F.Y.M. at 200 lb./ac. of N. | 8. A/S at 50 lb./ac. of N.      |
- These treatments were applied to Wheat crop.

## 3. DESIGN :

- (i) R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 29'×25'. (v) N.A. (vi) Yes.

## 4. GENERAL :

- (i) Good. (ii) No. (iii) Fodder yield. (iv) (a) 1949—1954. (b) Yes. (c) N.A. (v) (a) No. (b) N.A. (vi) Nil. (vii) The experiment was conducted by A.C.

## 5. RESULTS :

- (i) 17912 lb./ac.  
(ii) 5506.0 lb./ac.  
(iii) Treatment differences are not significant.  
(iv) Av. yield of grain in lb./ac.

Treatment	Av. yield	Treatment	Av. yield
1.	14825	5.	16027
2.	16733	6.	19512
3.	16117	7.	21945
4.	20593	8.	17544

S.E./mean = 2753.0 lb./ac.

Crop :- Jowar (*Kharif*).

Ref :- U.P. 51(116).

Site :- Govt. Res. Farm, Kanpur.

Type :- 'M'.

Object :- To study the residual effect of F.Y.M., compost and A/S applied to Wheat crop in *Rabi* on *Jowar* fodder

## BASAL CONDITIONS :

- (i) (a) *Jowar* fodder—Wheat. (b) Wheat. (c) As per treatments. (ii) (a) Loam. (b) N.A. (iii) 22.7.1951.  
(iv) (a) to (c) N.A. (v) No. (vi) N.A. (vii) Irrigated. (viii) N.A. (ix) N.A. (x) 4.10.1951.

**2. TREATMENTS :**

- |                                |                                |
|--------------------------------|--------------------------------|
| 1. Control.                    | 5. F.Y.M. at 175 lb./ac. of N. |
| 2. F.Y.M. at 100 lb./ac. of N. | 6. F.Y.M. at 200 lb./ac. of N. |
| 3. F.Y.M. at 125 lb./ac. of N. | 7. F.Y.M. at 225 lb./ac. of N. |
| 4. F.Y.M. at 150 lb./ac. of N. | 8. A/S at 50 lb./ac. of N.     |
- Treatments applied to Wheat crop.

**3. DESIGN :**

- (i) R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 29'×25'. (v) N.A. (vi) Yes.

**4. GENERAL :**

- (i) Good. (ii) No. (iii) Yield of fodder. (iv) (a) 1951—1955 (in modified form from 1949—1950). (b) upto 1952 on one field and from 1953 on another field. (c) N.A. (v) (a) No. (b) N.A. (vi) Nil. (vii) The experiment was conducted by A.C.

**5. RESULTS :**

- (i) 17,371 lb./ac.  
(ii) 3373.0 lb./ac.  
(iii) Treatment differences are not significant.  
(iv) Av. yield of fodder in lb./ac.

Treatment	Av. yield	Treatment	Av. yield
1.	16898	5.	16973
2.	16898	6.	18551
3.	17259	7.	19226
4.	16583	8.	16583
S.E./mean		= 1686.0 lb./ac.	

Crop :- Jowar (*Kharif*).

Ref :- U.P. 52(163).

Site :- Govt. Res. Farm, Kanpur.

Type :- 'M'.

Object :- To study the residual effect of F.Y.M. and A/S, applied to Wheat crop in *Rabi*, on *Jowar* fodder.**1. BASAL CONDITIONS :**

- (i) (a)
- Jowar*
- fodder-Wheat. (b) Wheat. (c) As per treatments. (ii) (a) Loam. (b) N.A. (iii) 3.7.1952. (iv) (a) to (e) N.A. (v) No. (vi) N.A. (vii) Irrigated. (viii) N.A. (ix) N.A. (x) 17.10.1952.

**2. TREATMENTS :**

- |                                |                                |
|--------------------------------|--------------------------------|
| 1. Control.                    | 5. F.Y.M. at 175 lb./ac. of N. |
| 2. F.Y.M. at 100 lb./ac. of N. | 6. F.Y.M. at 200 lb./ac. of N. |
| 3. F.Y.M. at 125 lb./ac. of N. | 7. F.Y.M. at 225 lb./ac. of N. |
| 4. F.Y.M. at 150 lb./ac. of N. | 8. A/S at 50 lb./ac. of N.     |
- Treatments applied to previous Wheat crop.

**3. DESIGN :**

- (i) R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 29'×25'. (v) N.A. (vi) Yes.

**4. GENERAL :**

- (i) Good. (ii) No. (iii) Yield of fodder. (iv) (a) 1951—1955 (in modified form from 1949-50). (b) Yes. upto 1952 on one field and from 1953 on another field. (c) N.A. (v) (a) No. (b) N.A. (vi) Nil. (vii) The experiment was conducted by A.C.

**5. RESULTS :**

- (i) 24,778 lb./ac.  
(ii) 7680.0 lb./ac.  
(iii) Treatment differences are not significant.  
(iv) Av. yield of fodder in lb./ac.

Treatment	Av. yield	Treatment	Av. yield
1.	22831	5.	29080
2.	24769	6.	29140
3.	21149	7.	22741
4.	26301	8.	22216
S.E./mean		= 3840.0 lb./ac.	

Crop :- Jowar (*Kharif*).  
Site :- Govt. Res. Farm, Kanpur.

Ref :- U.P. 53(197).  
Type :- 'M'.

Object :- To study the residual effect of F.Y.M. and A/S, applied to Wheat crop in *Rabi*, on *Jowar* fodder.

1. BASAL CONDITIONS :

(i) (a) *Jowar* fodder—wheat. (b) Wheat. (c) As per treatments. (ii) (a) Loam. (b) N.A. (iii) 5.7.1953. (iv) (a) to (e) N.A. (v) No. (vi) N.A. (vii) Irrigated. (viii) and (ix) N.A. (x) 26.9.1953.

2. TREATMENTS :

1. Control. 2. F.Y.M. at 175 lb./ac. of N.  
3. F.Y.M. at 100 lb./ac. of N. 6. F.Y.M. at 200 lb./ac. of N.  
4. F.Y.M. at 125 lb./ac. of N. 7. F.Y.M. at 225 lb./ac. of N.  
5. F.Y.M. at 150 lb./ac. of N. 8. A/S at 25 lb./ac. of N.

Treatments applied to previous wheat crop.

3. DESIGN :

(i) R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 36'×20'. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Good. (ii) No. (iii) Yield of fodder. (iv) (a) 1951—1955. (In modified form since 1949—1950). (b) Yes. (upto 1952—1953 on one field and from 1953—1954 on another field.) (v) N.A. (vi) Nil. (vii) The expt. was conducted by A.C.

5. RESULTS :

(i) 24191 lb./ac.  
(ii) 5074.0 lb./ac.  
(iii) Treatment differences are not significant.  
(iv) Av. yield of fodder in lb./ac.

Treatment	Av. yield	Treatment	Av. yield
1.	23323	5.	23656
2.	23383	6.	24745
3.	23156	7.	25470
4.	25758	8.	24034

S.E./mean = 2537.0 lb./ac.

Crop :- Jowar (*Kharif*).  
Site :- Govt. Res. Farm, Kanpur.

Ref :- U.P. 48(37).  
Type :- 'M'.

Object :- To study the residual effect of manuring linseed during last *rabi* with A/S at different times on the yield of *Jowar* fodder.

1. BASAL CONDITIONS :

(i) (a) Linseed—*Jowar* fodder. (b) Linseed. (c) As per treatments. (ii) (a) Loam. (b) N.A. (iii) 16.7.1948. (iv) (a) and (b) N.A. (c) 25 seers/ac. (d) and (e) N.A. (v) No. (vi) to (ix) N.A. (x) 16 and 17.9.1948.

2. TREATMENTS :

1. Control (no manure).  
2. A/S at 40 lb./ac. of N at sowing.  
3. A/S at 40 lb./ac. of N at one month after germination.  
4. A/S at 40 lb./ac. of N at flowering.  
5. A/S at 20 lb./ac. of N at sowing and 20 lb./ac. of N at one month after germination.  
6. A/S at 20 lb./ac. of N at sowing and 20 lb./ac. of N at flowering.  
7. A/S at 20 lb./ac. of N at one month after germination and 20 lb./ac. of N at flowering.  
Only residual effect of treatments applied to *Kharif* crop studied.

3. DESIGN :

(i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 29'×30'. (v) N.A. (vi) Yes.

## 4. GENERAL :

- (i) N.A. (ii) No. (iii) Yield of fodder. (iv) (a) 1946—1948. (b) Yes. (c) N.A. (v) (a) No. (b) N.A. (vi) Nil. (vi) The experiment was conducted by Agricultural Chemist.

## 5. RESULTS :

- (i) 10285 lb./ac.  
 (ii) 3361.2 lb./ac.  
 (iii) Treatment differences are not significant.  
 (iv) Av. yield of fodder in lb./ac.

Treatment	Av. yield
1.	11165
2.	11115
3.	11065
4.	9613
5.	10464
6.	7961
7.	10615
S.E./mean	=1680.6 lb./ac.

Crop :- Jowar (*Kharif*).

Ref :- U.P. 53(199)

Site :- Govt. Res. Farm, Kanpur,

Type :- 'M'.

Object :- To study the residual effect of  $P_2O_5$  applied broadcast and placed deep to previous. Wheat crop on the yield of Jowar.

## 1. BASAL CONDITIONS :

- (i) (a) Jowar fodder—Wheat. (b) Wheat. (c) As per treatments. (ii) (a) Loam. (b) N.A. (iii) 11.7.1953. (iv) (a) and (b) N.A. (c) 20 srs./ac. (d) and (e) N.A. (v) No. (vi) N.A. (vii) N.A. (viii) N.A. (ix) N.A. (x) 23 to 25.9.1953.

## 2. TREATMENTS :

All combinations of (1) and (2)

- (1) 2 levels of N as A/S :  $N_0=0$  and  $N_1=50$  lb./ac. of N.

- (2) 4 phosphatic treatments :  $P_0=0$ ,  $P_1=100$  lb./ac. of  $P_2O_5$  by broadcast,  $P_2=100$  lb./ac. of  $P_2O_5$  by victory plough and  $P_3=100$  lb./ac. of  $P_2O_5$  by U.P. plough with funnel.

Manures applied to wheat crop.

## 3. DESIGN :

- (i)  $4 \times 2$  Fact. in R.B.D. (ii) (a) 8. (b) N.A. (iii) 5. (iv) (a) N.A. (b)  $31' \times 20'$ . (v) N.A. (vi) Yes.

## 4. GENERAL :

- (i) Good. (ii) No. (iii) Fodder yield. (iv) (a) 1953—1955. (b) Yes. (c) N.A. (v) (a) No. (b) N.A. (vi) Nil. (vii) The experiment was conducted by Agricultural Chemist.

## 5. RESULTS :

- (i) 25,941 lb./ac.  
 (ii) 2,506.1 lb./ac.  
 (iii) None of the effects is significant.  
 (iv) Av. yield of fodder in lb./ac.

	$P_0$	$P_1$	$P_2$	$P_3$	Mean
$N_0$	27387	24099	25855	27766	26278
$N_1$	25138	25363	25209	26712	25606
Mean	26262	24731	25532	27239	25941

S.E. of marginal mean of P = 793.1 lb./ac.  
 S.E. of marginal mean of N = 560.4 lb./ac.  
 S.E. of body of table = 1120.8 lb./ac.

Crop :- Jowar (*Kharif*).

Ref :- U.P. 53(336).

Site :- Tarai State Farm, (Western Block), Matkota. Type :- 'M'.

Object :- To study the residual effect of N and  $P_2O_5$  applied to Wheat on *Jowar* crop.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) Wheat. (c) As per treatments. (ii) (a) Matkota clay loam, calcareous. (b) N.A. (iii) N.A. (iv) (a) Tractor harrowing once, ploughing by local plough once and mixing by cultivator. (b) Broadcasting. (c) to (e) N.A. (v) Nil. (vi) N.A. (vii) Nil. (viii) N.A. (ix) N.A. (x) N.A.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 3 levels of N as A/S :  $N_0=0$ ,  $N_1=30$  and  $N_2=60$  lb./ac.(2) 3 levels of  $P_2O_5$  as Super :  $P_0=0$ ,  $P_1=60$  and  $P_2=120$  lb./ac.The treatments were applied during *rabi* 1952-1953 to wheat crop.

## 3. DESIGN :

(i)  $3 \times 3$  Fact. in R.B.D. (ii) (a) 9. (b) N.A. (iii) 6. (iv) (a) N.A. (b)  $49.5' \times 22'$ . (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) Due to weeds, the germination was poor and uneven in growth. The effect was more serious in replications 1 and 2. (ii) N.A. (iii) As the grain formation of *Jowar* delayed too much only green fodder weighed and recorded. (iv) (a) 1953-N.A. (b) N.A. (c) Nil. (v) (a) Varanasi. (b) N.A. (vi) Due to heavy rains, uneven germination and weeds, the experiment failed. As the yields were missing in them, the analysis has been done after rejecting two blocks. Experiment conducted by Agricultural Chemist.

## 5. RESULTS :

(i) 5883 lb./ac.

(ii) 1625.5 lb./ac.

(iii) Only main effect of P is highly significant.

(iv) Av. yield of green fodder in lb./ac.

	$P_0$	$P_1$	$P_2$	Mean
$N_0$	4170	6180	5590	5313
$N_1$	4320	5510	7040	5623
$N_2$	4660	7770	7710	6713
Mean	4383	6487	6780	5883

S.E. of any marginal mean = 469.3 lb./ac.

S.E. of body of table = 812.7 lb./ac.

Crop :- Jowar (*Kharif*).

Ref :- U.P. 50(58).

Site :- Govt. Agri. Res. Farm, Pratapgarh.

Type :- 'M'.

Object :- To study the effect of N and  $P_2O_5$  applied alone and in combination on the yield of *Jowar* crop.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) N.A. (c) N.A. (ii) (a) Sandy loam. (b) N.A. (iii) 19.7.1950 (resown on 26.7.1950 due to heavy rains after first sowing). (iv) (a) to (c) N.A. (v) Nil. (vi) N.A. (vii) N.A. (viii) N.A. (ix) N.A. (x) Last week of Nov., 1950.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 3 levels of N :  $N_0=0$ ,  $N_1=15$  and  $N_2=30$  lb./ac.(2) 3 levels of  $P_2O_5$  :  $P_0=0$ ,  $P_1=30$  and  $P_2=60$  lb./ac.N as A/S was broadcast before sowing.  $P_2O_5$  and Super placed in bands  $3''-4''$  deep in soils  $1''-2''$  below the seed.

## 3. DESIGN :

(i) 3×3 Fact. in R.B.D. (ii) (a) 9. (b) N.A. (iii) 6. (iv) (a) N.A. (b) 35'×26'. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) Poor stand due to abnormal weather conditions. Yield very poor. (ii) No. (iii) Grain yield. (iv) (a) 1950-1952. (b), (c) No. (v) (a) Kalyanpur, Bharari and Varanasi. (b) N.A. (vi) Nil. (vii) Experiment conducted by A.C.

## 5. RESULTS :

- (i) 130.3 lb./ac.  
 (ii) 43.08 lb./ac.  
 (iii) Main effect of P and interaction N×P are highly significant. Main effect of N is significant.  
 (iv) Av. yield of grain in lb./ac.

	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>	Mean
N <sub>0</sub>	103.7	127.6	119.7	117.0
N <sub>1</sub>	119.7	103.7	135.6	119.7
N <sub>2</sub>	143.6	95.7	223.4	154.3
Mean	122.3	109.0	159.6	130.3

S.E. any marginal mean = 10.16 lb./ac.

S.E. of body of table = 17.59 lb./ac.

Crop :- Jowar (*Kharif*).

Ref :- U.P. 51(90).

Site :- Govt. Agri. Farm, Pratapgarh.

Type :- 'M'.

Object :- To study the effect of N and P<sub>2</sub>O<sub>5</sub> [applied alone and in combination on the yield of Jowar.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) N.A. (c) N.A. (ii) (a) Sandy loam. (b) N.A. (iii) 6.7.1951. (iv) (a) Field prepared after two ploughings. (b) Broadcasting. (c) to (e) N.A. (v) Nil. (vi) N.A. (vii) No. (viii) N.A. (ix) N.A. (x) 20, 21.11.1951.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 3 levels of N: N<sub>0</sub>=0, N<sub>1</sub>=15 and N<sub>2</sub>=30 lb./ac.

(2) 3 levels of P<sub>2</sub>O<sub>5</sub>: P<sub>0</sub>=0, P<sub>1</sub>=30 and P<sub>2</sub>=60 lb./ac.

N as A/S applied as broadcast and P<sub>2</sub>O<sub>5</sub> as Super was placed 3"-4" deep in furrows [behind the victory plough and then *pata* applied.

## 3. DESIGN :

(i) 3×3 Fact. in R.B.D. (ii) (a) 9. (b) N.A. (iii) 6. (iv) (a) N.A. (b) 21'×33½'. (v) A distance of 1' to 3' from plot to plot and 3' to 4' from block to block was left out. (vi) Yes.

## 4. GENERAL :

(i) Crop suffered due to inadequate moisture, as the rains were insufficient. (ii) Nil. (iii) Grain yield. (iv) (a) 1950 - 1952. (b), (c) No. (v) (a) Kanpur, Raya, Kalai, Varanasi, Atarra, Chirgaon and Bharari. (b) N.A. (vi) The ripe crop was damaged by birds and the resultant yield especially of grain was very poor. (vii) Expt. conducted by A.C.

## 5. RESULTS :

- (i) 202.9 lb./ac.  
 (ii) 42.55 lb./ac.  
 (iii) Main effects of N and P are significant. Interaction N×P is not significant.

(iv) Av. yield of grain in lb./ac.

	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>	Mean
N <sub>0</sub>	134.2	196.1	206.4	178.9
N <sub>1</sub>	206.4	206.4	216.7	209.8
N <sub>2</sub>	206.4	196.1	258.0	220.2
Mean	182.3	199.5	227.0	203.0

S.E. of any marginal mean = 10.03 lb./ac.  
S.E. of body of table = 17.37 lb./ac.

Crop :- Jowar (*Kharif*).

Ref. :- U.P. 52 (3)

Site :- Govt. Agri. Farm, Pratapgarh

Type :- 'M'.

Object :- To study the effect of N and P<sub>2</sub>O<sub>5</sub> applied alone and in combination on the yield of *Jowar*.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) Barley. (c) N.A. (ii) (a) Sandy Loam. (b) N.A. (iii) 5.7.1952. (iv) (a) 2 ploughings and harrowing with the first shower of rains. (b) to (e) N.A. (v) Nil. (vi) N.A. (vii) N.A. (viii) N.A. (ix) N.A. (x) 19 to 27.11.1952.

## 2. TREATMENTS :

All combinations of (1) and (2).

(1) 3 levels of N :- N<sub>0</sub>=0, N<sub>1</sub>=15 and N<sub>2</sub>=30 lb./ac.(2) 3 levels of P<sub>2</sub>O<sub>5</sub> :- P<sub>0</sub>=0, P<sub>1</sub>=30 and P<sub>2</sub>=60 lb./ac.N as A/S was applied as surface dressing and P<sub>2</sub>O<sub>5</sub> as Super was drilled in furrows behind the plough 4" deep in soil. (Fertilizers applied on 4.7.52).

## 3. DESIGN :

(i) 3×3 Fact. in R.B.D. (ii) (a) 9. (b) N.A. (iii) 6. (iv) (a) and (b) 30'×31'. (v) Nil. (vi) Yes.

## 4. GENERAL :

(i) Normal. (ii) Nil. (iii) Grain of straw yield. (iv) (a) 1950-1952. (b) Yes. (c) N.A. (v) (a) Kalyanpur, Vararasi, Nawabganj, Matkota, Bharari and Atarra. (b) N.A. (vi) Yield per plot is lower because of *usar* patches and droughty conditions at the time of maturity of crop. (vii) experiment conducted by Agricultural Chemist.

## 5. RESULTS :

- (i) 742.7 lb./ac.  
(ii) 124.5 lb./ac.  
(iii) Main effects of N and P are highly significant. Interaction N×P is not significant.  
(iv) Av. yield of grain in lb./ac.

	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>	Mean
N <sub>0</sub>	405.6	764.4	741.0	637.0
N <sub>1</sub>	468.0	717.6	920.4	702.0
N <sub>2</sub>	608.4	975.6	1084.2	889.2
Mean	494.0	819.0	915.2	742.7

S.E. of any marginal mean = 29.39 lb./ac.  
S.E. of body of table = 51.01 lb./ac.

Crop :- Jowar (*Kharif*).

Ref :- U.P. 53 (355)

Site :- Govt. Agri. Farm, Pura.

Type :- 'M'.

Object : To study the effect of N, P<sub>2</sub>O<sub>5</sub> and K<sub>2</sub>O applied alone and in combination on the yield of *Jowar* crop.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) Wheat. (c) N.A. (ii) (a) Kanpur Type 2 loam. (b) Refer soil analysis, Pura. (iii) 16.7.1953. (iv) (a) Ploughing by *Gurjar* plough on 6.7. 1953. Ploughing with cultivator on 8.7.1953. (b) to (e) N.A. (v) Nil. (vi) N.A. (vii) N.A. (viii) N.A. (ix) 38.9° (x) 30.11.1953 and 1.12.1953.

## 2. TREATMENTS :

All combinations of (1), (2) and (3)

(1) 2 levels of N as A/S : N<sub>0</sub>=0 and N<sub>1</sub>=15 lb./ac. of N.

(2) 2 levels of P<sub>2</sub>O<sub>5</sub> as Super : P<sub>0</sub>=0 and P<sub>1</sub>=30 lb./ac. of P<sub>2</sub>O<sub>5</sub>.

(3) 3 levels of K<sub>2</sub>O as Pot-Sulphate : K<sub>0</sub>=0 and K<sub>1</sub>=30, K<sub>2</sub>=60 lb./ac. of K<sub>2</sub>O.

Date of manuring, 16.7.1953. A/S broadcast, P<sub>2</sub>O<sub>5</sub> placed in 4" deep bands 9" apart. P<sub>2</sub>O<sub>5</sub> about 1" to 2" below the seed. Potash applied as deep placement with phosphate.

## DESIGN :

(i) 3×2×2 partially balanced as only one replication of balanced set has been repeated 4 times as well as partially confounded design in which one degree of freedom corresponding to PK and NPK interaction is partially confounded. (ii) (a) 6 plots/block and 2 blocks/replication. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 45'×24'. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) Germination and growth was good. (ii) Attack of stem borer. After ripening of grain, it was totally destroyed and eaten away by the birds and monkeys. (iii) Yield of grain and straw. (iv) (a) 1953—N.A. (b) N.A. (c) Nil. (v) (a) Varanasi. (b) N.A. (vi) Nil. (vii) Experiment was conducted by Agricultural Chemist.

## 5. RESULTS :

(i) 136.7 lb./ac.

(ii) 120.3 lb./ac.

(iii) None of the effects is significant.

(iv) Av. yield of grain in lb./ac.

	P <sub>0</sub>	P <sub>1</sub>	Mean	N <sub>0</sub>	N <sub>1</sub>
K <sub>0</sub>	105.9	147.5	126.7	105.9	147.5
K <sub>1</sub>	121.0	126.1	123.5	148.7	98.3
K <sub>2</sub>	136.1	184.0	160.0	136.1	184.0
Mean	121.0	152.5	136.7	130.2	143.3
N <sub>0</sub>	126.0	134.4	130.2		
N <sub>1</sub>	116.0	170.6	143.3		

S.E. of marginal mean of N or P

=24.56 lb./ac.

S.E. of marginal mean of K

=30.08 lb./ac.

S.E. of body of table N×K or P×K

=42.54 lb./ac.

S.E. of body of table N×P

=34.73 lb./ac.

Crop :- Jowar (*Kharif*).

Ref :- U.P. 51(97).

Site :- Govt. Cotton Res. Sub-Stn., Raya.

Type :- 'M'.

Object :- To study the effects of N and P<sub>2</sub>O<sub>5</sub> applied alone and in combination on the yield of *Jowar*.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) N.A. (c) N.A. (ii) (a) Sandy loam. (b) N.A. (iii) 5.8.1951. (iv) (a) Final preparation of field was done by one ploughing with a *desi* plough on 5.8.1951. (b) to (e) N.A. (v) Nil. (vi) N.A. (vii) Irrigated. (viii) 2 hand weedings. (ix) N.A. (x) 30.11.1951 to 5.12.1951.



## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 3 levels of N :  $N_0=0$ ,  $N_1=15$  and  $N_2=30$  lb./ac.

(2) 3 levels of  $P_2O_5$  :  $P_0=0$ ,  $P_1=30$  and  $P_2=60$  lb./ac.

N as A/S applied by broadcast and  $P_2O_5$  as Super placed 3"-4" deep in furrows behind the *desi* plough and then *pata* applied. Date of manuring 4.8.1951.

## 3. DESIGN :

(i) 3x3 Fact. in R.B.D. (ii) (a) 9. (b) N.A. (iii) 6. (iv) (a) N.A. (b) 77'x14'. (v) A distance of 1' to 3' from plot to plot and 3' to 4' from block to block was left out. (vi) Yes.

## 4. GENERAL :

(i) No setting of grain took place and therefore the experiment had to be harvested at green stage for fodder. (ii) Nil. (iii) Yield of green matter only. (iv) (a) No. (b) No. (c) No. (v) (a) Kanpur, Kalai, Varanasi, Pratapgarh, Atarra, Chirgaon and Bharari. (b) N.A. (vi) Nil. (vii) Experiment conducted by Agricultural Chemist.

## 5. RESULTS :

(i) 5296 lb./ac.

(ii) 829.9 lb./ac.

(iii) Main effects of N and P are highly significant ; interaction NxP is significant.

(iv) Av. yield of green fodder in lb./ac.

	$P_0$	$P_1$	$P_2$	Mean
$N_0$	4674	4944	4789	4802
$N_1$	4728	4944	5806	5159
$N_2$	4754	5954	7072	5927
Mean	4719	5281	5889	5296

S.E. of any marginal mean =195.6 lb./ac.

S.E. of body of table =339.4 lb./ac.

Crop :- Jowar (*Kharif*).

Ref :- U.P. 53(330).

Site :- Regional Res. Stn., Varanasi.

Type :- 'M'.

Object :- To study the residual effect of Super and B.M. along with A/S applied to Wheat crop on Jowar.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Wheat. (c) As per treatments. (ii) (a) Loam. (b) Refer soil analysis, Varanasi. (iii) 28.6.1953. (iv) (a) Ploughings on 4.6.1953 (once) and 27.6.1953 (twice). (b) In lines behind plough. (c) to (e) N.A. (v) Nil. (vi) N.A. (vii) Nil. (viii) N.A. (ix) 39.79°. (x) 19.10.1953.

## 2. TREATMENTS :

Main-plot treatments :

2 levels of N as A/S :  $N_0=0$  and  $N_1=30$  lb./ac.

Sub-plot treatments :

All combinations of (1), (2) + a control ( $P_0=$ No  $P_2O_5$ )

(1) 2 levels of  $P_2O_5$  :  $P_1=60$  and  $P_2=120$  lb./ac.

(2) 2 sources of  $P_2O_5$  :  $S_1=$ Super and  $S_2=$ B.M.

These manures were applied in the *Rabi* season of 1952-1953 to wheat crop.

## 3. DESIGN :

(i) Split-plot. (ii) (a) 2 main plots/block ; 5 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 1/40th ac. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) The crop was affected by grass hoppers when it had grown to full height. The damage was 6 annas in a rupee. (iii) yield of fodder only. (iv) (a) 1953-N.A. (b) N.A. (c) Nil. (v) (a) Kalai. (b) N.A. (vi) Nil. (vii) Experiment was conducted by Agricultural Chemist.

## 5. RESULTS :

- (i) 11710 lb./ac.  
 (ii) (a) 4413.3 lb./ac.  
 (b) 1489.9 lb./ac.  
 (iii) Effects of levels of P and Source of P are highly significant. Others are not significant.  
 (iv) Av. yield of fodder in lb./ac.

	P <sub>0</sub>	S <sub>1</sub> P <sub>1</sub>	S <sub>2</sub> P <sub>1</sub>	S <sub>1</sub> P <sub>2</sub>	S <sub>2</sub> P <sub>2</sub>	Mean
N <sub>0</sub>	9920	10960	11660	10850	13090	11296
N <sub>1</sub>	10510	10130	11870	13230	14880	12124
Mean	10215	10545	11765	12040	13985	11710

S.E. of difference of two

1. main-plot treatment means = 1395.6 lb./ac.
2. sub-plot treatment means = 744.9 lb./ac.
3. sub-plot treatment means at the same level of main-plot treatment = 1053.6 lb./ac.
4. main-plot treatment means at the same level of sub-plot treatment = 1683.9 lb./ac.

Crop :- Jowar (*Kharif*).

Ref :- U.P. 53(331).

Site :- Regional Res. Stn., Varanasi.

Type :- 'M'.

Object :- To study the effect of N, P<sub>2</sub>O<sub>5</sub> and K<sub>2</sub>O applied alone and in combination on the yield of Jowar crop.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Berseem in one portion and wheat in the other. (c) Nil. (ii) (a) Loam. (b) Refer soil analysis, Varanasi. (iii) 1.7.1953. (iv) (a) 2 ploughings on 29.6.1953. (b) Line sowing. (c) to (e) N.A. (v) Nil. (vi) N.A. (vii) Nil. (viii) Thinning was done on 12.8.1953 weeding on 14 and 16.8.1953. Field drained on 22.8.1953. (ix) 37.52°. (x) 26 to 30.11.1953.

## 2. TREATMENTS :

All combinations of (1), (2) and (3)

- (1) 2 levels of N as A/S : N<sub>0</sub>=0 and N<sub>1</sub>=15 lb./ac.
- (2) 2 levels of P<sub>2</sub>O<sub>5</sub> as Super : P<sub>0</sub>=0 and P<sub>1</sub>=30 lb./ac.
- (3) 3 levels of K<sub>2</sub>O as Pot. Sul : K<sub>0</sub>=0, K<sub>1</sub>=30 and K<sub>2</sub>=60 lb./ac.

Manuring with P and K on 30.6.1953 and manuring with N on 1.7.1953. P<sub>2</sub>O<sub>5</sub> placed in 4" deep bands 9" apart P<sub>2</sub>O<sub>5</sub> is about 1" to 2" below the seed. K<sub>2</sub>O applied as deep placement with seed.

## 3. DESIGN :

(i) 3×2×2 partially balanced (as only one replication of balanced set has been repeated 4 times) as well as partially confounded design in which 1 d.f. corresponding to PK and NPK interaction is partially confounded. (ii) (a) 6 plots/block and 2 blocks/replication. (b) N.A. (iii) 4. (iv) (a) and (b) 40'×27'-3". (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) Germination uniform. The southern four plots, two of control, one of K<sub>1</sub> and one of K<sub>2</sub> were badly affected due to heavy rains and mortality was 50% and rest of the plants in them had grown pale. (ii) Attack of grass hoppers—3 plots from each block from the north were affected. Dusting with 5% B.H.C. on 4.9.1953. The damage was mild. (iii) Grain and straw yield. (iv) (a) 1953—N.A. (b) N.A. (c) Nil. (v) (a) Pura (Kanpur). (b) N.A. (vi) During the adobscant stage the border plants of north, east and south were damaged by farm cattle damage to the eastern and southern plots was considerable (about 25%). At the flowering stage and maturity stage attacked by wild birds. (vii) The experiment was conducted by Agricultural Chemist.

## 5. RESULTS :

- (i) 296.7 lb./ac.
- (ii) 111.1 lb./ac.
- (iii) None of the effects is significant.

(iv) Av. yield of grain in lb./ac.

	P <sub>0</sub>	P <sub>1</sub>	Mean	N <sub>0</sub>	N <sub>1</sub>
K <sub>0</sub>	264.8	300.2	282.5	267.3	297.7
K <sub>1</sub>	256.8	333.7	295.2	294.7	295.7
K <sub>2</sub>	299.7	325.2	312.5	265.8	359.2
Mean	273.8	319.7	296.7	275.9	317.5
N <sub>0</sub>	247.1	304.7	275.9		
N <sub>1</sub>	300.4	334.7	317.5		

S.E. of marginal mean of K = 27.78 lb./ac.  
 S.E. of marginal mean of N or P = 22.68 lb./ac.  
 S.E. of body of table K×N or K×P = 39.28 lb./ac.  
 S.E. of body of table N×P = 32.07 lb./ac.

Crop :- Jowar (*Kharif*).

Ref :- U.P. 53(332).

Site :- Regional Res. Stn., Varanasi.

Type :- 'M'

Object :- To study the residual effect of N and P<sub>2</sub>O<sub>5</sub>, applied to wheat crop, on *Jowar*.**1. BASAL CONDITIONS :**

(i) (a) N.A. (b) Wheat. (c) As per treatments. (ii) (a) Loam. (b) Refer soil analysis, Varanasi. (iii) 1.7.1953. (iv) (a) Ploughing on 28, 29 and 30.6.1953. (b) Line sowing. (c) to (e) N.A. (v) A/S at 15 lb./ac. of N top dressed. (vi) N.A. (vii) Nil. (viii) Weeding on 16, 18.7.1953 and 7.8.1953; thinning on 2.8.1953 and field drained on 22.8.1953. (ix) 37.52%. (x) 26 to 30.11.1953.

**2. TREATMENTS :**

All combinations of (1) and (2)

(1) 3 levels of N as A/S : N<sub>0</sub>=0, N<sub>1</sub>=30 and N<sub>2</sub>=60 lb./ac.(2) 3 levels of P<sub>2</sub>O<sub>5</sub> as Super : P<sub>0</sub>=0, P<sub>1</sub>=60 and P<sub>2</sub>=120 lb./ac.Treatments were given during *Rabi*-1952-53 to wheat crop.**3. DESIGN :**

(i) 3×3 Fact. in R.B.D. (ii) (a) 9. (b) N.A. (iii) 6. (iv) (a) N.A. (b) 42'×25'. (v) N.A. (vi) Yes.

**4. GENERAL :**

(i) The crop was affected due to water logging after hardly a month had passed. (ii) At grain formation, the crop was attacked by birds. The effect was quite severe on grains. (iii) Grain and straw yield. (iv) (a) 1953-N.A. (b) N.A. (c) Nil. (v) (a) Matkota. (b) N.A. (vi) Nil. (vii) Expt. was conducted by A.C.

**5. RESULTS :**

(i) 232.6 lb./ac.

(ii) 71.07 lb./ac.

(iii) Main effect of P alone is significant.

(iv) Av. yield of grain in lb./ac.

	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>	Mean
N <sub>0</sub>	236.5	162.5	270.3	223.1
N <sub>1</sub>	221.3	188.1	263.4	224.3
N <sub>2</sub>	257.2	235.1	259.3	250.5
Mean	238.3	195.2	264.3	232.6

S.E. of any marginal mean = 16.75 lb./ac.  
 S.E. of body of table = 29.02 lb./ac.

**Crop :- Jowar (Kharif).**  
**Site :- Regional Res. Stn., Varanasi.**

**Ref :- U.P. 50(56).**  
**Type :- 'M'.**

**Object :-** To study the effect of N and  $P_2O_5$  applied alone and in combination on the yield of Jowar.

**1. BASAL CONDITIONS :**

(i) (a) N.A. (b) N.A. (c) N.A. (ii) (a) Clay loam (Varanasi type 2). (b) Refer soil analysis, Varanasi. (iii) 7.7.1950. (iv) (a) to (e) N.A. (v) Nil. (vi) N.A. (vii) N.A. (viii) N.A. (ix) N.A. (x) 27.11.1950. to 6.12.1950.

**2. TREATMENTS :**

All combinations of (1) and (2)

(1) 3 levels of N :  $N_0=0$ ,  $N_1=15$  and  $N_2=30$  lb./ac.

(2) 3 levels of  $P_2O_5$  :  $P_0=0$ ,  $P_1=30$  and  $P_2=60$  lb./ac.

N as A/S broadcast and  $P_2O_5$  as Super placed in bands 3"—4" deep in the soil. Date of manuring 7.7.1950.

**3. DESIGN :**

(i)  $3 \times 3$  Fact. in R.B.D. (ii) (a) 9. (b) N.A. (iii) 6. (iv) (a) N.A. (b)  $35.5' \times 27'$ . (v) 1' from plot to plot and 3' from block to block was left out. (vi) Yes.

**4. GENERAL :**

(i) Due to uneven level, badly effected by water logging in the centre. Germination was fair but due to bad weather, the crop could not progress well. (ii) No. (iii) Grain yield. (iv) (a) 1950—1952. (b) and (c) No. (v) (a) Kalyanpur, Bharari, Pratapgarh, Kalai, Aligarh and Atarra. (b) N.A. (vi) A portion of crop was damaged by cattle which has considerably effected final results. (vii) Experiment conducted by Agricultural Chemist.

**5. RESULTS :**

- (i) 1137 lb./ac.  
(ii) 346.4 lb./ac.  
(iii) None of the effects is significant.  
(iv) Av. yield of grain in lb./ac.

	$P_0$	$P_1$	$P_2$	Mean
$N_0$	1166	1060	1136	1121
$N_1$	1288	970	1060	1106
$N_2$	1363	1136	1053	1184
Mean	1272	1055	1083	1137

S.E. of any marginal mean  
S.E. of body of table

= 81.6 lb./ac.  
= 141.4 lb./ac.

**Crop :- Jowar (Kharif).**  
**Site :- Regional Res. Stn., Varanasi.**

**Ref :- U.P. 51(92).**  
**Type :- 'M'.**

**Object :-** To study the effect of N and  $P_2O_5$  applied alone and in combination on the yield of Jowar.

**1. BASAL CONDITIONS :**

(i) (a) to (c) N.A. (ii) (a) Loam (Varanasi type 2). (b) Refer soil analysis, Varanasi. (iii) 10.7.1951. (iv) (a) Two initial ploughings. (b) Broadcast. (c) 10 srs./ac. (d) and (e) N.A. (v) Nil. (vi) N.A. (vii) N.A. (viii) N.A. (ix) N.A. (x) Last week of November 1951.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 3 levels of N :  $N_0=0$ ,  $N_1=15$  and  $N_2=30$  lb./ac.

(2) 3 levels of  $P_2O_5$  :  $P_0=0$ ,  $P_1=30$  and  $P_2=60$  lb./ac.

N as A/S broadcast and  $P_2O_5$  as Super placed 3"—4" deep in furrows behind the plough and then *pata* applied. Date of manuring 9.7.1951.

## 3. DESIGN :

(i) 3×3 Fact. in R.B.D. (ii) (a) 9. (b) N.A. (iii) 6. (iv) (a) N.A. (b) 1/40 ac. (v) A distance of 1' to 3' from plot to plot and 3' to 4' from block to block was left out. (vi) Yes.

## 4. GENERAL :

(i) Growth affected in early stages due to the failure of early monsoon. (ii) Nil. (iii) Grain yield. (iv) (a) 1950—1952. (b) and (c) No. (v) (a) Kanpur, Raya, Kalai, Pratapgarh, Atarra, Chirgaon and Bharari. (b) N.A. (vi) Nil. (vii) Experiment was conducted by Agricultural Chemist.

## 5. RESULTS :

- (i) 638.5 lb./ac.  
 (ii) 144.1 lb./ac.  
 (iii) Main effect of N alone is highly significant.  
 (iv) Av. yield of grain in lb./ac.

	$P_0$	$P_1$	$P_2$	Mean
$N_0$	420.0	593.3	600.0	537.8
$N_1$	653.3	640.0	613.3	635.5
$N_2$	740.0	733.3	753.3	742.2
Mean	604.4	655.5	655.5	638.5

S.E. of any marginal mean

=33.98 lb./ac.

S.E. of body of table

=58.84 lb./ac.

Crop :- Jowar (*Kharif*).

Ref :- U.P. 52(2).

Site :- Regional Res. Stn., Varanasi.

Type :- 'M'.

Object :- To study the effect of N and  $P_2O_5$  applied alone and in combination on the yield of *Jowar*.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) Gram. (c) N.A. (ii) (a) Loam (Varanasi type 2). (b) Refer soil analysis, Varanasi. (iii) 2.7.1952. (iv) (a) 4 ploughings after first shower. (b) to (e) N.A. (v) Nil. (vi) N.A. (vii) N.A. (viii) N.A. (ix) N.A. (x) 26.11.1952 to 4.12.1952.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 3 levels of N :  $N_0=0$ ,  $N_1=15$  and  $N_2=30$  lb./ac.

(2) 3 levels of  $P_2O_5$  :  $P_0=0$ ,  $P_1=30$  and  $P_2=60$  lb./ac.

N as A/S applied on the surface by broadcast and  $P_2O_5$  as Super drilled in furrows behind the plough. Date of manuring 26.6.1952.

## 3. DESIGN :

(i) 3×3 Fact. in R.B.D. (ii) (a) 9. (b) N.A. (iii) 6. (iv) (a), (b) 42'×26'. (v) Nil. (vi) Yes.

## 4. GENERAL :

(i) Not satisfactory. (ii) Nil. (iii) Grain and straw yield. (iv) (a) 1950—1952. (b), (c) No. (v) (a) Kalyanpur, Pratapgarh, Nawabganj, Matkota, Bharari and Atarra. (b) N.A. (vi) Just after sowing when seed had not even completely sprouted there was about 2.5" of rains resulting in water logging at numerous places. The crop subsequently became very patchy and stunted and could not recover afterwards. Flowering was also scanty and the effect of treatments were not appreciable. (vii) Experiment was conducted by A.C.

## 5. RESULTS :

- (i) 246.0 lb./ac.  
 (ii) 55.13 lb./ac.  
 (iii) Main effects of N and P are highly significant. Interaction N×P is not significant.

(iv) Av. yield of grain in lb./ac.

	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>	Mean
N <sub>0</sub>	139.6	186.2	172.9	166.2
N <sub>1</sub>	192.8	219.4	252.6	221.6
N <sub>2</sub>	285.9	332.4	432.1	350.1
Mean	206.1	246.0	285.9	246.0

S.E. of any marginal mean = 12.99 lb./ac.  
 S.E. of body of table = 22.51 lb./ac.

**Crop :-Jowar (Kharif).****Ref :-U.P. 51(228).****Site :-Kannauj, Chibbraman (Farukhabad).****Type :-'M'.****Object :-**To study the optimum dose of N and P<sub>2</sub>O<sub>5</sub> for *Jowar*.**1. BASAL CONDITIONS :**

(i) (a) N.A. (b) N.A. (c) N.A. (ii) Sandy loam to *Domat* and *Balui Domat* (iii) N.A. (iv) Improved.  
 (v) (a) to (c) N.A. (vi) N.A. (vii) N.A. (viii) N.A. (ix) N.A. (x) N.A.

**2. TREATMENTS :**

1. Control. (no manure)
2. 15 lb./ac. of N as A/S.
3. 15 lb./ac. of N as A/S+30 lb./ac. of P<sub>2</sub>O<sub>5</sub> as Super.

**3. DESIGN :**

(i), (ii) Fields selected randomly in a randomly selected village in the District. No. of villages 30. (iii) (a) N.A. (b) N.A. (iv) N.A.

**4. GENERAL :**

(i) N.A. (ii) N.A. (iii) Grain yield. (iv) (a) No. (b), (c) N.A. (v) N.A. (vi) Nil. (vii) Experiment was conducted by A.C. on cultivators' field.

**5. RESULTS :**

- (i) 392 lb./ac.  
 (ii) 43.12 lb./ac.  
 (iii) Treatment differences are highly significant.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	340
2.	392
3.	443
S.E./mean	=7.87 lb./ac.

**Crop :-Jowar (Kharif).****Ref :-U.P. 50(240),****Site :-Mahrani Lalitpur (Jhansi).****Type :-'M'.****Object :-**To study the optimum dose of N and P<sub>2</sub>O<sub>5</sub> for *Jowar*.**1. BASAL CONDITIONS :**

(i) (a) to (c) N.A. (ii) N.A. (iii) N.A. (iv) Improved. (v) (a) to (c) N.A. (vi) July. (vii) N.A. (viii) N.A.  
 (ix) N.A. (x) December.

**2. TREATMENTS :**

1. Control. (no manure).
2. 15 lb./ac. of N as A/S.
3. 15 lb./ac. of N as A/S+30 lb./ac. of P<sub>2</sub>O<sub>5</sub> as Super.

**3. DESIGN :**

(i), (ii) Fields selected randomly in a randomly selected village. No. of villages—8. (iii) (a) N.A. (b) N.A.  
 (iv) N.A.

## 4. GENERAL :

(i) Normal. (ii) N.A. (iii) Grain yield. (iv) (a) No. (b), (c) N.A. (v) N.A. (vi) Nil. (vii) The expt. was conducted by A.C. on cultivator's fields.

## 5. RESULTS :

- (i) 707 lb./ac.  
 (ii) 40.56 lb./ac.  
 (iii) Treatment differences are highly significant.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	644
2.	711
3.	766
S.E./mean	=14.34 lb./ac.

Crop :- Jowar (*Kharif*).

Ref :- U.P. 51(232).

Site :- Jhansi, Lalitpur and Moth (Jhansi).

Type :- 'M'.

Object :- To study the optimum dose of N and  $P_2O_5$  for *Jowar*.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) N.A. (c) N.A. (ii) N.A. (iii) N.A. (iv) Improved. (v) (a) to (e) N.A. (vi) N.A. (vii) N.A. (viii) N.A. (ix) N.A. (x) N.A.

## 2. TREATMENTS :

- Control (no manure).
- 15 lb./ac. of N as A/S.
- 15 lb./ac. of N as A/S+30 lb./ac. of  $P_2O_5$  as Super.

## 3. DESIGN :

(i), (ii) Fields selected randomly in a randomly selected village in the district. No. of villages—29. (iii) (a), (b) N.A. (iv) N.A.

## 4. GENERAL :

(i) N.A. (ii) N.A. (iii) Grain yield. (iv) (a) No. (b) and (c) N.A. (v) N.A. (vi) Nil. (vii) The expt. conducted by A.C. in cultivator's fields.

## 5. RESULTS :

- (i) 968 lb./ac.  
 (ii) 63.41 lb./ac.  
 (iii) Treatment differences are highly significant.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	843
2.	1003
3.	1057
S.E./mean	=11.77 lb./ac.

Crop :- Jowar (*Rabi*).

Ref :- U.P. 51(233).

Site :- Moth, Man Ranipur and Gortha (Jhansi).

Type :- 'M'.

Object :- To draw out a fertilizer schedule for agriculturally important soil types.

## 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) *Parwa* and *Domat*. (iii) N.A. (iv) Improved. (v) (a) to (c) N.A. (vi) N.A. (vii) Generally irrigated. (viii) N.A. (ix) N.A. (x) N.A.

## 2. TREATMENTS :

- Control (no manure).
- 60 lb./ac. of  $P_2O_5$ .

## 3. DESIGN :

(i) and (ii) R.B.D. in which villages have been taken as replications (No of villages=12). Also in each village control was tried in one plot while P was tried in two plots. Field selected randomly in a randomly selected village in the Distt. (iii) (a) N.A. (b) N.A. (iv) N.A.

## 4. GENERAL :

(i) N.A. (ii) N.A. (iii) Yield of grain. (iv) (a) No. (b) N.A. (c) N.A. (v) N.A. (vi) Nil. (vii) The expt. was conducted by A.C. on cultivator's fields.

## 5. RESULTS :

(i) 628 lb./ac.  
 (ii) 50.19 lb./ac.  
 (iii) Treatment differences are highly significant.  
 (iv) Average yield of grain in lb./ac.

Treatment	Av. yield
1.	505
2.	690
S.E. for control	=14.49 lb./ac.
S.E. for P mean	=10.24 lb./ac.

Crop :- Jowar (*Kharif*).

Ref :- U.P. 50(245).

Site :- Kanpur and Bilhaur (Kanpur).

Type :- 'M'.

Object :- To study the optimum dose of N and  $P_2O_5$  for Jowar.

## 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) N.A. (iii) N.A. (iv) Improved. (v) (a) to (e) N.A. (vi) July. (vii) N.A. (viii) N.A. (ix) N.A. (x) November.

## 2. TREATMENTS :

1. Control (no manure).  
 2. 15 lb./ac. of N as A/S.  
 3. 15 lb./ac. of N as A/S+30 lb./ac. of  $P_2O_5$  as Super.

## 3. DESIGN :

(i) and (ii) Fields selected randomly in a randomly selected village in the district. No. of villages—6. (iii) (a) and (b) N.A. (iv) N.A.

## 4. GENERAL :

(i) Good crop. (ii) N.A. (iii) Grain yield. (iv) (a) No. (b) and (c) N.A. (v) N.A. (vi) Nil. (vii) The experiment was conducted by Agricultural Chemist on cultivators' fields.

## 5. RESULTS :

(i) 789 lb./ac.  
 (ii) 41.09 lb./ac.  
 (iii) Treatment differences are highly significant.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	680
2.	793
3.	893
S.E./mean	=16.77 lb./ac.

Crop :- Jowar (*Kharif*).

Ref :- U.P. 49(189).

Site :- Ghatanpur, Kanpur (Kanpur).

Type :- 'M'.

Object :- To study the optimum dose of N and  $P_2O_5$  for Jowar.

## 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) Kanpur type 1, type 2 and type 3 soils. (iii) N.A. (iv) Improved. (v) (a) As practised locally. After application of manure, the field was levelled by drawing a *pata*. (b) Seeds sown in lines parallel to the fertilizer band. (c) N.A. (d) At a distance of 1"–2" away from the fertilizer line. (e) N.A. (vi) 10.7.1949 to 28.11.1949. (vii) N.A. (viii) N.A. (ix) N.A. (x) N.A.

## 2. TREATMENTS :

1. Control (no manure).  
 2. 15 lb./ac. of N as A/S.  
 3. 15 lb./ac. of N as A/S+30 lb./ac. of  $P_2O_5$  as Super.



## 3. DESIGN :

(i) and (ii) Villages selected in the district and unreplicated experiment laid out in 24 villages or fields were laid out, but only 17 trials were harvested. (iii) (a) N.A. (b) N.A. but is taken to be about 1/40 ac. (iv) N.A.

## 4. GENERAL :

(i) Stand of the crop was from good to satisfactory. (ii) N.A. (iii) Grain and straw yield. (iv) (a) No. (b) and (c) N.A. (v) N.A. (vi) Nil. (vii) The expt. was conducted by Agricultural Chemist, on cultivators' fields.

## 5. RESULTS :

(i) 516 lb./ac.

(ii) 57.55 lb./ac.

(iii) Treatment differences are highly significant.

(iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	388
2.	517
3.	642
S.E./mean	=13.96 lb./ac.

Crop :-Jowar (*Kharif*).

Ref :-U.P. 50 (243).

Site :-Varanasi and Chandauli (Varanasi).

Type :-'M'.

Object :-To study the optimum dose of N and  $P_2O_5$  for *Jowar*.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) N.A. (c) N.A. (ii) N.A. (iii) N.A. (iv) Improved. (v) (a) to (c) N.A. (vi) July. (vii) N.A. (viii) N.A. (ix) N.A. (x) November.

## 2. TREATMENTS :

- Control (no manure).
- 15 lb./ac. of N as A/S.
- 15 lb./ac. of N as A/S+30 lb./ac. of  $P_2O_5$  as Super.

## 3. DESIGN :

(i) and (ii) Fields selected randomly in a randomly selected village. No. of villages—3. (iii) (a) and (b) N.A. (iv) N.A.

## 4. GENERAL :

(i) Generally good. (ii) N.A. (iii) Grain yield. (iv) (a) No. (b) N.A. (c) N.A. (v) N.A. (vi) Nil. (vii) The experiment was conducted by Agricultural Chemist on cultivators' fields.

## 5. RESULTS :

(i) 768 lb./ac.

(ii) 224.7 lb./ac.

(iii) Treatments do not differ significantly.

(iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	459
2.	818
3.	1027
S.E./mean	=129.7 lb./ac.

Crop :-Jowar (*Kharif*).

Ref :-U.P. 53 (409)

Stte :- Kiehha. (Nainital)

Type :-'M'.

Object :-To study the optimum dose of N and  $P_2O_5$  for *Jowar*.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) Barley. (c) N.A. (ii) Sandy loam in one trial and loam (slightly calcareous) in one trial. (iii) Nil. (iv) N.A. (v) (a) to (e) N.A. (vi) 7.7.1953 and 8.7.1953. (vii) Unirrigated. (viii) N.A. (ix) N.A. (x) N.A.

**2. TREATMENTS :**

1. Control.
  2. 15 lb./ac. of N.
  3. 15 lb./ac. of N. + 30 lb./ac. of  $P_2O_5$ .
- N as A/S broadcast and  $P_2O_5$  as Super applied behind the plough.

**3. DESIGN :**

(i) and (ii) One village was selected in the tahsil. 2 fields were selected in the village. In each field, 3 plots were taken to which 3 treatments were assigned. (iii) (a) 55' × 66'. (b) 33' × 33'. (iv) N.A.

**4. GENERAL :**

(i) Good in 1 trial. N.A. in 1 trial. (ii) N.A. (iii) Grain and straw yield. (iv) (a) No. (b) and (c) N.A. (v) N.A. (vi) Light kaus weeds in one trial. (vii) Expt. Conducted by A.C. on cultivators' fields.

**5. RESULTS :**

- (i) 1962 lb./ac.
- (ii) 193.3 lb./ac.
- (iii) Treatment differences are not significant.
- (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	1641
2.	1893
3.	2352
S.E./mean	=136.7 lb./ac.

**Crop :- Jowar (*Kharif*).**

**Ref :- U.P. 52(324).**

**Site :- Allahabad Agri. Institute, Allahabad.**

**Type :- 'C'.**

**Object :- To study the optimum seed rate and spacing for Jowar.**

**1. BASAL CONDITIONS :**

(i) (a) to (c) N.A. (ii) (a) Sandy loam and Clay loam. (b) Refer soil analysis, Allahabad. (iii) 30.6.1952. (iv) (a) N.A. (b) N.A. (c) and (d) As per treatments. (e) N.A. (v) N.A. (vi) N.A. (vii) N.A. (viii) N.A. (ix) 24.73°. (x) 22.9.1952.

**2. TREATMENTS :**

All combinations of (1) and (2)

- (1) 3 seed rates :  $R_1=8$ ,  $R_2=10$  and  $R_3=12$  srs./ac.
- (2) 5 spacing between rows :  $S_1=1\frac{1}{2}'$ ,  $S_2=2'$ ,  $S_3=2\frac{1}{2}'$ ,  $S_4=3'$  and  $S_5=$ Broadcasting.

**3. DESIGN :**

(i) 3 × 5 Fact. in R.B.D. (ii) (a) 15. (b) 180' × 48'. (iii) 4. (iv) (a) and (b) 48' × 12'. (v) Nil. (vi) Yes.

**4. GENERAL :**

(i) N.A. (ii) N.A. (iii) Green fodder yield (harvested at booting stage). (iv) (a) No. (b) No. (c) Nil. (v) (a), (b) No. (vi) Nil. (vii) Experiment conducted by the Head, Agronomy Department, Allahabad, Agricultural Institute, Allahabad.

**5. RESULTS :**

- (i) 34467 lb./ac.
- (ii) 4884.44 lb./ac.
- (iii) None of the effects is significant.
- (iv) Av. yield of green fodder in lb./ac.

	$R_1$	$R_2$	$R_3$	Mean
$S_1$	35276	36501	39807	37195
$S_2$	39165	32923	41926	38005
$S_3$	36112	32378	30473	32988
$S_4$	28489	33448	36501	32813
$S_5$	34284	29909	29811	31335
Mean	34665	33032	35704	34467

S.E. of marginal mean of R	=1092.36 lb./ac.
S.E. of marginal mean of S	=1014.23 lb./ac.
S.E. of body of table	=2442.22 lb./ac.

Crop :-Jowar (*Kharif*).

Ref :-U.P. 53(365).

Site :-Allahabad Agri. Institute, Allahabad.

Type :-'C'.

Object :-To find out the optimum spacing for *Jowar*.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) Gram. (c) N.A. (ii) (a) Sandy loam to Clay loam. (b) Refer soil analysis, Allahabad. (iii) 9.7.1953. (iv) (a) Ploughing on 16.6.1953 ; on 7.7.1953 field ploughed and harrowed before resowing. (b) Sown by *Malabasa*. (c) 10 srs./ac. (for all spacings). (d) As per treatments. (e) N.A. (v) N.A. (vi) Farm selection (N.A.) (vii) N.A. (viii) On 1 and 3.8.1953 weeding and interculture (weeding in broadcasted plots with *khurpi* and interculture with hand cultivator). (ix) 48.03". (x) 6.10.1953.

2. TREATMENTS :

5 spacings between rows :  $S_1=1.5'$ ,  $S_2=2.0'$ ,  $S_3=2.5'$ ,  $S_4=3.0'$  and  $S_5$ =Broadcast.

3. DESIGN :

(i) Latin square. (ii) (a) 5. (b) 132'×34'. (iii) 5. (iv) (a) 31'×24'. (b) 1/80.698 acre. (v) N.A. (vi) Yes.

4. GENERAL :

(i) N.A. (ii) N.A. (iii) Germination and green fodder yield. (iv) (a) No. (b) No. (c) Nil. (v) (a), (b) No. (vi) Nil. (vii) The crop was sown on 24.6.1953, but the seed did not germinate well in many of the plots. So the field was ploughed and harrowed and the sowing was done again. (First sowing discarded). Field Record Register and the "Allahabad Farmer" were consulted. Experiment conducted by the Head, Agronomy Department, Allahabad Agricultural Institute, Allahabad.

5. RESULTS :

- (i) 15405 lb./ac.  
(ii) 3701.14 lb./ac  
(iii) Treatment differences are not significant.  
(iv) Av. yield of green fodder in lb./ac.

Treatment	Av. yield
$S_1$	17211
$S_2$	16431
$S_3$	16431
$S_4$	12066
$S_5$	14887
S.E./mean	=1658.78 lb./ac.

Crop :-Jowar.

Ref :-U.P. 49(192).

Site :-State Mechanised Farm, Bharari.

Type :-'D'.

Object :-To study the dressing of seed with Agrosan G.N. vs. cold water and solar treatment for the control of grain smut of *Jowar*.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) and (b) N.A. (iii) 13.7.1949. (iv) (a) to (e) N.A. (v) N.A. (vi) N.A. (vii) N.A. (viii) N.A. (ix) N.A. (x) N.A.

2. TREATMENTS :

- Control.
- Treated with Agrosan G.N.
- Treated with Ceresan.
- Treated with cold water and dried in sun.
- Treated with cold water and dried in shade.

3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 6. (iv) (a) N.A. (b) 54'×20'. (v) N.A. (vi) Yes.

## 4. GENERAL :

- (i) Satisfactory. (ii) Attack of smut. (iii) % of infection and grain yield. (iv) (a) 1949—1950. (b) No. (c) N.A. (v) (a) Kanpur, Gorakhpur and Meerut. (b) N.A. (vi) Nil. (vii) Experiment conducted by P.P.

## 5. RESULTS :

- (i) 8.37 degrees.  
 (ii) 6.5939 degrees.  
 (iii) Treatment differences are highly significant.  
 (iv)

Treatment	Mean angle	Transformed back mean % of infection
1.	23.58	16.34
2.	0.00	0.50
3.	9.06	2.98
4.	5.34	1.35
5.	3.89	0.95

S.E./mean = 2.6919 degrees

Note : - (1) Mean (angles) after transformation back to percentages are given after applying bias correction and hence 0.50 mean percent corresponds to 0.00 mean angle.

(2) The data is converted into  $\sin^{-1} \sqrt{P}$  and then analysed where P is percent infection.

Crop :- Jowar (*Kharif*).

Ref :- U.P. 48(92).

Site :- Govt. Res. Farm, Kanpur.

Type :- 'D'.

Object :- To study the dressing of seed with Agrosan G.N. vs cold water and solar treatments for the control of grain smut of Jowar.

## 1. BASAL CONDITIONS :

- (i) (a) to (c) N.A. (ii) (a) Loam. (b) N.A. (iii) N.A. (iv) (a) to (e) N.A. (v) N.A. (vi) N.A. (vii) N.A. (viii) N.A. (ix) N.A. (x) N.A.

## 2. TREATMENTS :

Seeds treated with :

- Control.
- Agrosan G.N.
- Ceresan.
- Cold water treatment and dried in sun.
- Cold water treatment and dried in shade.

## 3. DESIGN :

- (i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 6. (iv) (a) 32'×39.5'. (b) 30'×38'. (v) N.A. (vi) Yes.

## 4. GENERAL :

- (i) N.A. (ii) N.A. (iii) % infection and grain yield. (iv) (a) 1948—1950. (b) No. (c) N.A. (v) (a) Gorakhpur and Meerut. (b) N.A. (vi) Nil. (vii) The expt. was conducted by P.P.

## 5. RESULTS :

(i) to (iv)

Treatment	Av. yield of grain in lb./ac.	Mean value of $\log_e (1+x)$ /plot	Mean % infection/plot
1.	708	0.33929	0.45
2.	825	0.00000	0.00
3.	786	0.00000	0.00
4.	747	0.00000	0.00
5.	707	0.00000	0.00
G.M.	755	0.06786	0.09
S E./mean	105.61	0.051575	

On the basis of yield analysis : treatment differences [are not significant. On the basis of analysis of  $\log_e (1+x)$  ; treatment differences are highly significant.

Note :- The data has been converted into  $\log_e (1+x)$  and then analysed, where x is % infection.

Crop :- Jowar (*Kharif*).

Ref :- U.P. 49(195).

Site :- Govt. Res. Farm, Kanpur.

Type :- 'D'.

Object :- To study the dressing of seed with Agrosan G.N., vs. cold water and solar treatments for control of grain smut of *Jowar*.

## 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Loam. (b) N.A. (iii) 28.6.1949. (iv) (a) to (c) N.A. (v) N.A. (vi) N.A. (vii) N.A. (viii) N.A. (ix) N.A. (x) N.A.

## 2. TREATMENTS :

Seeds treated with :

1. Control.
2. Treated with Agrosan G.N.
3. Treated with Ceresan.
4. Treated with cold water and dried in sun.
5. Treated with cold water and dried in shade.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 6. (iv) (a) N.A. (b) 35'×33' for replication 1, 2 and 3 and 37'×28' for replication 4, 5 and 6. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) Satisfactory, (ii) N.A. (iii) % infection and grain yield. (iv) (a) 1948—1950. (b) No. (c) N.A. (v) (a) Meerut, Gorakhpur and Bharari. (b) N.A. (vi) Nil. (vii) The experiment was conducted by P.P.

## 5. RESULTS :

(i) to (iv)

Treatment	Av. yield of grain in lb./ac.	Mean value in $\log_e (1+x)/\text{plot}$	Av. % infection per plot
1.	357.9	2.12054	9.37
2.	553.3	0.00000	0.00
3.	501.3	0.00000	0.00
4.	490.3	0.26143	0.35
5.	529.4	0.12841	0.16
G.M.	486.4	0.50208	1.98
S.E./mean	38.44 lb./ac.	0.143870	

Note :- On the basis of yield analysis, treatment differences are significant. On the basis of analysis of  $\log_e (1+x)$ , treatment differences are highly significant. The % infection (i.e. x) was converted to  $\log_e (1+x)$  and then analysed.

Crop :- Jowar (*Kharif*).

Ref :- U.P. 50(258).

Site :- Govt. Res. Farm Kanpur.

Type :- 'D'.

Object :- To study the dressing of seed with Agrosan G.N. and Ceresan vs. cold water and shade and cold solar treatment for the control of *Jowar* smut.

## 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Loam. (b) N.A. (iii) 11.7.1950. (iv) (a) to (c) N.A. (v) N.A. (vi) N.A. (vii) N.A. (viii) N.A. (ix) N.A. (x) N.A.

## 2. TREATMENTS :

1. Control (infection with smut spores).
2. Treated with Agrosan G.N.
3. Treated with Ceresan.
4. Treated with cold water and dried in sun.
5. Treated with cold water and dried in shade.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 6. (iv) (a) N.A. (b) 44'×22'. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Attack of smut. (iii) Percentage of infection. (iv) (a) 1948—1950. (b) and (c) N.A. (v) (a) and (b) N.A. (vi) Nil. (vii) The experiment was conducted by P.P.

## 5. RESULTS :

- (i) 3.10 degree  
 (ii) 1.5295 degree  
 (iii) Treatment differences are highly significant.  
 (iv)

Treatment	Mean angle	Transformed back mean %
1.	10.50	3.77
2.	0.00	0.50
3.	0.80	0.52
4.	0.95	0.53
5.	3.23	0.82

S.E./mean = 0.6244 degree

Note :—Transformed back mean % are given after applying bias correction and that is why 0.05 mean % corresponds to 0.00 mean angle. The data has been converted into  $\sin^{-1}\sqrt{p}$  and then analysed where  $p = \% \text{ infection}$ .

Crop :- Jowar (*Kharif*).

Ref :- U.P. 53 (162).

Site :- Govt. Res. Farm, Kanpur.

Type :- 'D'.

Object :—To conduct insecticidal trials against *Jowar* stem-borer.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) (a) Loam (b) N.A. (iii) 21.7.1953. (iv) (a) one ploughing and harrowing. (b) to (e) N.A. (v) Nil. (vi) Local. (vii) Unirrigated. (viii) One hoeing with desi plough. (ix) 33.60° (July to Nov.) (x) 6.12.1953.

## 2. TREATMENTS :

1. Spraying with 0.25% D.D.T.
2. Spraying with 0.25% B.H.C.
3. Dusting with 5.0% B.H.C.
4. Dusting with 5.0% D.D.T.
5. Control (no treatment).

Spray liquid at 40 and 60 gallons and dust at 20 and 30 lb./ac. in first and second application respectively.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 5. (iv) (a) 29.90' × 25'. (b) 25.90' × 21' (v) 2' ring round the net plot. (vi) Yes.

## 4. GENERAL :

(i) Very poor and lodged also. (ii) Dusting and spraying was done on 26.8.1953 to 16.9.1953. (iii) % of plants attacked and no. of borers formed on both the above dates. (iv) (a) 1953—continued. (b) N.A. (c) N.A. (v) (a) No. (b) N.A. (vi) Nil. (vii) The experiment was conducted by Ento. (K). The reduction in the incidence and population of the pest in the treated plots and control was determined one week after last treatment and at harvest by dissecting 50 plants which were cut from ground level from each plot. Transformation done after applying bias correction.

## 5. RESULTS :

(i) to (iv).

Treatment	Mean Angle in degrees % of affected plants	Transformed back mean %	Av. number of borers in 50 affected plants
1.	37.32	36.88	98.60
2.	37.50	37.19	102.60
3.	38.02	38.05	105.40
4.	38.74	39.28	107.20
5.	41.54	44.04	114.60
G.M.	38.62	—	105.68
S.E./mean	1.6643	—	6.9602
Significance	N.S.	—	N.S.

Crop :- Jowar (*Kharif*).

Ref :- U.P. 48 (91).

Site :- Sugarcane Res. Sub-Stn., Kunraghat.

Type :- 'D'.

Object :- To study the dressing of seed with Agrosan G.N. and Ceresan vs cold water and solar treatment on control of *Jowar* smut.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) N.A. (c) N.A. (ii) (a) and (b) N.A. (iii) N.A. (iv) (a) to (e) N.A. (v) N.A. (vi) N.A. (vii) N.A. (viii) N.A. (ix) N.A. (x) N.A.

## 2. TREATMENTS :

Seeds treated with :

1. Control.
2. Agrosan G.N.
3. Ceresan.
4. Cold water treated and dried in sun.
5. Cold water treated and dried in shade.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 6. (iv) (a) 32'×39.5'. (b) 30'×38'. (v) Distances between plots= 4'×3' on either sides. Field border 4' lengthwise and 5' breadthwise. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) Under study. (iii) % infection and yield of grain. (iv) (a) 1948—1950. (b) and (c) No. (v) (a) Kanpur and Meerut. (b) N.A. (vi) Nil. (vii) Experiment conducted by P.P.

## 5. RESULTS :

(i) to (iv).

Treatment	Av. yield of grain in lb./ac	Mean value of $\log_e (1+x)$ /plot	Av. % infection/plot
1.	778	0.36590	0.78
2.	1046	0.00000	0.00
3.	937	0.00000	0.00
4.	1094	0.00000	0.00
5.	969	0.00000	0.00
G.M.	965	0.07318	0.16
S.E./mean	79.85	0.11724	

Note :- On the basis of yield analysis treatment differences are not significant. On the basis of analysis of  $\log_e (1+x)$  treatment differences are not significant. The % infection (x) has converted to  $\log_e (1+x)$  and then analysed.

Crop :- Jowar (*Kharif*).

Ref :- U.P. 49(194).

Site :- Sugarcane Res. Sub-Stn., Kunraghat.

Type :- 'D'.

Object :- To study the dressing of seed with Agrosan G.N. vs cold water and solar treatment for the control of grain smut of *Jowar*.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) N.A. (c) N.A. (ii) (a) N.A. (b) N.A. (iii) 8.7.1949. (iv) (a) to (e) N.A. (v) N.A. (vi) N.A. (vii) N.A. (viii) N.A. (ix) N.A. (x) N.A.

## 2. TREATMENTS :

1. Control.
2. Treated with Agrosan G.N.
3. Treated with Ceresan.
4. Treated with cold water and dried in sun.
5. Treated with cold water and dried in shade.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 6. (iv) (a) N.A. (b) 54'×20'. (v) Plot to plot distance—4' and 5' on either side. Field border—4'. (vi) Yes.

## 4. GENERAL :

(i) Satisfactory. (ii) N.A. (iii) % infection and grain yield. (iv) (a) 1948—1950. (b), (c) No. (v) (a) Kanpur, Meerut and Bharari. (b) N.A. (vi) Nil. (vii) Experiment was conducted by P.P.

## 5. RESULTS :

(i) to (iv)

Treatment	Av. yield	Mean value of $\log_e (1+x)$ per plot	Av. % infection per plot
1.	1037	0.97788	1.70
2.	1064	0.00000	0.00
3.	1053	0.00000	0.00
4.	1039	0.00000	0.00
5.	1002	0.10785	0.15
G.M.	1039	0.21715	0.37
S.E./mean	61.12	0.061485	

On the basis of the yield analysis treatment differences are not significant.

On the basis of analysis of  $\log_e (1+x)$  treatment differences are highly significant.

Note :—The % infection (x) was converted to  $\log_e (1+x)$  and then analysed.

Crop :-Jowar (*Khari*).

Ref :-U.P. 50(257).

Site :-Sugarcane Res. Sub-Stn., Kunraghat.

Type :-'D'.

Object :—To study the dressing of seed with Agrosan G.N. and Ceresan vs cold water and solar treatment for the control of *Jowar* smut.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) N.A. (c) N.A. (ii) (a) and (b) N.A. (iii) 6.7.1950. (iv) (a) to (e) N.A. (v) N.A. (vi) N.A. (vii) N.A. (viii) N.A. (ix) N.A. (x) N.A.

## 2. TREATMENTS :

- Control (inoculated with smut spores).
- Treated with Agrosan G.N.
- Treated with Ceresan.
- Treated with cold water and dried in sun.
- Treated with cold water and dried in shade.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 6. (iv) (a) N.A. (b) 54'×20'. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Attack of smut. (iii) Percentage of infection. (iv) (a) 1948—1950. (b) N.A. (c) N.A. (v) (a), (b) N.A. (vi) Nil. (vii) Experiment conducted by P.P.

## 5. RESULTS :

- 3.57 degree.
- 2.2028 degree.
- Treatment differences are highly significant.
- Av. yield of grain in lb./ac.

Treatment	Mean angle	Transformed back mean percentage of infection
1.	11.73	4.56
2.	0.00	0.50
3.	0.00	0.50
4.	4.08	1.00
5.	2.02	0.62
S.E./mean	=0.8993	

Note :—Transformed back mean percentages of infection are given after applying bias correction and that is why 0.5 mean percent infection corresponds to 0.00 mean angle.

The data is converted into  $\sin^{-1}\sqrt{p}$  and then analysed.



Crop :- Jowar (*Kharif*).  
Site :- Regional Res. Stn., Meerut.

Ref :- U.P. 48(93).  
Type :- 'D'.

Object :- To study the dressing of seed with Agrosan G.N. vs cold water and solar treatment for the control of grain smut of *Jowar*.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) and (b) N.A. (iii) N.A. (iv) (a) to (e) N.A. (v) N.A. (vi) N.A. (vii) N.A. (viii) N.A. (ix) N.A. (x) N.A.

2. TREATMENTS :

Seeds treated with :

1. Control.
2. Agrosan G.N.
3. Ceresan.
4. Cold water treatment and dried in sun.
5. Cold water treatment and dried in shade.

3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 6. (iv) (a) 32'×39.5'. (b) 30'×38'. (v) Distance between plots 4' and 3' on either side of the plot. Field border 4' length wise and 5' breadth wise. (vi) Yes.

4. GENERAL :

(i) N.A. (ii) N.A. (iii) % of infection and grain yield. (iv) (a) 1948—1950. (b) and (c) No. (v) (a) Gorakhpur and Kanpur. (b) N.A. (vi) Nil. (vii) Experiment conducted by P.P.

5. RESULTS :

(i) to (iv)

Treatment	Av. yield of grain in lb./ac.	Mean value of $\log_e (1+x)/\text{plot}$	Mean % infection/plot
1.	604	1.60104	4.24
2.	791	0.61249	0.92
3.	714	0.62677	1.04
4.	649	1.30608	2.95
5.	583	0.81990	1.54
G.M.	668	0.99326	2.14
S.E./mean	=30.80	0.138628	

Note :- On the basis of yield analysis—Treatment differences [are highly significant. On the basis of  $\log_e (1+x)$  analysis where x is % infection—Treatment differences are highly significant.

Crop :- Jowar (*Kharif*).  
Site :- Regional Res. Stn., Meerut.

Ref :- U.P. 49(196).  
Type :- 'D'.

Object :- To study the dressing of seed with Agrosan G.N. vs cold water and solar treatment for the control of grain smut of *Jowar*.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) to (b) N.A. (iii) 5.7.1949. (iv) (a) to (e) N.A. (v) N.A. (vi) N.A. (vii) N.A. (viii) N.A. (ix) N.A. (x) N.A.

2. TREATMENTS :

1. Control.
2. Treated with Agrosan G.N.
3. Treated with Ceresan.
4. Treated with cold water and dried in sun.
5. Treated with cold water and dried in shade.

3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 6. (iv) (a) N.A. (b) 54'×20'. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) N.A. (iii) % infection and yield of grain. (iv) (a) 1948—1950. (b) No. (c) No. (v) (a) Kanpur, Gorakhpur and Bharari. (b) N.A. (vi) Nil. (vii) The % infection (x) was converted to  $\log_e (1+x)$  and then analysed, experiment conducted by P.P.

## 5. RESULTS :

(i) to (iv) Treatments	Av. yield of grain in lb./ac.	Mean value of $\log_e (1+x)/\text{plot}$	Av. %infection/plot
1.	421.6	3.14036	23.77
2.	496.0	0.68799	1.14
3.	481.2	0.07033	0.08
4.	401.7	0.33296	0.43
5.	307.5	0.20397	0.26
G.M.	421.6	0.88712	5.14
S.E./mean	38.40	0.111722	
Significance	Significant	Highly significant	

Crop :- Jowar (*Kharif*).

Ref :- U.P. 50(256).

Site :- Regional Res. Stn., Meerut.

Type :- 'D'.

Object :- To study the dressing of seed with Agrosan G.N. vs cold water and solar treatment for the control of grain smut of *Jowar*.

## 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) and (b) N.A. (iii) N.A. (iv) (a) to (e) N.A. (v) N.A. (vi) N.A. (vii) N.A. (viii) N.A. (ix) N.A. (x) N.A.

## 2. TREATMENTS :

- Control (inoculated with smut spores).
- Treated with Agrosan G.N.
- Treated with Ceresan.
- Treated with cold water and dried in sun.
- Treated with cold water and dried in shade.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 6. (iv) (a) N.A. (b) 36' x 30'. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) Poor. (ii) Attack of smut. (iii) Percentage of infection. (iv) (a) 1948—1950. (b) and (c) N.A. (v) (a) and (b) N.A. (vi) Nil. (vii) The data has been converted into  $\sin^{-1}\sqrt{p}$  and then analysed. Transformed back, mean % are given after applying bias correction. Experiment conducted by P.P.

## 5. RESULTS :

(i) to (iv).

Treatment	Mean angle	Transformed back mean % of infection
1.	23.47	16.24
2.	0.00	0.50
3.	2.19	0.65
4.	11.80	4.66
5.	8.70	2.78
G.M.	9.23	
S.E./mean	=1.2293	
Significance	Highly significant.	

Crop :- Jowar (*Kharif*).

Ref :- U.P. 49(209).

Site :- Azamgarh.

Type :- 'D'.

Object :- To test efficacy of Hexyclan dust against the *Kharif* grass hopper (*Hiroglyphus banian* Fabr).

## 1. BASAL CONDITIONS :-

(i) (a) to (c) N.A. (ii) N.A. (iii) N.A. (iv) N.A. (v) (a) to (e) N.A. (vi) N.A. (vii) N.A. (viii) N.A. (ix) N.A. (x) N.A.

**2. TREATMENTS :**

1. No treatment (Control)
2. Dusting with 5% Hexyclan (5% B.H.C.) at 40 lb./ac.
3. Dusting with 5% B.H.C. (Gamaxene D. 025) at 40 lb./ac.
4. Dusting with 5% D.D.T. at 40 lb./ac.
5. Treating with poison bait (Sodium fluosilicate 1 seer, carbon 20 seers, molasses 2½ seers and water 7 seers).
6. Dusting with B.H.C. (5% Hexyclan) at 20 lb./ac.
7. Dusting with 5% B.H.C. (5% Hexyclan) at 10 lb./ac.
8. Spraying with 1% D.D.T. suspension at 150 gallon/ac.

**3. DESIGN :**

(i) and (ii) N.A. (R.B.D. with 4 replications). (iii) (a) N.A. (b) 48' × 18'. (iv) N.A.

**4. GENERAL :**

(i) N.A. (ii) N.A. (iii) Population of grass hopper before and after application of treatments. (iv) (a) No. (b) N.A. (c) N.A. (v) N.A. (vi) Nil. (vii) The data was converted into  $\sin^{-1} \sqrt{P}$  and then analysed; transformed back means have been presented after applying bias correction. The experiment was conducted by Ento. (K) on cultivators' fields.

**5. RESULTS :**

- (i) 60.70 degree.  
 (ii) 4.3704 degree.  
 (iii) Treatment differences are highly significant.  
 (iv)

Treatments	Mean angle	Transformed back mean % of reduction of grass hoppers seen at 16 yards of walk, 36 hours after application of treatments.
1.	18.46	10.40
2.	79.05	95.94
3.	78.52	95.54
4.	64.52	81.19
5.	48.06	55.25
6.	72.90	90.94
7.	49.77	58.22
8.	74.32	92.27
S.E./mean	=2.1852 degree	

**Crop :-Jowar (Kharif).**

**Site :-Govt. Res. Farm, Kanpur.**

**Ref :-U.P. 51(242)**

**Type :-'CD'.**

**Object :-To study the effect of seed dressing and sowing dates on the incidence of Jowar smut.**

**1. BASAL CONDITIONS :**

(i) (a) to (c) N.A. (ii) (a) and (b) N.A. (iii) As per treatments. (iv) (a) to (e) N.A. (v) N.A. (vi) 8-B. (vii) to (x) N.A.

**2. TREATMENTS :**

All combinations of (1) and (2)

(1) 2 methods of seed dressing:  $M_1$ =control (seeds inoculated with smut spores) and  $M_2$ =seeds treated with Agrosan G.N.

(2) 8 dates of sowing:  $D_1=27.6.1951$ ,  $D_2=3.7.1951$ ,  $D_3=9.7.1951$ ,  $D_4=16.7.1951$ ,  $D_5=23.7.1951$ ,  $D_6=31.7.1951$ ,  $D_7=8.8.1951$  and  $D_8=17.8.1951$ .

**3. DESIGN :**

(i) 3 × 2 Fact. in R.B.D. (ii) (a) 16. (b) N.A. (iii) 2. (iv) (a) N.A. (b) 20' × 8'. (v) N.A. (vi) Yes.

**4. GENERAL :**

(i) N.A. (ii) Attack of jowar smut. (iii) Percentage of infection. (iv) (a) 1951—1952. (b) and (c) N.A. (v) (a) and (b) N.A. (vi) Nil. (vii) The expt. was conducted by P.P.

## 5. RESULTS :

- (i) 8.75 degree.  
(ii) 4.0669 degree.  
(iii) Effect of M alone is highly significant.  
(iv)

	D <sub>1</sub>	D <sub>2</sub>	D <sub>3</sub>	D <sub>4</sub>	D <sub>5</sub>	D <sub>6</sub>	D <sub>7</sub>	D <sub>8</sub>	Mean
M <sub>1</sub>	34.14	11.63	6.12	2.22	13.50	28.90	25.76	11.24	16.69
M <sub>2</sub>	0.00	0.00	6.46	0.00	0.00	0.00	0.00	0.00	0.81
Mean	17.07	5.82	6.29	1.11	6.75	14.45	12.88	5.62	8.75

S.E. of marginal mean of D = 2.0209 degree  
S.E. of marginal mean of M = 1.0169 degree  
S.E. of body of table = 2.8757 degree

## Transformed back mean percentage

	D <sub>1</sub>	D <sub>2</sub>	D <sub>3</sub>	D <sub>4</sub>	D <sub>5</sub>	D <sub>6</sub>	D <sub>7</sub>	D <sub>8</sub>
M <sub>1</sub>	31.68	4.51	1.59	0.65	4.89	23.67	19.21	4.30
M <sub>2</sub>	0.50	0.50	1.80	1.80	0.50	0.50	0.50	0.50

Note :—Transformed back mean percentages are given after applying bias correction and hence 0.50 mean percent corresponds to 0.00 mean angle. The data has been converted into  $\sin^{-1} \sqrt{P}$  and then analysed.

Crop :-Jowar (*Khari*).

Ref :-U.P. 52(290).

Site :-Govt. Res. Farm, Kanpur.

Type :-'CD'.

Object :—To study the effect of seed dressing and sowing dates on the incidence of *Jowar* smut.

## 1. BASAL CONDITIONS :

- (i) (a) to (c) N.A. (ii) (a) and (b) N.A. (iii) As per treatments. (iv) (a) to (c) N.A. (v) N.A. (vi) 8-B. (vii) to (x) N.A.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 2 methods of seed dressing : M<sub>1</sub>=control (seeds inoculated with smut spores) and M<sub>2</sub>=seeds treated with Agrosan G.N.

(2) 5 dates of sowing : D<sub>1</sub>=5.7.1952, D<sub>2</sub>=11.7.1952, D<sub>3</sub>=19.7.1952, D<sub>4</sub>=31.7.1952 and D<sub>5</sub>=23.8.1952.

## 3. DESIGN :

- (i) 5×2 Fact. in R.B.D. (ii) (a) 10. (b) N.A. (iii) 2. (iv) (a) and (b) N.A. (v) N.A. (vi) Yes.

## 4. GENERAL :

- (i) N.A. (ii) Attack of smut. (iii) Percentage of infection. (iv) (a) 1951—1952. (b) and (c) N.A. (v) (a) and (b) N.A. (vi) Nil. (vii) The expt. was conducted by P.P.

## 5. RESULTS :

- (i) 7.34 degrees  
(ii) 3.3725 degrees  
(iii) Main effects of M and D and interaction M×D are highly significant.

(iv)

	D <sub>1</sub>	D <sub>2</sub>	D <sub>3</sub>	D <sub>4</sub>	D <sub>5</sub>	Mean
M <sub>1</sub>	34.16	17.10	12.00	10.10	0.00	14.67
M <sub>2</sub>	0.00	0.00	0.00	0.00	0.00	0.00
Mean	17.08	8.55	6.00	5.05	0.00	7.34

S.E. of marginal mean of D = 1.6865 degree  
 S.E. of marginal mean of M = 1.0666 degree  
 S.E. of body of table = 2.3847 degree

## Transformed back mean percentage

	D <sub>1</sub>	D <sub>2</sub>	D <sub>3</sub>	D <sub>4</sub>	D <sub>5</sub>
M <sub>1</sub>	31.68	9.06	4.79	3.57	0.50
M <sub>2</sub>	0.50	0.50	0.50	0.50	0.50

Note :—Transformed back mean percentages are given after applying bias correction and hence 0.5 mean percent corresponds to 0.00 mean angle. The data has been converted into  $\sin^{-1} \sqrt{P}$  and then analysed where P is the percent infection.

Crop :- Bajra (*Kharif*).

Ref :- U.P. 53(366).

Site :- Allahabad Agri. Institute, Allahabad.

Type :- 'M'.

Object :—To study the effect of different green manure crops on *Bajra*.

1. (a) Nil. (b) Wheat. (c) As per treatments. (ii) (a) N.A. (b) N.A. (iii) 2.7.1953. (iv) (a) N.A. (b) N.A. (c) 8 srs./ac. (d) 6 rows/plot. (e) N.A. (v) N.A. (vi) N.A. (vii) N.A. (viii) Thinning on 29.7.1953 and 1, 5.8.1953. (ix) 47.62°. (x) 23, 24 and 25.9.1953.

## 2. TREATMENTS :

1. Control.
2. Sannhemp.
3. Cow pea.
4. Mung.
5. Dhaincha.

Sown on 7.6.1952. Ploughed into the soil on 20.9.1952.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) 60'×73'. (iii) 6. (iv) (a) 73'×12'. (b) 69'×8'. (v) Between blocks=4'.3" on either side. Between plots=1.5'. 2' around the net-plot. (vi) Yes.

## 4. GENERAL :

(i) Germination very good. (ii) N.A. (iii) Germination and yield of green fodder only. (iv) (a) No. (b) No. (c) Nil. (v) (a), (b) Nil. (vi) Nil. (vii) Experiment conducted by the Head, Agronomy Department, Allahabad Agricultural Institute, Allahabad.

## 5. RESULTS :

- (i) 23711 lb./ac.
- (ii) 3152.7 lb./ac.
- (iii) Treatment differences are not significant.
- (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	21793
2.	24972
3.	24025
4.	24228
5.	23538
S.E./mean	= 1287.1 lb./ac.

Crop :- Bajra.

Ref :- U.P. 49(186).

Site :- Sikandra Rao and Hathras (Aligarh).

Type :- 'M'.

Object :- To draw out fertilizer schedules for agriculturally important soil types.

**1. BASAL CONDITIONS :**

(i) (a) to (c) N.A. (ii) Aligarh type 1 and type 2 soils. (iii) N.A. (iv) Improved. (v) (a) As practised locally. (b) Sown in lines parallel to the fertilizer band. (c) N.A. (d) Distance of 1"-2" away from the fertilizer line. (e) N.A. (vi) 26.6.1949 to 1.8.1949. (vii) N.A. (viii) N.A. (ix) N.A. (x) 11.9.1949 to 20.11.1949.

**2. TREATMENTS :**

1. Control.

2. 15 lb./ac. of N as A/S.

3. 15 lb./ac. of N as A/S+30 lb./ac. of  $P_2O_5$  as Super.

A/S added to surface at sowing time. Super placed at a depth of about 3"-4" at the sole of the furrow and in the side of the seed row made by either an iron plough or two *desi* ploughs one behind the other in the same furrow.

**3. DESIGN :**

(i), (ii) Villages selected in the district and unreplicated expt. laid out. 12 replications or trials were laid out. (iii) (a) N.A. (b) 1/40 acre.

**4. GENERAL :**

(i) Satisfactory. (ii) N.A. (iii) Grain and straw yield. (iv) (a) No. (b), (c) N.A. (v) N.A. (vi) Nil. (vii) The expt. conducted by A.C. on cultivators' fields.

**5. RESULTS :**

(i) 580 lb./ac.

(ii) 146.0 lb./ac.

(iii) Treatment differences are highly significant.

(iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	429
2.	618
3.	693
S.E./mean	=42.16 lb./ac.

Crop :- Bajra (*Kharif*).

Ref :- U.P. 50 (248).

Site :- In all tehsils of Aligarh.

Type :- 'M'.

Object :- To draw out fertilizer schedules for agriculturally important soil types.

**1. BASAL CONDITIONS :**

(i) (a) N.A. (b) N.A. (c) N.A. (ii) N.A. (iii) N.A. (iv) Improved. (v) (a) to (c) N.A. (vi) July (vii) N.A. (viii) N.A. (ix) N.A. (x) October.

**2. TREATMENTS :**

1. Control.

2. A/S at 15 lb./ac. of N.

3. A/S at 15 lb./ac. of N+Super at 30 lb./ac. of  $P_2O_5$ .**3. DESIGN :**

(i) and (ii) Field selected randomly in a randomly selected village in the district. No. of villages—23. (iii)

(a) N.A. (b) N.A. (iv) N.A.

**4. GENERAL :**

(i) Generally crop damaged by rains. (ii) N.A. (iii) Grain yield. (iv) (a) No. (b) N.A. (c) N.A. (v) N.A. (vi) Nil. (vii) The experiment was conducted by A.C. on cultivators' fields.

## 5. RESULTS :

- (i) 1053 lb./ac.  
 (ii) 210.3 lb./ac.  
 (iii) Treatment differences are highly significant.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	785
2.	1110
3.	1265
S.E./mean	=43.86 lb./ac.

Crop :- Bajra (*Kharif*).

Ref :- U.P. 50 (237).

Site :- Nawabganj (Bareilly).

Type :- 'M'.

Object :- To draw out fertilizer schedules for agriculturally important soil types.

## 1. BASAL CONDITIONS :

- (i) (a) N.A. (b) N.A. (c) N.A. (ii) N.A. (iii) N.A. (iv) Improved. (v) (a) to (c) N.A. (vi) N.A.  
 (vii) N.A. (viii) N.A. (ix) N.A. (x) N.A.

## 2. TREATMENTS :

- Control.
- A/S at 15 lb./ac. of N.
- A/S at 15 lb./ac. of N + Super 30 lb./ac. of  $P_2O_5$ .

## 3. DESIGN :

- (i) and (ii) Fields selected randomly in a randomly selected village in the district. No. of villages—4. (iii)  
 (a) N.A. (b) N.A. (iv) N.A.

## 4. GENERAL :

- (i) N.A. (ii) N.A. (iii) Grain yield. (iv) (a) No. (b) N.A. (c) N.A. (v) N.A. (vi) Nil. (vii) The experiment was conducted by A.C. on cultivators' fields.

## 5. RESULTS :

- (i) 146 lb./ac.  
 (ii) 29.84 lb./ac.  
 (iii) Treatment differences are highly significant.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	100
2.	130
3.	208
S.E./mean	=14.92 lb./ac.

Crop :- Bajra (*Kharif*).

Ref :- U.P. 51(240).

Site :- Bareilly and Aonla (Bareilly).

Type :- 'M'.

Object :- To draw out fertilizer schedules for agriculturally important soil types.

## 1. BASAL CONDITIONS :

- (i) (a) to (c) N.A. (ii) Bareilly type 3C and Bareilly type 3D. (iii) N.A. (iv) Improved. (v) (a) As practised locally. (b) Seeds sown in lines parallel to the fertilizer band. (c) N.A. (d) At a distance of 1"–2" away from the fertilizer line. (e) N.A. (vi) to (x) N.A.

## 2. TREATMENTS :

1. Control.
2. 15 lb./ac. of N as A/S.
3. 15 lb./ac. of N as A/S+30 lb./ac. of  $P_2O_5$  as Super.

A/S broadcasted at the time of sowing and Super is applied to one of the plots over the N dose. Super is placed at a depth of 3"—4" at the sole of the furrow and in the sides of the furrows made either by an iron plough or two *desi* ploughs—one behind the other in the same field.

## 3. DESIGN :

(i) and (ii) Villages selected in the district and unreplicated expt. with the above 3 treatments laid out. 12 replications or trials. (iii) (a) N.A. (b) 1/40 ac. (iv) N.A.

## 4. GENERAL :

(i) Uniform and good condition. (ii) N.A. (iii) Grain and straw yield. (iv) (a) No. (b) and (c) N.A. (v) N.A. (vi) Nil. (vii) The expt. was conducted by A.C. on cultivators' fields.

## 5. RESULTS :

- (i) 1081 lb./ac.
- (ii) 62.84 lb./ac.
- (iii) Treatment differences are highly significant.
- (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	926
2.	1101
3.	1216
S.E./mean	=18.14 lb./ac.

Crop :- Bajra (*Kharif*).

Ref :- U.P.-51(226).

Site :- Etah and Jalesar (Etah).

Type :- 'M'.

Object :- To draw out fertilizer schedules for agriculturally important soil types.

## 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) *Domat*. (iii) N.A. (iv) Improved. (v) (a) to (e) N.A. (vi) N.A. (vii) N.A. (viii) N.A. (ix) N.A. (x) N.A.

## 2. TREATMENTS :

1. Control.
2. A/S at 15 lb./ac. of N.
3. A/S at 15 lb./ac. of N+Super at 30 lb./ac. of  $P_2O_5$ .

## 3. DESIGN :

(i) and (ii) Field selected randomly in a randomly selected village in the district. No. of villages—15. (iv) (a) and (b) N.A. (iv) N.A.

## 4. GENERAL :

(i) N.A. (ii) N.A. (iii) Grain yield. (iv) (a) No. (b) and (c) N.A. (v) N.A. (vi) Nil. (vii) The expt. was conducted by A.C. on cultivators' fields.

## 5. RESULTS :

- (i) 911 lb./ac.
- (ii) 81.90 lb./ac.
- (iii) Treatment differences are highly significant.
- (v) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	797
2.	930
3.	1005
S.E./mean	= 21.15 lb./ac.



Crop :- Bajra (*Kharif*).

Ref :- U.P. 53(578).

Site :- Institutional Research Farm, Bichpuri.

Type :- 'C'.

Object :- To study the effect of different spacings on yield of *Bajra*.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Wheat. (c) *Sanai*. (i) (a) Sandy loam. (b) Refer soil analysis, Bichpuri. (iii) 20.7.1953. (iv) (a) Ploughing by tractor and offset disc harrow. (b) Behind the plough shaped furrow at 3" depth. (c) 2 srs./ac. (d) As per treatments. (e) N.A. (v) Manuring on 18.7.1953 by farm compost at 400 lb./ac. by mixing it thoroughly with the soil. 10 lb./ac. of N as A/S at the time of tillering given on 16.8.1953 by putting fertilizer round each plant. (vi) Local varieties. (vii) Nil. (viii) Thinning, gapfilling, and hand weeding. (ix) 13.05". (x) 10.10.1953.

## 2. TREATMENTS :

Main-plot treatments :

3 row to row spacings :  $S_1=1'$ ,  $S_2=1.5'$  and  $S_3=2'$ .

Sub-plot treatments :

3 plant to plant spacings :  $P_1=6'$ ,  $P_2=12'$  and  $P_3=18'$ .

## 3. DESIGN :

(i) Split-plot. (ii) (a) 3 main-plots/block and 3 sub-plots/main-plot. (b) 70' x 88'. (iii) 6 (replication no. 2 discarded after sowing as sowing was wrongly done, hence effective replications are 5.). (iv) (a) N.A. (b) 24' x 13'. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) Satisfactory. (ii) A mild attack of *jowar* grass hopper and top borer—plants removed. Infection of green ear disease and grain smut of *bajra* on the earheads. (iii) Grain and straw yield. (iv) (a) and (b) No. (c) Nil. (v) (a) and (b) Nil. (vi) Nil. (viii) The experiment was conducted by B.R. College, Agra.

## 5. RESULTS :

(i) 906.2 lb./ac.  
 (ii) (a) 69.1 lb./ac.  
 (b) 213.5 lb./ac.  
 (iii) None of the effects is significant.  
 (iv) Av. yield of grain in lb./ac.

	$P_1$	$P_2$	$P_3$	Mean
$S_1$	913.4	979.2	822.9	905.2
$S_2$	890.3	958.6	884.5	911.2
$S_3$	872.2	880.5	954.5	902.4
Mean	892.0	939.4	887.3	906.2

S.E. of difference of two

1. S marginal means = 25.24 lb./ac.
2. P marginal means = 77.94 lb./ac.
3. P means at the same level of S = 135.0 lb./ac.
4. S means at the same level of P = 113.0 lb./ac.

Crop :- Bajra (*Kharif*).

Ref :- U.P. 49(191).

Site :- Agri. Res. Farm, Kalyanpur.

Type :- 'D'.

Object :- To study the best seed dressing for control of smut disease of *Bajra*.

## 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) N.A. (b) Refer soil analysis, Kalyanpur. (iii) 3.7.1949. (iv) (a) to (c) N.A. (v) N.A. (vi) 8-B. (vii) N.A. (viii) N.A. (ix) N.A. (x) N.A.

## 2. TREATMENTS :

1. Control.
  2. Seeds treated with Agrosan G.N.
  3. Seeds treated with Ceresan.
  4. Seeds treated with cold water and dried in sun.
  5. Seeds treated with cold water and dried in shade.
- Each chemical at 1.52 gms./lb. of seed.

## 3. DESIGN :

- (i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 6. (iv) (a) N.A. (b) 50' x 22'. (v) N.A. (vi) Yes.

## 4. GENERAL :

- (i) N.A. (ii) Attack of smut. (iii) % infection and grain yield. (iv) (a) No. (b) and (c) N.A. (v) (a) and (b) N.A. (vi) Nil. (vii) Transformed back mean percentages are given after applying bias correction. The data has been converted into  $\sin^{-1}\sqrt{p}$  and then analysed where  $p$  = percentage of infection. The experiment was conducted by P.P.

## 5. RESULTS :

- (i) 10.80 degrees.  
 (ii) 5.2273 degrees.  
 (iii) Treatment differences are highly significant.  
 (iv)

Treatment	Mean angle	Transformed back mean percentage of infection
1.	19.39	11.39
2.	12.36	5.05
3.	5.14	1.29
4.	8.05	2.43
5.	9.08	2.97
S.E./mean	= 2.1340 lb./ac.	

Crop :- Bajra (*Kharif*).

Ref :- U.P. 51(243).

Site :- Govt. Res. Farm, Kanpur.

Type :- 'D'.

Object :- To study the best seed dressing for control of smut disease of *Bajra*.

## 1. BASAL CONDITIONS :

- (i) (a) to (c) N.A. (ii) (a) Loam. (b) N.A. (iii) 8.8.1951. (iv) (a) to (e) N.A. (v) N.A. (vi) N.A. (vii) N.A. (viii) N.A. (ix) N.A. (x) N.A.

## 2. TREATMENTS :

1. Control (untreated healthy seed).
2. Inoculated seed + Agrosan G.N.
3. Seed inoculated.
4. Hot water treated seed.
5. Soil inoculated.

## 3. DESIGN :

- (i) R.B.D. (ii) (a) and (b) 5. (iii) 4. (iv) (a) N.A. (b) 34' x 16'. (v) N.A. (vi) Yes.

## 4. GENERAL :

- (i) N.A. (ii) N.A. (iii) Percentage of infection. (iv) (a) No. (b) No. (c) N.A. (v) (a) and (b) No. (vi) Nil. (vii) The experiment was conducted by P.P.

## 5. RESULTS :

- (i) 20.03 degrees  
 (ii) 4.5282 degrees.  
 (iii) Treatment differences are not significant.

(iv)

Treatment	Mean angle (in degrees) corresponding to percentage infection	Transformed back mean percentages after applying bias correction
1.	18.70	10.68
2.	23.38	16.09
3.	15.92	7.95
4.	18.95	10.93
5.	23.18	15.83
S.E./mean	=2.2641 degrees.	

Crop :- Bajra (*Kharif*).

Ref :- U.P. 53(299).

Site :- Govt. Res. Farm, Kanpur.

Type :- 'D'.

Object :- To study the effect of chemicals in controlling green ear diseases.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Loam. (b) N.A. (iii) 5.8.1953. (iv) (a) to (e) N.A. (v) N.A. (vi) N.A. (vii) N.A. (viii) N.A. (ix) N.A. (x) N.A.

2. TREATMENTS :

1. Control (untreated seeds).
2. Seed inoculated with oosporic material.
3. Inoculated seeds with oosporic material + Agrosan G.N.
4. Soil inoculated with oosporic material.
5. Hot water treated seeds.

3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 4. (iv) (a) 30' x 12'. (b) 28' x 10'. (v) 1' all round the net plot. (vi) Yes.

4. GENERAL :

(i) N.A. (ii) N.A. (iii) % of green ear disease infection. (iv) (a) No. (b) No. (c) N.A. (v) (a) No. (b) N.A. (vi) Nil. (vii) The experiment was conducted by P.P.

5. RESULTS :

- (i) 3.70 degrees.
- (ii) 2.2091 degrees.
- (iii) Treatment differences are highly significant.
- (iv)

Treatment	Mean angle corresponding to % of green ear disease infection	Transformed back mean percentages after applying bias correction
1.	1.11	0.54
2.	6.54	1.79
3.	2.12	0.64
4.	7.72	2.28
5.	1.01	0.53
S.E./mean	=1.1046 degrees.	

Crop :- Bajra (*Kharif*).

Ref :- U.P. 50(253).

Site :- Govt. Agri. Res. Farm, Kanpur.

Type :- 'D'.

Object :- To study the effect of seed dressing for controlling smut disease.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) N.A. (c) N.A. (ii) (a) Loam. (b) N.A. (iii) 29th July 1950. (iv) (a) to (e) N.A. (v) N.A. (vi) N.A. (vii) N.A. (viii) N.A. (ix) N.A. (x) N.A.

**2. TREATMENTS :**

1. Control (untreated).
  2. Seeds treated with Agrosan G.N.
  3. Treated with Ceresan.
  4. Treated with cold water and dried in sun.
  5. Treated with cold water and dried in shade.
- Chemical used at 1.52 gms. per lb. of seed.

**3. DESIGN :**

- (i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 34'×16'. (v) N.A. (vi) Yes.

**4. GENERAL :**

- (i) N.A. (ii) N.A. (iii) % infection and yield of grain. (iv) (a) No. (b) No. (c) N.A. (v) (a) No. (b) N.A. (vi) Nil. (vii) The experiment was conducted by P.P.

**5. RESULTS :**

- (i) 22.95 degree.  
 (ii) 3.7282 degree.  
 (iii) Treatment differences are not significant.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Mean Angles	Transformed back mean % of infection
1.	23.42	15.46
2.	20.56	11.92
3	24.00	16.16
4.	23.95	16.16
5.	22.82	14.65
S.E./mean	=1.8641 degree.	

Note :—The data has been converted into  $\sin^{-1} \sqrt{p}$  and then analysed. Transformed back mean percentages are given after applying bias correction.

Crop :- Barley (*Rabi*).

Ref :- U.P. 49 (24).

Site :- Central Dairy Farm, Aligarh.

Type :- 'M'.

Object :—To study the effect of N and  $P_2O_5$  applied alone and in combination on the yield of Barley.

**1. BASAL CONDITIONS :**

- (i) (a) N.A. (b) N.A. (c) N.A. (ii) (a) Low lying clay (Aligarh T.3). (b) N.A. (iii) 2.11.1949. (iv) (a) to (e) N.A. (v) Nil. (vi) N.A. (vii) N.A. (viii) N.A. (ix) N.A. (x) 9.4.1950.

**2. TREATMENTS :**

All combinations of (1) and (2)

1. 3 levels of N :  $N_0=0$ ,  $N_1=30$  and  $N_2=60$  lb./ac.
2. 3 levels of  $P_2O_5$  :  $P_0=0$ ,  $P_1=60$  and  $P_2=120$  lb./ac.

A/S was top dressed ;  $P_2O_5$  as Super was applied in deep furrows (3'×4' deep) so that it was not in contact with seeds ; manures applied on 1.11.1949.

**3. DESIGN :**

- (i) 3×3 Fact. in R.B.D. (ii) (a) 9. (b) N.A. (iii) 6. (iv) N.A. (b) 1/40 ac. (v) N.A. (vi) Yes.

**4. GENERAL :**

- (i) Good. (ii) Nil. (iii) Grain yield. (iv) (a) 1949–1951. (b) N.A. (c) N.A. (v) (a) No. (b) N.A. (vi) The field received washing from cattle shed, hence half of the field was highly manured. (vii) The experiment was conducted by Agricultural Chemist.

**5. RESULTS :**

- (i) 1403 lb./ac.  
 (ii) 358.6 lb./ac.  
 (iii) Main effect of N alone is highly significant.

(vi) Av. yield of grain in lb./ac.

	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>	Mean
N <sub>0</sub>	1160	1160	1073	1131
N <sub>1</sub>	1420	1560	1213	1398
N <sub>2</sub>	1713	1613	1713	1680
Mean	1431	1444	1333	1403

S.E. of any marginal mean

= 84.5 lb./ac.

S.E. of body of table

= 146.4 lb./ac.

Crop :- Barley (*Rabi*).

Ref :- U.P. 51(110).

Site :- Central Dairy Farm, Aligarh.

Type :- 'M'.

Object :- To study the effects of N and P<sub>2</sub>O<sub>5</sub> applied alone and in combination on the yield of Barley crop.

## 1. BASAL CONDITIONS :

(i) (a) No. (b) *Jowar* fodder. (c) N.A. (ii) (a) Heavy loam. (Aligarh type 3) (b) N.A. (iii) 18.11.1951.  
 (iv) (a) Four ploughings in all, two by Watt's plough and two by *desi* plough, followed by harrowing and levelling. (b) Sown in lines. (c) to (e) N.A. (v) Nil. (vi) N.A. (vii) N.A. (viii) N.A. (ix) N.A. (x) 26 and 27.3.1952.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 3 levels of N :- N<sub>0</sub>=0, N<sub>1</sub>=30 and N<sub>2</sub>=60 lb./ac.(2) 3 levels of P<sub>2</sub>O<sub>5</sub> : P<sub>0</sub>=0, P<sub>1</sub>=60 and P<sub>2</sub>=120 lb./ac.N as A/S was broadcast while P<sub>2</sub>O<sub>5</sub> as Super was placed deep in bands near the root zone, through fertilizer drill and then *pata* applied.

## 3. DESIGN :

(i) 3×3 Fact. in R.B.D. (ii) (a) 9. (b) N.A. (iii) 6. (iv) (a) N.A. (b) 48'×23'. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) Normal. (b) No. (iii) Grain yield. (iv) (a) 1949-1951. (b) No. (c) N.A. (v) (a) Varanasi. (b) (vi) Nil. (vii) The expt. was conducted by A.C.

## 5. RESULTS :

(i) 700.7 lb./ac.

(ii) 202.8 lb./ac.

(iii) Main effect of N is highly significant. Interaction N×P is significant. P effect is not significant.

(iv) Av. yield of grain in lb./ac.

	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>	Mean
N <sub>0</sub>	506.4	637.9	644.5	596.3
N <sub>1</sub>	499.8	782.6	756.3	679.6
N <sub>2</sub>	874.6	624.7	979.8	826.4
Mean	626.9	681.7	793.5	700.7

S.E. of any marginal mean

= 47.80 lb./ac.

S.E. of body of table

= 82.80 lb./ac.

Crop :-Barley (*Rabi*).

Ref:-U.P. 51(284).

Site :-Agri. Institute, Allahabad.

Type :-'M'.

Object :—To study the effect of organic manures on the yield of Barley.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis, Allahabad. (iii) N.A. (iv) (a) to (e) N.A. (v) N.A. (vi) N.A. (vii) Irrigated. (viii) N.A. (ix) 1.23'. (x) 17.3.1952.

2. TREATMENTS :

1. Control.
2. Farm compost at 60 lb./ac. of N.
3. Castor cake at 60 lb./ac. of N.
4. T.C. at 60 lb./ac. of N.
5. T.C. at 30 lb./ac. of N.

Manures applied as top dressing in standing crop on 5.12.1951.

3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 6. (iv) (a) 40'×20'. (b) 40'×18'. (v) N.A. (vi) N.A.

4. GENERAL :

(i) N.A. (ii) N.A. (iii) Grain yield. (iv) (a) No. (b) No. (c) Nil. (v) (a) No. (b) N.A. (vi) Nil. (vii) Experiment conducted by the Head, Agronomy Department, Allahabad (A.A.I).

5. RESULTS :

- (i) 1707 lb./ac.
- (ii) N.A.
- (iii) Treatment differences are not significant.
- (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	1628
2.	1784
3.	1981
4.	1535
5.	1608
S.E./mean	=N.A.

Crop :-Barley (*Rabi*).

Ref :-U.P 48(22).

Site :-Govt. Res. Farm, Kanpur.

Type :-'M'.

Object :—To study the effect of coconut oil cake on the yield of Barley.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Loam. (b) N.A. (iii) 12.11.1948. (iv) (a) to (e) N.A. (v) Nil. (vi) C-251 (early). (vii) Irrigated. (viii) and (ix) N.A. (x) 24 and 25.3.1949

2. TREATMENTS :

1. Control.
2. 25 lb./ac. of N as coconut oil cake.
3. 50 lb./ac. of N as coconut oil cake.
4. 75 lb./ac. of N as coconut oil cake.

Manure applied on 30.12.1948.

3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 6. (iv) (a) 37'×15'. (b) 34'×13'. (v) 1.5'×1'. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Grain and *bhusa* yield. (iv) (a) 1948—1949. (b) No. (c) N.A. (v) (a) No. (b) N.A. (vi) Nil. (vii) The expt. was conducted by E.B.(R).

## 5. RESULTS :

- (i) 2121 lb./ac.  
 (ii) 177.6 lb./ac.  
 (iii) Treatment differences are not significant.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	2111
2.	2028
3.	2123
4.	2221
S.E./mean	=72.5 lb./ac.

Crop :- Barley (*Rabi*).

Ref :- U.P. 49(32).

Site :- Govt. Res. Farm, Kanpur.

Type :- 'M'.

Object :- To study the effect of coconut oil cake on Barley crop.

## 1. BASAL CONDITIONS :

- (i) (a) Nil. (b) *Sanai* for G.M. (c) N.A. (ii) (a) Loam. (b) N.A. (iii) 12.11.1949. (iv) (a) 4 ploughings with Watt's and victory plough ; 3 ploughings with cultivator plough and 4 ploughings with *desi* plough. (b) N.A. (c) 20½ oz./plot. (d) and (e) N.A. (v) Nil. (vi) C-251 (early). (vii) Irrigated (viii) One hand weeding. (ix) N.A. (x) 29.3.1950.

## 2. TREATMENTS :

1. Control.  
 2. 25 lb./ac. of N as coconut oil cake.  
 3. 50 lb./ac. of N as coconut oil cake.  
 4. 75 lb./ac. of N as coconut oil cake.

Date of manuring :- 1.12.1949.

## 3. DESIGN :

- (i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 6. (iv) (a) 42.5'×12.8'. (b) 39.5'×11.3'. (v) 1.5'×0.75'. (vi) Yes.

## 4. GENERAL :

- (i) Good. (ii) Slight attack of smut. (iii) Grain yield, fresh and dry. (iv) (a) 1948—1949. (b) No. (c) N.A. (v) (a) No. (b) N.A. (vi) Nil. (vii) The expt. was conducted by E.B.(R).

## 5. RESULTS :

- (i) 2961 lb./ac.  
 (ii) 251.8 lb./ac.  
 (iii) Treatment differences are not significant.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	2940
2.	3055
3.	3006
4.	2843
S.E./mean	=102.8 lb./ac.

Crop :- Barley (*Rabi*).

Ref :- U.P. 50(22).

Site :- Govt. Res. Farm, Kanpur.

Type :- 'M'.

Object :- To study the residual effect of *Mung* T<sub>1</sub>, *Sanai* and *Jowar* fodder crops sown in *Kharif* 1950.

## 1. BASAL CONDITIONS :

- (i) (a) No. (b) As per treatments. (c) Nil. (ii) (a) Loam. (b) N.A. (iii) 3.11.1950. (iv) (a) 2 ploughings each with victory plough and *desi* plough. (b) N.A. (c) 100 lb./ac. (d) 9" (e) N.A. (v) Nil. (vi) C-591. (vii) Irrigated. (viii) Hoeing and weeding once—28.2.1951. (ix) N.A. (x) 9, 10.4 1951.

## 2. TREATMENTS :

1. Fallow.
  2. *Mung* T<sub>1</sub> (seed sown and straw ploughed in).
  3. *Sanai* green manuring.
  4. *Jowar* fodder.
- 1st picking of *mung* T<sub>1</sub>—6/7.9.1950, 2nd picking of *mung* T<sub>1</sub>—15/19.9.1950. Turning of *sanai* on 6.9.1950.

## 3. DESIGN :

- (i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 6. (iv) (a) 30' × 15'. (b) 26' × 13.5'. (v) 2' × 0.75'. (vi) Yes.

## 4. GENERAL :

- (i) Condition of *sanai* plots at time of turning—fair growth in all plots, some of them were diseased and showed uneven growth. The crop was full of weeds. Barley crop—good. (ii) Nearly all the treatments have been affected by stiple disease equally (about 2% incidence). Smut incidence is about 0.5% in all the plots. (iii) Germination and grain yield. (iv) (a) 1950—1953. (b) Yes. (c) N.A. (v) (a) No. (b) N.A. (vi) Nil. (vii) The experiment was conducted by E.B. (R).

## 5. RESULTS :

- (i) 2342 lb./ac.  
 (ii) 168.7 lb./ac.  
 (iii) Treatment differences are highly significant.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	2462
2.	1606
3.	2659
4.	2643
S.E./mean	=68.98 lb./ac

Crop :- Barley (*Rabi*).

Ref :- U.P. 51(14) 50(22).

Site :- Govt. Res. Farm, Kanpur.

Type :- 'M'.

Object :—To study the residual effect of *Mung* T<sub>1</sub>, *Sanai* and *Jowar* fodder crops sown in *Kharif* 1950.

## 1. BASAL CONDITIONS :

- (i) (a) No. (b) As per treatments. (c) Nil. (ii) (a) Loam. (b) N.A. (iii) 29.10.1951. (iv) (a) 2 ploughings each with victory plough and *desi* plough. (b) N.A. (c) 100 lb./ac. (d) 9". (e) N.A. (v) Nil. (vi) C-251. (vii) Irrigated. (viii) Nil. (ix) N.A. (x) 1.4.1952.

## 2. TREATMENTS :

1. Fallow during *kharif*.
  2. *Mung* T<sub>1</sub>—pods picked up and plants turned in during *kharif*.
  3. *Sanai* (G.M.) during *kharif*.
  4. *Chari* for fodder during *kharif*.
- Sanai* and *Jowar* were broadcasted and *Mung* was sown in lines 1½' apart.

## 3. DESIGN :

- (i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 6. (iv) (a) 30' × 15.7'. (b) 26' × 14.25'. (v) N.A. (vi) Yes.

## 4. GENERAL :

- (i) *Sanai* crop was below normal nearly in all the blocks due to poor rains and late sowing and *chari* crop was very poor in block no. 5 due to water logging. Barley—good. (ii) No. (iii) Germination and grain yield. (iv) (a) 1950—1953. (b) Yes. (c) N.A. (v) (a) No. (b) N.A. (vi) Nil. (vii) The experiment was conducted by E.B. (R).

## 5. RESULTS :

- (i) 1201 lb./ac.  
 117.1 lb./ac.  
 Treatment differences are highly significant.



(iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	776
2.	1305
3.	1491
4.	1232
S.E./mean	= 47.81 lb./ac.

Crop :- Barley (*Rabi*).

Ref :- U.P. 52(47)/51(14)/50(22)

Site :- Govt. Res. Farm, Kanpur.

Type :- 'M'.

Object :- To study the residual effect of *mung T<sub>1</sub>*, *Sanai* and *Jowar* fodder crops sown in *Kharif* 1950.

## 1. BASAL CONDITIONS :

(i) (a) No. (b) As per treatments. (c) No. (ii) (a) Loam. (b) N.A. (iii) 29.10.1952. (iv) (a) 2 ploughings each with victory plough and *desi* plough. (b) N.A. (c) 100 lb./ac. (d) 9". (e) N.A. (v) Nil. (vi) C-25 1. (vii) Irrigated. (viii) Nil. (ix) N.A. (x) 28.3.1953.

## 2. TREATMENTS :

1. Fallow during *kharif*.
2. *Mung T<sub>1</sub>*, pods picked up and plants turned in during *kharif*.
3. *Sanai* green manuring during *kharif*.
4. *Chari* during *kharif*.

Amount N.A.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 4 (in two flanks). (b) N.A. (iii) 6. (iv) (a) 30' x 15.75'. (b) 26' x 14.25'. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) Very good. (ii) No. (iii) Germination and yield of grain. (iv) (a) 1950-1953. (b) Yes. (c) N.A. (v) (a) No. (b) N.A. (vi) Nil. (vii) The experiment was conducted by E.B.(R),

## 5. RESULTS :

- 1310 lb./ac.
- 180.2 lb./ac.
- Treatment differences are highly significant.
- Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	1172
2.	1570
3.	1847
4.	650
S.E./mean	= 73.58 lb./ac.

Crop :- Barley (*Rabi*).

Ref :- U.P. 53(87)/52(47)/51(14)/50(22).

Site :- Govt. Res. Farm, Kanpur.

Type :- 'M'.

Object :- To study the residual effect of *mung T-1*, *Sanai* and *Jowar* fodder crops sown in *kharif* 1950.

## 1. BASAL CONDITIONS :

(i) (a) No. (c) As per treatments. (c) Nil. (ii) (a) Loam. (b) N.A. (iii) 28.10.1953. (iv) (a) 2 ploughings each with victory plough and *desi* plough. (b) N.A. (c) 100 lb./ac. (d) 9". (e) N.A. (v) Nil. (vi) C-251 (medium). (vii) Irrigated. (viii) Weeding in *mung T<sub>1</sub>* on 7.8.1953 and turning in of *Sanai* 8 times. (ix) N.A. (x) 29.3.1954.

## 2. TREATMENTS :

1. Fallow (during *kharif*).
2. *Mung T<sub>1</sub>*, pods picked up and plants turned in during *kharif*, sown on 4.7.1953 and harvested on 6.8.1953.
3. *Sanai* green manure during *kharif*.
4. *Chari* during *kharif* harvested on 3.9.1953.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 4 (in two flanks). (b) N.A. (iii) 6. (iv) (a) 30'×15.75' (b) 26'×14.25' (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) Good ; None of the plants showed any lodging. (ii) Nil. (iii) Germination, flowering and yield. (iv) (a) 1950—1953. (b) Yes. (c) N.A. (v) (a) No. (b) N.A. (vi) Nil. (vii) The experiment was conducted by E.B. (R).

## 5. RESULTS :

- (i) 849 lb./ac.  
 (ii) 333.5 lb./ac.  
 (iii) Treatment differences are not significant.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	796
2.	841
3.	897
4.	862
S.E./mean	=136.2 lb./ac.

Crop :-Barley (*Rabi*).

Site :-Govt. Res. Farm, Kanpur.

Ref :-U.P. 51(15).

Type :-'M'.

Object :—To study the N, P and K requirements of Barley.

## 1. BASAL CONDITIONS :

(i) (a) No. (b) *Chari* for fodder. (c) Nil. (ii) (a) Loam. (b) N.A. (iii) 11.11.1951. (iv) (a) 2 ploughings each by victory plough, Watt's plough and *desi* plough. (b) N.A. (c) 100 lb./ac. (d) 9°. (e) N.A. (v) Nil. (vi) N.P. 2. (vii) Irrigated. (viii) Nil. (ix) N.A. (x) 25, 26 and 27.3.1952.

## 2. TREATMENTS :

All combinations of (1), (2) and (3)

- (1) 3 levels of N:  $N_0=0$ ,  $N_1=25$  and  $N_2=50$  lb./ac.  
 (2) 3 levels of  $P_2O_5$ :  $P_0=0$ ,  $P_1=50$  and  $P_2=100$  lb./ac.  
 (3) 3 levels of  $K_2O$ :  $K_0=0$ ,  $K_1=50$  and  $K_2=100$  lb./ac.

N as A/S and  $K_2O$  as pot. sulphate were dusted and  $P_2O_5$  as Super applied in furrows before sowing.

## 3. DESIGN :

(i) 3×3×3 Fact. in R.B.D. (ii) (a) 27 in 3 flanks. (b) N.A. (iii) 3. (iv) (a) 40'×11.25'. (b) 36'×9.75'. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Incidence of smut was observed. (iii) Germination and grain yield. (iv) (a) 1951—continued. (b) Yes. (c) N.A. (v) (a) No. (b) N.A. (vi) Nil. (vii) The expt. was conducted by E.B.(R).

## 5. RESULTS :

- (i) 2615 lb./ac.  
 (ii) 383.6 lb./ac.  
 (iii) Main effect of N is highly significant. All others are not significant.  
 (iv) Av. yield of grain in lb./ac.

	$K_0$	$K_1$	$K_2$	Mean	$P_0$	$P_1$	$P_2$
$N_0$	2220	2395	2365	2327	2425	2232	2322
$N_1$	2704	2672	2603	2659	2562	2730	2686
$N_2$	2969	2721	2888	2859	2728	2932	2918
Mean	2631	2596	2619	2615	2572	2631	2642
$P_0$	2670	2399	2647				
$P_1$	2571	2741	2583				
$P_2$	2652	2649	2626				

S.E. of any marginal mean = 72.5 lb./ac.  
S.E. of body of table = 127.9 lb./ac.

Crop :- Barley (*Rabi*).

Ref :- U.P. 52(50)/51(15).

Site :- Govt. Res. Farm, Kanpur.

Type :- 'M'.

Object :- To study the N, P and K requirements of Barley.

### 1. BASAL CONDITIONS :

(i) (a) No. (b) *Chari* for fodder. (c) Nil. (ii) (a) Loam. (b) N.A. (iii) 2.11.1952. (iv) (a) 2 ploughings each by victory plough, Watt's plough and *desi* plough. (b) N.A. (c) 100 lb./ac. (d) 9". (e) N.A. (v) Nil. (vi) N.P. 21 (vii) Irrigated. (viii) Weeding on 4.2.1953. (ix) N.A. (x) 25, 26.3.1953.

### 2. TREATMENTS :

All combinations of (1), (2) and (3)

- (1) 3 levels of N :  $N_0=0$ ,  $N_1=25$  and  $N_2=50$  lb./ac.  
(2) 3 level of  $P_2O_5$  :  $P_0=0$ ,  $P_1=50$  and  $P_2=100$  lb./ac.  
(3) 3 levels of  $K_2O$  :  $K_0=0$ ,  $K_1=50$  and  $K_2=100$  lb./ac.

N as A/S and  $K_2O$  as Pot. Sulphate were dusted and  $P_2O_5$  as Super applied in furrows before sowing.

### 3. DESIGN :

(i)  $3 \times 3 \times 3$  Fact. in R.B.D. (ii) (a) 27 in 3 flanks. (b) N.A. (iii) 3. (iv) (a)  $15' \times 10.5'$ . (b)  $11' \times 9'$ . (v)  $2' \times 0.75'$ . (vi) Yes.

### 4. GENERAL :

(i) Good. (ii) No. (iii) Germination and grain yield (iv) (a) 1951—continued. (b) Yes. (c) No. (v) (a) No. (b) N.A. (vi) Nil. (vii) The expt. was conducted by E.B.(R).

### 5. RESULTS :

- (i) 3132 lb./ac.  
(ii) 368.1 lb./ac.  
(iii) Main effect of N is highly significant ; P effect is significant. Others are not significant.  
(iv) Av. yield of grain in lb./ac.

	$K_0$	$K_1$	$K_2$	Mean	$P_0$	$P_1$	$P_2$
$N_0$	2583	2917	2910	2804	2653	2879	2879
$N_1$	3162	3306	3306	3258	3074	3514	3187
$N_2$	3306	3369	3325	3333	3262	3363	3375
Mean	3017	3197	3180	3132	2996	3252	3147
$P_0$	2961	2961	3067				
$P_1$	3055	3419	3281				
$P_2$	3036	3212	3193				

S.E. of any marginal mean = 70.8 lb./ac.  
S.E. of body of table = 122.7 lb./ac.

Crop :-Barley (*Rabi*).  
Site :-Govt. Res. Farm, Kanpur.

Ref :-U.P. 53(97)/52(50)/51(15).  
Type :-'M'.

Object :-To study the effects of N, P and K fertilizers on Barley

#### 1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Charl* for fodder. (c) Nil. (ii) (a) Loam. (b) N.A. (iii) 12.11.1953. (iv) (a) Victory plough on 18.9.1953 ; cultivator on 30.9.1953 ; *desi* plough and pata on 29.10.1953, 1 and 12.11.1953. (b) N.A. (c) 80 lb./ac. (d) and (e) N.A. (v) Nil. (vi) N.P. 21 (medium). (vii) Irrigated. (viii) Weeding on 23.1.1954. (ix) N.A. (x) 31.3.1954.

#### 2. TREATMENTS :

All combinations of (1), (2) and (3)

- (1) 3 levels of N :  $N_0=0$ ,  $N_1=25$ ,  $N_2=50$  lb./ac.  
(2) 3 levels of  $P_2O_5$  :  $P_0=0$ ,  $P_1=50$  and  $P_2=100$  lb./ac.  
(3) 3 levels of  $K_2O$  :  $K_0=0$ ,  $K_1=50$  and  $K_2=100$  lb./ac.

N as A/S and  $K_2O$  as pot. sulphate were dusted and  $P_2O_5$  as Super applied in furrows before sowing.

#### 3. DESIGN :

(i)  $3 \times 3 \times 3$  Fact. in R.B.D. (ii) (a) 27 in 3 flanks of 9 plot each. (b) N.A. (iii) 3. (iv) (a)  $15' \times 10.5'$ . (b)  $11' \times 9'$ . (v) N.A. (vi) Yes.

#### 4. GENERAL :

(i) Good. (ii) Smut incidence affected the grain moderately. (iii) Germination, grain and straw yield. (iv) (a) 1951—continued. (b) Yes. (c) N.A. (v) (a) No. (b) N.A. (vi) Nil. (vii) The expt. was conducted by E.B.(R). Although design is termed randomised block yet 27 treatments are not taken in a single block but in 3 blocks each containing 9 treatments (no confounding). So efficiency of design thus decreases.

#### 5. RESULTS :

- (i) 1840 lb./ac.  
(ii) 254.1 lb./ac.  
(iii) Main effects of N and P and interaction  $N \times K$  are highly significant. Main effect K and other interactions are not significant.  
(iv) Av. yield of grain in lb./ac.

	$K_0$	$K_1$	$K_2$	Mean	$P_0$	$P_1$	$P_2$
$N_0$	1106	1213	1257	1192	1106	1295	1175
$N_1$	1521	1829	2037	1796	1647	1911	1829
$N_2$	2602	2577	2414	2531	2439	2665	2489
Mean	1743	1873	1903	1840	1731	1957	1831
$P_0$	1634	1817	1741				
$P_1$	1848	1930	2093				
$P_2$	1747	1873	1873				

S.E. of any marginal mean  
S.E. of body of table

=48.91 lb./ac.  
=84.71 lb./ac.

Crop :-Barley (*Rabi*).  
Site :-Govt. Res. Farm, Kanpur.

Ref :-U.P. 50(21).  
Type :-'M'.

Object :-To study the effect of N and  $P_2O_5$  manures applied alone and in combination on the yield of Barley.

#### 1. BASAL CONDITIONS :

(i) (a) No. (b) *Jowar* fodder. (c) Nil. (ii) (a) Loam. (b) N.A. (iii) 26.10.1950. (iv) (a) 1 ploughing with victory and 4 ploughings with *desi* plough. (b) N.A. (c) 80 lb./ac. (d) and (e) N.A. (v) Nil. (vi) N.P.21. (vii) Irrigated. (viii) Weeding and hoeing on 28.2.1951. (ix) N.A. (x) 13 and 14.4.1951.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 3 levels of N :  $N_0=0$ ,  $N_1=25$  and  $N_2=50$  lb./ac.

(2) 3 levels of  $P_2O_5$  :  $P_0=0$ ,  $P_1=25$  and  $P_2=50$  lb./ac.

N as A/S broadcast and  $P_2O_5$  as Super applied in furrows at sowing time.

## 3. DESIGN :

(i)  $3 \times 3$  Fact. in R.B.D. (ii) (a) 9. (b) N.A. (iii) 4. (iv) (a)  $24' \times 18'$ . (b)  $20' \times 16.5'$ . (v)  $2' \times 0.75'$ . (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) 1% to 2% smut diseased plants in all the treatments were observed. (iii) Germination and grain yield. (iv) (a) and (b) No. (c) N.A. (v) (a) No. (b) N.A. (vi) Nil. (vii) The expt. was conducted by E.B. (R).

## 5. RESULTS :

(i) 1702 lb./ac.

(ii) 292.4 lb./ac.

(iii) Only main effect N is highly significant.

(iv) Av. yield of grain in lb./ac.

	$P_0$	$P_1$	$P_2$	Mean
$N_0$	730	785	1180	898
$N_1$	1731	2083	1761	1858
$N_2$	2321	2372	2255	2349
Mean	1594	1747	1765	1702

S.E. of any marginal mean = 84.4 lb./ac.

S.E. of body of table = 146.2 lb./ac.

Crop :- Barley (*Rabi*).

Site :- Govt. Res. Farm, Kanpur.

Ref :- U.P. 50 (37).

Type :- 'M'.

Object :- To study the manurial value of coconut oil cake and castor cake on Barley.

## 1. BASAL CONDITIONS :

(i) (a) No. (b) *Jowar* for fodder. (c) Nil. (ii) (a) Loam. (b) N.A. (iii) 8.11.1950. (iv) (a) 1 ploughing with victory plough and 3 ploughings with *dest* plough. (b) N.A. (c) 80 lb./ac. (d) 9' apart. (e) N.A. (v) Nil. (vi) C-251. (vii) Irrigated. (viii) Weeding on 28.2.1951. (ix) N.A. (x) 10/11.4.1951.

## 2. TREATMENTS :

All combinations of (1) and (2) + a control (no manure).

1. 3 levels of N :  $N_1=25$ ,  $N_2=50$  and  $N_3=75$  lb./ac.

2. 2 sources of N :  $S_1$ =coconut oil cake and  $S_2$ =castor cake.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 4. (a)  $36' \times 14.25'$ . (b)  $32' \times 12.75'$ . (v)  $2' \times 0.75'$ . (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Plants were diseased—5% (stripe and smut). (iii) Germination and grain yield. (iv) (a) No. (b) No. (c) N.A. (v) (a) No. (b) N.A. (vi) Nil. (vii) The experiment was conducted by E.B. (R).

## 5. RESULTS :

(i) 1189 lb./ac.

(ii) 130.9 lb./ac.

(iii) Levels of N, source of N and control vs others effects are highly significant. Interaction levels x source is significant.

(iv) Av. yield of grain in lb./ac.

Control=518 lb./ac.

	N <sub>1</sub>	N <sub>2</sub>	N <sub>3</sub>	Mean
S <sub>1</sub>	824	1314	1386	1175
S <sub>2</sub>	951	1479	1853	1428
Mean	888	1396	1620	1301

S.E. of marginal mean of S =37.8 lb./ac.

S.E. of marginal mean of N =46.3 lb./ac.

S.E. of body of table or control mean =65.5 lb./ac.

Crop :- Barley.

Ref :- U.P. 53 (209).

Site :- Crop Physiological Res. Stn., Lucknow.

Type :- 'M'.

Object :- The study the effect of different sources of P<sub>2</sub>O<sub>5</sub> fertilizer (in presence of adequate quantities of N, K and Ca) on growth and yield of Barley.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) *Jowar+Guar*. (c) N.A. (ii) (a) Sandy loam. (b) N.A. (iii) 15.10.53. (iv) (a) N.A. (b) Sown behind the *desi* plough. (c) 40 sr./ac. (d) and (e) N.A. (v) A/S at 50 lb./ac. of N+Gypsum at 10 lb./ac. of Ca +Pot. Sul. at 20 lb./ac. (vi) C-251 (Medium). (vii) N.A. (viii) N.A. (ix) N.A. (x) 7.4.1954.

## 2. TREATMENTS :

1. Control (no manure).
  2. Super at 40 lb./ac. of P<sub>2</sub>O<sub>5</sub>.
  3. Kotka phosphate at 40 lb./ac. of P<sub>2</sub>O<sub>5</sub>.
  4. B.M. at 40 lb./ac. of P<sub>2</sub>O<sub>5</sub>.
- Manuring on 14 and 15.10.1953 by placement.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 3. (iv) (a) 26'×20'. (b) 22'×16'. (v) 2' all round the net plot. (vi) Yes.

## 4. GENERAL :

(i) Lodging due to rains on 10.1.1954. and 20.2.1954. (ii) N.A. (iii) Grain and *bhusa* yield. (iv) (a) No. (b) and (c) No. (v) (a) and (b) No. (vi) Nil. (vii) The experiment was conducted by Crop Physiologist.

## 5. RESULTS :

- (i) 995 lb./ac.
- (ii) 107.1 lb./ac.
- (iii) Treatments differ significantly.
- (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	764
2.	1093
3.	976
4.	1146
S.E./mean	=61.8 lb./ac.

Crop :- Barley (*Rabi*).

Ref :- U.P.53(192).

Site :- Crop Physiological Res. Stn., Lucknow.

Type :- 'M'.

Object :- To study the effect of placement of fertilizers on growth and yield of Barley.

## 1. BASAL CONDITIONS :

- (i) (a) Green manure-Barley. (b) *Sanai* G.M. (c) Nil. (ii) (a) Sandy loam. (b) N.A. (iii) 1.11.1953.  
 (iv) (a) N.A. (b) Seeds were sown behind *desi* plough. (c) N.A. (d) Lines 9' apart. (e) N.A. (v) Nil.  
 (vi) C-251 (medium). (vii) Irrigated. (viii) Weeding on 12.2.1954. (ix) 5.78°. (x) 25, 26.3.1954.

## 2. TREATMENTS :

All combinations of (1) and (2)

- (1) 4 fertilizers :  $F_1=60$  lb./ac. of N as A/S,  $F_2=50$  lb./ac. of  $P_2O_5$  as Super,  $F_3=40$  lb./ac. of  $K_2O$  as Pot. sulphate and  $F_4=6$  lb./ac. of CaO as Gypsum.  
 (2) 3 methods of application of the above fertilizers :  $M_1=$ By broadcast,  $M_2=$ Placement behind plough in furrows and  $M_3=$ Drilled mixed with seed through improved seed drill.

## 3. DESIGN :

- (i) 3×4 Fact. in R.B.D. (ii) (a) 12. (b) N.A. (iii) 3. (iv) (a) 32'×25'. (b) 29'×22'. (v) Plot border 2' and field border 5' around; block partition 3' and irrigation channel 3'. (vi) Yes.

## 4. GENERAL :

- (i) Unsatisfactory. Heavy lodging due to rain and wind on 10.1.1954 and 20.2.1954. (ii) Slight attack of smut. (iii) Grain and straw yield. (iv) (a) 1953—1957. (b) No. (c) No. (v) (a) Farrukhabad, Atarra and Pratapgarh. (vi) Nil. (vii) Experiment conducted by C.P. (R).

## 5. RESULTS :

- (i) 1399 lb./ac.  
 (ii) 355.04 lb./ac.  
 (iii) Only M effect is significant.  
 (iv) Av. yield of grain in lb./ac.

	$M_1$	$M_2$	$M_3$	Mean
$F_1$	1076	1326	1205	1202
$F_2$	1285	1501	1326	1371
$F_3$	1235	1844	1161	1413
$F_4$	1644	1802	1381	1609
Mean	1310	1618	1268	1399

S.E. of marginal mean of F  
 S.E. of marginal mean of M  
 S.E. of body of table

=118.4 lb./ac.  
 =102.5 lb./ac.  
 =205.0 lb./ac.

Crop :- Barley (*Rabi*).

Ref :-U.P. 53(359).

Site :-Govt. Agri. Farm, Pura.

Type :- 'M'.

Object :-To study the effect of lime, iron and F.Y.M. and their combinations on Barley.

## 1. BASAL CONDITIONS :

- (i) (a) N.A. (b) *Jowar*. (c) N.A. (ii) (a) Kanpur type 2—loam. (b) Refer soil analysis, Pura. (iii) 4.12.1953. (iv) (a) *Paewa*; field ploughed by *desi* plough. (b) Behind the plough. (c) to (c) N.A. (v) N.A. (vi) N.A. (vii) N.A. (viii) N.A. (ix) 4.7°. (x) 14 and 15.4.1954.

## 2. TREATMENTS :

- Control (no manure).
- $FeSO_4$  at 6½ lb./ac.+lime at 13 lb./ac.
- F.Y.M. at 50 lb./ac. of N+treatment No. (2).
- F.Y.M. at 50 lb./ac. of N.  
Date of manuring 2.12.1953.

**3. DESIGN :**

(i) Latin square. (ii) (a) 4. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 26' x 42' (v) N.A. (vi) Yes.

**4. GENERAL :**

(i) Germination was good. Growth was very poor due to late sowing and late preparation of the field.  
 (ii) N.A. (iii) Grain and straw yield. (iv) (a) 1953—N.A. (b) N.A. (c) Nil. (v) (a) Nil. (b) Nil.  
 (vi) Nil. (vii) Experiment conducted by Agricultural Chemist.

**5. RESULTS :**

(i) 430.8 lb./ac.  
 (ii) 75.09 lb./ac.  
 (iii) Treatment differences are not significant.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	376.0
2.	392.9
3.	424.8
4.	529.5
S.E./mean	=37.54 lb./ac.

Crop :- Barley (*Rabi*).

Ref :- U.P. 51(104).

Site :- Regional Res. Stn., Varanasi.

Type :- 'M'.

Object :- To study the effect of N and  $P_2O_5$  applied alone and in combination on the yield of Barley crop.

**1. BASAL CONDITIONS :**

(i) (a) to (c) N.A. (ii) (a) Loam (Varanasi type 2). (b) Refer soil analysis, Varanasi. (iii) 28.10.1951 and resown on 28.11.1951. (iv) (a) 8 pre-paratory ploughings given. (b) to (e) N.A. (v) Nil. (vi) N.A. (vii) Irrigated. (viii) N.A. (ix) 1°. (x) 25 to 30.3.1952.

**2. TREATMENTS :**

All combinations of (1) and (2)

(1) 3 levels of N :  $N_0=0$ ,  $N_1=30$  and  $N_2=60$  lb./ac. of N.

(2) 3 levels of  $P_2O_5$  :  $P_0=0$ ,  $P_1=60$  and  $P_2=120$  lb./ac.

N as A/S broadcast and  $P_2O_5$  as Super placed deep in bands near the root zone. Manuring on 26.10.1951.

**3. DESIGN :**

(i) 3x3 Fact. in R.B.D. (ii) (a) 9. (b) N.A. (iii) 6. (iv) (a) N.A. (b) 4' x 26'. (v) A distance of 1' to 3' from plot to plot and 3' to 4' from block to block was left out. (vi) Yes.

**4. GENERAL :**

(i) Crop failed due to droughty conditions and hence crop was resown after *palewa*—progress satisfactory but stunted due to late sowing. (ii) No. (iii) Grain yield. (iv) (a) to (c) No. (v) (a) Aligarh. (b) N.A. (vi) Nil. (vii) Experiment conducted by Agricultural Chemist.

**5. RESULTS :**

(i) 1686 lb./ac.  
 (ii) 220.3 lb./ac.  
 (iii) N and P effects are highly significant. Interaction is not significant.  
 (iv) Av. yield of grain in lb./ac.

	$P_0$	$P_1$	$P_2$	Mean
$N_0$	1070	1137	1270	1159
$N_1$	1616	1782	1908	1769
$N_2$	1881	2187	2327	2132
Mean	1522	1702	1835	1686

S.E. of any marginal mean  
 S.E. of body of table

=51.9 lb./ac.  
 =89.9 lb./ac.



Crop :- Barley (*Rabi*).  
Site :- Aonla (Bareilly).

Ref :- U.P. 50(239).  
Type :- 'M'.

Object :- To draw out a fertilizer schedule for agriculturally important soil types.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) N.A. (iii) N.A. (iv) Improved. (v) (a) to (e) N.A. (vi) November 1950. (vii) Generally irrigated. (viii) N.A. (ix) N.A. (x) March-April.

2. TREATMENTS :

1. Control (no manure).
2. A/S at 30 lb./ac. of N.
3. A/S at 30 lb./ac. of N+Super at 60 lb./ac. of P<sub>2</sub>O<sub>5</sub>.

3. DESIGN :

(i) and (ii) Field selected randomly in a randomly selected village in the district. No. of villages—4.  
(iii) (a) and (b) N.A. (iv) N.A.

4. GENERAL :

(i) Generally average to poor growth. (ii) N.A. (iii) Grain yield. (iv) (a) No. (b) and (c) N.A. (v) N.A. (vi) Nil. (vii) The experiment was conducted by Agricultural Chemist on cultivators' fields.

5. RESULTS :

- (i) 1252 lb./ac.
- (ii) 21.94 lb./ac.
- (iii) Treatment differences are highly significant.
- (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	979
2.	1248
3.	1530
S.E./mean	= 10.97 lb./ac.

Crop :- Barley (*Rabi*).  
Site :- Bareilly and Baheri (Bareilly).

Ref :- U.P. 51(238).  
Type :- 'M'.

Object :- To draw out a fertilizer schedule for agriculturally important soil types.

1. BASAL CONDITIONS :

(i) to (c) N.A. (ii) Bareilly soil type 7 (A and B combined). (iii) N.A. (iv) Improved. (v) (a) As practised locally. After application of manure, the field is levelled by drawing a *pata*. (b) Seeds sown in lines parallel to the fertilizer band. (c) N.A. (d) At a distance of 1" to 2" away from the fertilizer line. (e) N.A. (vi) N.A. (vii) N.A. (viii) N.A. (ix) N.A. (x) N.A.

2. TREATMENTS :

1. Control.
2. A/S at 30 lb./ac. of N.
3. A/S at 30 lb./ac. of N+Super at 60 lb./ac. of N.

3. DESIGN :

(i) and (ii) Villages selected in the district and unreplicated experiment laid out. 3 [replications or trials].  
(iii) (a) and (b) N.A. (iv) N.A.

4. GENERAL :

(i) One trial has poor growth and the other two trials were sown late and were damaged by frost.  
(ii) N.A. (iii) Grain and straw yield. (iv) (a) No. (b) and (c) N.A. (v) N.A. (vi) Nil. (vii) The experiment was conducted by Agricultural Chemist on cultivators' fields.

## 5. RESULTS :

- (i) 799 lb./ac.  
 (ii) 20.28 lb./ac.  
 (iii) Treatment differences are highly significant.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	647
2.	817
3.	933
S.E./mean	= 11.71 lb./ac.

Crop :- Barley (*Rabi*).

Ref :-U.P. 53(416).

Site :- Ghazipur (Ghazipur).

Type :- 'M'.

Object :-To draw out a fertilizer schedule for agriculturally important soil types.

## 1. BASAL CONDITIONS :

- (i) (a) N.A. (b) Fallow. (c) Nil. (ii) 1 trial in loam and 1 trial in sandy loam. (iii) N.A. (iv) N.A.  
 (v) (a) 7 to 8 ploughings by *desi* plough. (b) Sown behind the plough. (c) 30 to 40 [srs./ac. (d) 4" to 6" between rows. (e) N.A. (vi) 24 and 25.10.1953. (vii) Irrigated by well. (viii) N.A. (ix) N.A.  
 (x) 14 and 15.3.1954.

## 2. TREATMENTS :

1. Control.  
 2. 25 lb./ac. of N.  
 3. 25 lb./ac. of N+30 lb./ac. of  $P_2O_5$ .  
 4. 25 lb./ac. of N+60 lb./ac. of  $P_2O_5$ .

N as A/S applied broadcast before sowing.  $P_2O_5$  as Super, placed deep in furrows behind the plough before sowing.

## 3. DESIGN :

- (i) and (ii) 2 villages were selected in the tehsil. In both the villages, one field each was selected. (iii) (a) N.A. (b) Different sizes, area=1/40 ac. (iv) N.A.

## 4. GENERAL :

- (i) Good. (ii) One trial damaged by rats. (iii) Grain and straw yield. (iv) (a) 1953--continued.  
 (b) and (c) N.A. (v) N.A. (vi) Interaction village x treatment has been taken as the error. (vii) Expt. conducted by A.C. on cultivators' fields.

## 5. RESULTS :

- (i) 1030 lb./ac.  
 (ii) 132.7 lb./ac.  
 (iii) Treatment differences are not significant.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	820
2.	1080
3.	1060
4.	1160
S.E./mean	= 93.80 lb./ac.

Crop :-Barley.

Ref :-U.P. 53(417).

Site :-Saidpur (Ghazipur).

Type :-'M'.

Object :-To draw out fertilizer schedules for agriculturally important soil types.

## 1. BASAL CONDITIONS :

- (i) N.A. (b) Fallow for 3 trials, early paddy for 1 trial, *Sanal* fibre for 1 trial and *Jowar* for 1 trial. (c) N.A.  
 (ii) 4 trials in clayey loam to clayey, 2 trials in loam. (iii) N.A. (iv) N.A. (v) (a) 7 to 8 ploughings by *desi* plough. (b) Sown behind the plough. (c) 30 to 40 srs./ac. (d) 4" to 6" between rows. (e) N.A. (vi) 24.10.53 to 13.11.53. (vii) Irrigated. (viii) N.A. (ix) N.A. (x) 8.3.1954 to 24.3.1954.

**2. TREATMENTS :**

1. Control.
2. 25 lb./ac. of N.
3. 25 lb./ac of N+30 lb./ac. of  $P_2O_5$ .
4. 25 lb./ac. of N+60 lb./ac. of  $P_2O_5$ .

N as A/S applied broadcast before sowing.  $P_2O_5$  as Super placed deep in furrows behind the plough.

**3. DESIGN :**

(i) and (ii) 5 villages were selected in the Tehsil. In 1 village 2 fields were selected and in 4 villages, one field was selected. (iii) (a) N.A. (b) Different plot sizes ; area 1/40 acre. (iv) N.A.

**4. GENERAL :**

(i) Fair in 3 trials, good in 2 trials and poor in 1 trial. (ii) N.A. (iii) Grain and straw yield. (iv) (a) 1953—1954. continued. (b), (c) N.A. (v) N.A. (vi) Interaction village×treatment has been taken as error because it comes out to be significant when tested against interaction treatment×fields within villages. (vii) Expt. conducted by A.C. on cultivators' fields.

**5. RESULTS :**

- (i) 955.8 lb./ac.
- (ii) 197.83 lb./ac.
- (iii) Treatment differences are highly significant.
- (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	610.0
2.	830.0
3.	1076.7
4.	1306.7
S.E./mean	=80.76 lb./ac.

Crop :- Barley (*Rabi*).

Ref :- U.P. 49(188).

Site :- Bilhaur and Ghatampur (Kanpur).

Type :- 'M'.

Object :- To draw out a fertilizer schedule for agriculturally important soil types.

**1. BASAL CONDITIONS :**

(i) (a) to (c) N.A. (ii) Kanpur type 1 soils, type 2 soils and type 3 soils. (iii) N.A. (iv) Improved. (v) (a) As practised locally. (b) Seeds sown in lines parallel to the fertilizer band. (c) N.A. (d) At a distance of 1"–2" away from the fertilizer line. (e) N.A. (vi) 18.10.1949 to 15.11.1949. (vii) N.A. (viii) N.A. (ix) N.A. (x) 23.2.1950 to 9.4.1950.

**2. TREATMENTS :**

1. Control.
2. A/S at 30 lb./ac. of N.
3. A/S at 30 lb./ac of N+Super at 60 lb./ac. of  $P_2O_5$ .

N added to surface at sowing time. Super placed at a depth of 3"–4" deep in the sole of the furrow and in the side of the seed row made by either an iron plough or two *desi* ploughs one behind the other in the same furrow.

**3. DESIGN :**

(i) and (ii) Villages selected in the district and unreplicated expt. with the above three treatments laid out. 5 replications or trials were laid. (iii) (a) N.A. (b) N.A. but is taken to be about 1/40 ac. (iv) N.A.

**4. GENERAL :**

(i) Good. (ii) N.A. (iii) Grain and straw yield. (iv) (a) No. (b), (c) N.A. (v) N.A. (vi) Nil. (vii) The expt. was conducted by A.C. on cultivators' fields.

**5. RESULTS :**

- (i) 1423 lb./ac.
- (ii) 167.5 lb./ac.
- (iii) Treatment differences are highly significant.
- (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	1148
2.	1366
3.	1756
S.E./mean	=74.90 lb./ac.

Crop :- Barley (*Rabi*).

Ref :- U.P. 52(284).

Site :- Chunar and Mirzapur. (Mirzapur).

Type :- 'M'.

Object :—To draw out a fertilizer schedule for agriculturally important soil types.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) N.A. (c) N.A. (ii) Type 1 B (Southern Flats) Type 1C (*Karail*), Type 1D (Northern up-lands), Type 1 E (Eastern low lands), Type 2 A (Vindhyan up-lands), Type 2 B (Vindhyan Flats), Type 2 C (Vindhyan low lands). (iii) N.A. (iv) Improved. (v) (a) As practised locally. (b) Seeds sown in lines parallel to the fertilizer band. (c) N.A. (d) At a distance of 1' to 2' away from the fertilizer line. (e) N.A. (vi) N.A. (vii) N.A. (viii) N.A. (ix) N.A. (x) N.A.

## 2. TREATMENTS :

1. Control.

2. A/S at 30 lb./ac. of N.

3. A/S at 30 lb./ac. of N+Super at 60 lb./ac. of  $P_2O_5$ .

N added to surface at sowing time. Super placed at a depth of 3" to 4" deep in the sole of the furrow and in the side of the seed row made by either an iron plough or two *dest* ploughs one behind the other in the same furrow.

## 3. DESIGN :

(i) and (ii) Villages selected in the district and unreplicated experiment with the 3 treatments conducted. (iii) (a) and (b) N.A. but roughly about 1/40 ac. (iv) N.A.

## 4. GENERAL :

(i) N.A. (ii) N.A. (iii) Grain and *bhusa* yield. (iv) (a) No. (b) N.A. (c) N.A. (v) N.A. (vi) Nil. (vii) The experiment was conducted by Agricultural Chemist on cultivators' fields.

## 5. RESULTS :

(i) 1010 lb./ac.

(ii) 177.1 lb./ac.

(iii) Treatment differences are highly significant.

(iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	754
2.	992
3.	1285

S.E./mean = 44.28 lb./ac.

Crop :- Barley (*Rabi*).

Ref :- U.P. 51(224).

Site :- Robertsganj and Dudhi (Mirzapur).

Type :- 'M'.

Object :—To draw out a fertilizer schedule for agriculturally important soil types.

## 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) *Domat*, *Karail* and *Dhanusar*. (iii) N.A. (iv) Improved. (v) (a) to (e) N.A. (vi) N.A. (vii) Irrigated. (viii) N.A. (ix) N.A. (x) N.A.

## 2. TREATMENTS :

1. Control.

2. 30 lb./ac. of N as A/S.

3. 30 lb./ac. of N as A/S+60 lb./ac. of  $P_2O_5$  as Super.

## 3. DESIGN :

(i) and (ii) Field selected randomly in a randomly selected village in the district. No. of villages—9. (iii) (a) N.A. (b) N.A. (iv) N.A.

## 4. GENERAL :

(i) Good to poor growth. (ii) N.A. (iii) Grain yield. (iv) (a) no. (b) N.A. (c) N.A. (v) N.A. (vi) Nil. (vii) The experiment was conducted by Agricultural Chemist on cultivators' fields.

## 5. RESULTS :

- (i) 1773 lb./ac.  
 (ii) 149.6 lb./ac.  
 (iii) Treatment differences are highly significant.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	1538
2.	1787
3.	1993
S.E./mean	=49.85 lb./ac.

Crop :- Barley (*Rabi*).

Ref :- U.P. 50(235).

Site :- Varanasi and Chandauli (Varanasi).

Type :- 'M'.

Object :—To draw out a fertilizer schedule for agriculturally important soil types.

## 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) N.A. (iii) N.A. (iv) N.A. (v) (a) to (e) N.A. (vi) November. (vii) Generally irrigated. (viii) N.A. (ix) N.A. (x) March—April.

## 2. TREATMENTS :

- Control (no manure).
- A/S at 30 lb./ac. of N.
- A/S at 30 lb./ac. of N+Super at 60 lb./ac. of  $P_2O_5$ .

## 3. DESIGN :

(i) and (ii) Field selected randomly in randomly selected village in the district. No. of villages—14. (iii) (a) N.A. (b) N.A. but generally 1/40 ac. (iv) N.A.

## 4. GENERAL :

(i) Generally good. (ii) N.A. (iii) Grain yield. (iv) (a) No. (b) and (c) N.A. (v) N.A. (vi) NIL. (vii) The experiment was conducted by Agricultural Chemist on cultivators' fields.

## 5. RESULTS .

- (i) 1629 lb./ac.  
 (ii) 184.7 lb./ac.  
 (iii) Treatment differences are highly significant.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	1296
2.	1577
3.	2015
S.E./mean	= 49.37 lb./ac.

Crop :- Barley (*Rabi*).

Ref :- U.P. 50(23).

Site :- Govt. Res. Farm, Kanpur.

Type :- 'MV'.

Object :—To study the optimum dose of N along with varieties of Barley.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Jowar* for fodder. (c) Nil. (ii) (a) Loam. (b) N.A. (iii) 5.11.1950. (iv) (a) One ploughing with victory plough. Two ploughings by *desi* plough. (b) Line sowing. (c) 80 lb./ac. (d) Rows 9' apart. (v) Nil. (vi) C-251 and NP-21. (vii) Irrigated on 30.11.1950. (viii) Weeding on 28.2.1951. (ix) N.A. (x) 16.4.1951.

## 2. TREATMENTS :

All combinations of (1) and (2)

- 2 varieties :  $V_1 = C-251$  and  $V_2 = NP-21$ .
- 3 levels of N as A/S :  $N_0 = 0$ ,  $N_1 = 25$  and  $N_2 = 50$  lb./ac.

## 3. DESIGN :

(i) 3×2 Fact. in R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) 24'×12.75'. (b) 20'×11.25'. (v) One row on either side and 2' at each end of the plot. Between plots=2½' and between blocks 4'. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Barley C-251 had strip disease about 2.0% and smut 0.5%. Barley NP-21 was badly affected by smut (up to 20% in some of the plots) and strip disease (0.5%). (iii) Germination and grain yield. (iv) (a) 1950—1952. (b) No. (c) Nil. (v) (a) and (b) Nil. (vi) The experiment was to compare the yield of wheat and barley under similar conditions of manuring. In the experiment along with the 3 levels of manuring, 2 varieties each of wheat and barley were tested giving 12 treatments in each replication. This proforma has been filled for barley and another proforma has been filled in for wheat crop. (vii). Experiment conducted by E.B. (Rabi cereals and potatoes) to Government U.P., Kanpur.

## 5. RESULTS :

- (i) 1225 lb./ac.  
 (ii) 149.9 lb./ac.  
 (iii) Only N effect is highly significant.  
 (iv) Av. yield of grain in lb./ac.

	V <sub>1</sub>	V <sub>2</sub>	Mean
N <sub>0</sub>	635	548	592
N <sub>1</sub>	1332	1232	1282
N <sub>2</sub>	1718	1886	1802
Mean	1228	1222	1225

S.E. of marginal mean of N = 53.0 lb./ac.  
 S.E. of marginal mean of V = 43.3 lb./ac.  
 S.E. of body of table = 75.0 lb./ac.

Crop :- Barley (Rabi).

Ref:- U.P. 51 (16).

Site :- Govt. Res. Farm, Kanpur.

Type :- 'M'.

Object :- To study the optimum dose of N along with varieties of Barley.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Chari*. (c) Nil. (ii) (a) Loam. (b) N.A. (iii) 12.11.1951. (iv) Ploughings by victory plough on 4.10.51, cultivator on 7.10.1951, *desi* plough on 26, 27.10.1951. (b) Line sowing. (c) 100 lb./ac. (d) 9" apart. (e) N.A. (v) Nil. (vi) C-251 and N.P.21. (vii) Irrigated. (viii) Weeding on 14.12.1951, and 11.1.1952. (ix) N.A. (x) 1 and 2.4.1952.

## 2. TREATMENTS :

All combinations of (1) and (2).

(1) 2 varieties : V<sub>1</sub>=C-251 and V<sub>2</sub>=N.P.-21.

(2) 3 levels of N : N<sub>0</sub>=0, N<sub>1</sub>=25 and N<sub>2</sub>=50 lb./ac.

## 3. DESIGN :

(i) 3×2 Fact in R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) 23'×12.75'. (b) 19'×11.25'. (c) One row on either side and 2' at each end of the plot. Between plots 2½', between blocks 4'. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) No. (iii) Germination and grain yield. (iv) (a) 1950-1952. (b) No. (c) Nil. (v) (a) No. (b) No. (vi) The experiment was to compare the yield of wheat and barley under similar conditions of manuring. In the experiment along with the 3 levels of manuring, 2 varieties each of wheat and barley were tested giving 12 treatments (in each replication). This proforma is for barley and another has been filled in for wheat crop. (vii) Experiment conducted by E.B. (Rabi cereals and potatoes) to Govt., U.P., Kanpur.

## 5. RESULTS :

- (i) 1464 lb./ac.  
 (ii) 339.9 lb./ac  
 (iii) Only main effect of N is highly significant.  
 (iv) Av. yield of grain in lb./ac.

	V <sub>1</sub>	V <sub>2</sub>	Mean
N <sub>0</sub>	819	1022	920
N <sub>1</sub>	1697	1421	1559
N <sub>2</sub>	2063	1762	1912
Mean	1526	1402	1464

S.E. of marginal mean of N = 120.2 lb./ac.  
 S.E. of marginal mean of V = 98.1 lb./ac.  
 S.E. of body of table = 169.9 lb./ac.

Crop :- Barley (*Rabi*).

Ref :- U.P. 52(49).

Site :- Govt. Res. Farm, Kanpur.

Type :- 'MV'.

Object :—To study the optimum dose of N for different varieties of Barley.

## 1. BASAL CONDITIONS :

- (i) (a) Nil. (b) *Chari*. (c) Nil. (ii) (a) Loam. (b) N.A. (iii) 3.11.1952. (iv) (a) Ploughings and harrowing by victory on 10.8.1952. by cultivator on 20.9.1952 and by *dest* on 4,5.10.1952., 28.10.1952. and 2.11.1952. (b) Line sowing. (c) 80 lb./ac. (d) rows 9" apart. (e) —. (v) Nil. (vi) C-251. (vii) Irrigated. (viii) Nil. (ix) N.A. (x) 27.3.53.

## 2. TREATMENTS :

All combinations of (1) and (2).

- (1) 2 varieties : V<sub>1</sub>=C-251 and V<sub>2</sub>=NP-21.  
 (2) 3 levels of N : N<sub>0</sub>=0, N<sub>1</sub>=25 and N<sub>2</sub>=50 lb./ac.

## 3. DESIGN :

- (i) 3×2 Fact. in R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) 23'×12.75'. (b) 19'×10.75'. (v) One row on either side and at each end of the plot. Between plots 2½' between blocks 4'. (vi) Yes.

## 4. GENERAL :

- (i) Good. (ii) Attack of rust. (iii) Germination and grain yield. (iv) (a) 1950-1952. (b) No. (c) Nil. (v) (a) and (b) No. (vi) The experiment was to compare the yield of wheat and barley under similar conditions of manuring. In that experiment along with the 3 levels of manuring, 2 varieties each of wheat and barley were tested giving 12 treatments (in each replication). This proforma has been filled for barley and another has been filled in for wheat. (vii) The experiment is conducted by E.B. (*Rabi* cereals and potatoes) to Govt., U.P. Kanpur.

## 5. RESULTS :

- (i) 2571 lb./ac.  
 (ii) 283.0 lb./ac.  
 (iii) Main effects of N and V are highly significant. Interaction is not significant.  
 (iv) Av. yield of grain in lb./ac.

	V <sub>1</sub>	V <sub>2</sub>	Mean
N <sub>0</sub>	2132	2392	2262
N <sub>1</sub>	2420	2913	2666
N <sub>2</sub>	2619	2948	2784
Mean	2390	2751	2571

S.E. of marginal mean of N = 100.1 lb./ac.  
 S.E. of marginal mean of V = 81.7 lb./ac.  
 S.E. of body of table = 141.5 lb./ac.

Crop :-Barley (*Rabi*).

Ref :-U.P. 53(94).

Site :-Govt. Res. Farm, Kanpur.

Type :-'MV'.

Object :-To study the effect of application of  $P_2O_5$  on yield of Barley varieties.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Sanal* for green manuring. (c) Nil. (ii) (a) Loam. (b) N.A. (iii) 2.11.1953. (iv) (a) Turning in of *sanal* on 2.9.1953 with victory plough ; *desi* plough and *pata* on 25 and 30.10.1953. (b) Sown behind plough. (c) 4.25 oz./plot. (d) Rows 9" apart. (e) N.A. (v) Nil. (vi) C-251 and NP-21 (vii) Irrigated. (viii) Weeding on 18.1.1954. (ix) N.A. (x) 6.4.1954.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 2 varieties :  $V_1=C-251$  and  $V_2=NP-21$ .

(2) 5 phosphate treatments :  $P_0=Control$ ,  $P_1=50$  lb./ac. of  $P_2O_5$  as Super in furrows,  $P_2=50$  lb./ac. of  $P_2O_5$  as Super broadcast,  $P_3=100$  lb./ac. of  $P_2O_5$  as Super in furrows and  $P_4=100$  lb./ac. of  $P_2O_5$  as Super broadcast.

## 3. DESIGN :

(i)  $5 \times 2$  Fact. in R.B.D. (ii) (a) 10. (b) N.A. (iii) 4. (iv) (a)  $16' \times 9'$ . (b)  $12' \times 7.5'$ . (v)  $2' \times 0.75'$  (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Slight incidence of smut and rust. (iii) Grain and *bhusha* yield. (iv) (a) 1953—continued. (b) No. (c) N.A. (v) (a) No. (b) N.A. (vi) Nil. (vii) The expt. was conducted by E.B.(R).

## 5. RESULTS :

(i) 1987 lb./ac.

(ii) 795.5 lb./ac.

(iii) None of the effects is significant.

(iv) Av. yield of grain in lb./ac.

	$P_0$	$P_1$	$P_2$	$P_3$	$P_4$	Mean
$V_1$	1431	1758	2007	1556	2131	1777
$V_2$	2209	2100	1805	1960	2909	2197
Mean	1820	1929	1906	1758	2520	1987

S.E. of marginal mean of P = 281.3 lb./ac.

S.E. of marginal mean of V = 177.8 lb./ac.

S.E. of body of table = 397.8 lb./ac.

Crop :-Barley (*Rabi*).

Ref :-U.P. 53(91).

Site :-Govt. Res. Farm, Kanpur.

Type :-'C'.

Object :-To study dibbling as a method of sowing Barley.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Sanai* (green manure). (c) Nil. (ii) (a) Loam. (b) N.A. (iii) 1.11.1953. (iv) (a) Light *palewa* on 12.10.1953. Watt's plough and *pata* on 11.10.1953. *Desi* plough and *pata* on 18, 27 and 31.10.1953. (b) As per treatments. (c) N.A. (d)  $9" \times 6"$ . (e) N.A. (v) Nil. (vi) K-12 (medium). (vii) Irrigated. (viii) Nil. (ix) N.A. (x) 29.3.1954.

## 2. TREATMENTS :

5 methods of sowing :  $S_1=1$  seed/hole,  $S_2=2$  seeds/hole,  $S_3=3$  seeds/hole,  $S_4=4$  seeds/hole and  $S_5=80$  lb./ac. broadcast.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 4. (iv) (a) and (b)  $10' \times 6'$ . (v) Nil. (vi) Yes.



## 4. GENERAL :

(i) Good. (ii) Slight attack of smut and rust. (iii) Grain, straw and dry grain yield. (iv) (a) 1953—continued. (b) No. (c) N.A. (v) (a) No. (b) N.A. (vi) Nil. (vii) The expt. was conducted by E.B.(R).

## 5. RESULTS :

- (i) 4475 lb./ac.  
 (ii) 497.0 lb./ac.  
 (iii) Treatment differences are not significant.  
 (iv) Av. yield of straw in lb./ac.

Treatment	Av. yield
S <sub>1</sub>	4527
S <sub>2</sub>	4807
S <sub>3</sub>	4713
S <sub>4</sub>	4270
S <sub>5</sub>	4060
S.E./mean	= 248.5 lb./ac.

Crop :- Barley (*Rabi*).

Ref :- U.P. 51(13).

Site :- Govt. Res. Farm, Kanpur.

Type :- 'CV'.

Object :- To study the optimum sowing date for different varieties of Barley.

## 1. BASAL CONDITIONS :

(i) (a) No. (b) *Sana*. (c) Nil. (ii) (a) Loam. (b) N.A. (iii) As per treatments. (iv) (a) 1 ploughing each with victory, *desi* and cultivator. (b) N.A. (c) 100 lb./ac. (d) Rows 9" apart. (e) N.A. (v) Nil. (vi) As per treatments. (vii) Irrigated. (viii) Nil. (ix) N.A. (x) 1.4.1952.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 3 varieties : V<sub>1</sub>=NP-21, V<sub>2</sub>=CN-292 and V<sub>3</sub>=CN-294.

(2) 3 sowing dates : D<sub>1</sub>=19.10.1951, D<sub>2</sub>=3.11.1951 and D<sub>3</sub>=20.11.1951.

## 3. DESIGN :

(i) 3×3 Fact. in R.B.D. (ii) (a) 9. (b) N.A. (iii) 4. (iv) (a) 28'×12'. (b) 24'×10.5'. (v) 2'×0.75'. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Traces of smut disease were observed. (iii) Germination and grain yield. (iv) (a) 1951—continued. (b) No. (c) N.A. (v) (a) No. (b) N.A. (vi) Nil. (vii) The experiment was conducted by E.B. (R).

## 5. RESULTS :

- (i) 1248 lb./ac.  
 (ii) 319.5 lb./ac.  
 (iii) Main effect of V alone is highly significant.  
 (iv) Av. yield of grain in lb./ac.

	D <sub>1</sub>	D <sub>2</sub>	D <sub>3</sub>	Mean
V <sub>1</sub>	2072	1934	1850	1952
V <sub>2</sub>	722	906	733	787
V <sub>3</sub>	806	1256	956	1006
Mean	1200	1365	1180	1248

S.E. of any marginal mean = 92.3 lb./ac.  
 S.E. of body of table = 159.8 lb./ac.

Crop :- Barley (*Rabi*).

Ref :- U.P. 52(44).

Site :- Govt. Res. Farm, Kanpur.

Type :- 'CV'.

Object :- To study the optimum sowing date for different varieties of Barley.

## 1. BASAL CONDITIONS :

- (i) (a) No. (b) *Sanai*. (c) Nil. (ii) (a) Loam. (b) N.A. (iii) As per treatments. (iv) (a) 2 ploughings with victory plough, 4 with *desi* and 1 with cultivator. (b) N.A. (c) 80 lb./ac. (d) Rows 9" apart. (e) N.A. (v) Nil. (vi) As per treatments. (vii) Irrigated. (viii) Weeding on 18.12.1950. (ix) N.A. (x) 31.3.1953.

## 2. TREATMENTS :

All combinations of (1) and (2)

- (1) 4 varieties :
- $V_1=N.P.-21$
- ,
- $V_2=C.N. 294$
- ,
- $V_3=CN-292$
- and
- $V_4=K-12$
- .

- (2) 4 sowing dates :
- $D_1=23$
- Oct. 1952,
- $D_2=30$
- th Oct. 1952,
- $D_3=6$
- th November 1952 and
- $D_4=13$
- th November 1952.

## 3. DESIGN :

- (i) 4x4 Fact. in R.B.D. (ii) (a) 16. (b) N.A. (iii) 4. (iv) (a) and (b) 18'x6'. (v) Nil. (vi) Yes.

## 4. GENERAL :

- (i) Good, but lodging took place when the field was irrigated and followed by strong wind. (ii) Traces of smut disease were seen. (iii) Germination and yield of grain. (iv) (a) 1951—continued. (b) No. (c) N.A. (v) (a) No. (b) N.A. (vi) Nil. (vii) The experiment was conducted by E.B. (R).

## 5. RESULTS :

- (i) 2688 lb./ac.  
(ii) 360.7 lb./ac.  
(iii) Main effect of V alone is highly significant.  
(iv) Av. yield of grain in lb./ac.

	$D_1$	$D_2$	$D_3$	$D_4$	Mean
$V_1$	3837	3993	4239	3513	3896
$V_2$	1867	1828	1776	1906	1844
$V_3$	1646	1659	1556	1335	1549
$V_4$	3436	3371	3345	3695	3462
Mean	2696	2713	2729	1612	2688

S.E. of any marginal mean = 90.2 lb./ac.

S.E. of body of table = 180.4 lb./ac.

Crop :- Barley (*Rabi*).

Ref :- U.P. 53(83).

Site :- Govt. Res. Farm, Kanpur.

Type :- 'CV'.

Object :- To study the optimum sowing dates for Barley varieties.

## 1. BASAL CONDITIONS :

- (i) (a) Nil. (b) *Sanai* for G.M. (c) Nil. (ii) (a) Loam. (b) N.A. (iii) As per treatments. (iv) (a) Light *palewa* on 12.10.1953, victory plough on 19.9.1953; cultivator on 30.9.1953, spring harrowing and *pata* on 18.10.1953; *desi* plough and *pata* on 24.10.1953 and 26.10.1953. (b) N.A. (c) 80 lb./ac. (d) Rows 8" apart. (e) N.A. (v) Nil. (vi) As per treatments. (vii) Irrigated. (viii) Nil. (ix) N.A. (x) 30.3.1954.

## 2. TREATMENTS :

All combinations of (1) and (2)

- (1) 4 varieties :
- $V_1=N.P. 21$
- ,
- $V_2=C.N. 294$
- ,
- $V_3=C.N. 292$
- , and
- $V_4=K-12$
- .

- (2) 4 sowing dates :
- $D_1=26.10.1953$
- ,
- $D_2=2.11.1953$
- ,
- $D_3=9.11.1953$
- and
- $D_4=16.11.1953$
- .

## 3. DESIGN :

- (i) 4x4 Fact. in R.B.D. (ii) (a) 16. (b) N.A. (iii) 4. (iv) (a) and (b) 18'x6'. (v) Nil. (vi) Yes.

## 4. GENERAL :

- (i) Good. (ii) Slight attack of smut rust. (iii) Grain and straw yield. (iv) (a) 1951—continued. (b) No. (c) N.A. (v) (a) No. (b) N.A. (vi) Nil. (vii) The experiment was conducted by E.B. (R).

## 5. RESULTS :

- (i) 1792 lb./ac.  
 (ii) 372.9 lb./ac.  
 (iii) Main effect of V alone is highly significant.  
 (iv) Av. yield of grain in lb./ac.

	D <sub>1</sub>	D <sub>2</sub>	D <sub>3</sub>	D <sub>4</sub>	Mean
V <sub>1</sub>	2722	2334	2761	2411	2557
V <sub>2</sub>	946	869	933	1270	1004
V <sub>3</sub>	869	1063	816	1128	969
V <sub>4</sub>	2800	2476	2567	2710	2638
Mean	1834	1686	1769	1880	1792

S.E. of any marginal mean  
 S.E. of body of table

= 93.2 lb./ac.  
 =186.5 lb./ac.

Crop :- Barley (*Rabi*).

Ref :- U.P. 50(47).

Site :- Govt. Res. Farm, Kanpur.

Type :- 'CV'.

Object :- To study on the effect of cold storage on Barley varieties.

## 1. BASAL CONDITIONS :

- (i) (a) No. (b) *Sana* for G.M. (c) No. (ii) (a) Loam. (b) N.A. (iii) 15.11.1950. (iv) (a) 3 ploughings with victory plough, 4 ploughings with *dest* plough. (b) N.A. (c) 1½ oz/plot. (d) Between rows 1'. (e) N.A. (v) Nil. (vi) As per treatments. (vii) Irrigated. (viii) Weeding on 26.2.1951. (ix) N.A. (x) 10, 11.4.1951.

## 2. TREATMENTS :

All combinations of (1) and (2)

- (1) 7 early varieties : V<sub>1</sub>=N.P.21, V<sub>2</sub>=C-50, V<sub>3</sub>=C-84, V<sub>4</sub>=C-251, V<sub>5</sub>=C.N.292, V<sub>6</sub>=C.N.293 and V<sub>7</sub>=C.N.294.

- (2) 2 methods of storage of seed : M<sub>1</sub>=Cold storage and M<sub>2</sub>=Ordinary.  
 variety CN-293 was untreated and hence excluded from analysis.

## 3. DESIGN :

- (i) 6×2 Fact. in R.B.D. (ii) (a) 12. (b) N.A. (iii) 4. (iv) (a) 7'×5'. (b) 7'×3'. (v) N.A. (vi) Yes.

## 4. GENERAL :

- (i) Very good. (ii) No. (iii) Germination and grain yield. (iv) (a) No. (b) No. (c) N.A. (v) (a) No. (b) N.A. (vi) Nil. (vii) The experiment was conducted by E.B. (R).

## 5. RESULTS :

- (i) 1930 lb./ac.  
 (ii) 273.8 lb./ac.  
 (iii) Main effect of V alone is highly significant.  
 (iv) Av. yield of grain in lb./ac.

	V <sub>1</sub>	V <sub>2</sub>	V <sub>3</sub>	V <sub>4</sub>	V <sub>5</sub>	V <sub>7</sub>	Mean
M <sub>1</sub>	2593	2690	2253	1961	810	1215	1920
M <sub>2</sub>	2447	2333	2512	2074	843	1426	1939
Mean	2520	2512	2382	2018	826	1320	1930

S.E. of marginal mean of V  
 S.E. of marginal mean of M  
 S.E. of body of table

= 96.8 lb./ac.  
 = 55.9 lb./ac.  
 =136.9 lb./ac.

Crop :-Barley (*Rabi*).

Ref :-U.P. 48(14).

Site :-Sugarcane Res. Sub-Stn., Kunraghat.

Type :-'CV'.

Object :-To study the optimum sowing date for Barley varieties.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Cow peas. (c) Nil. (ii) (a) Light loam. (b) N.A. (iii) As per treatments. (iv) (a) 3 ploughings by *dest* plough. (b) to (e) N.A. (v) 1.5 md./ac. of A/S, top dressed. (vi) As per treatments. (vii) Irrigated. (viii) Nil. (ix) N.A. (x) 31.3.1949.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 2 varieties :  $V_1 = \text{N.P.21}$  and  $V_2 = \text{C-251}$ .(2) 4 sowing dates :  $D_1 = 22.10.1948$ ,  $D_2 = 29.10.1948$ ,  $D_3 = 5.11.1948$  and  $D_4 = 12.11.1948$ .

## 3. DESIGN :

(i)  $2 \times 4$  Fact. in R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a)  $40' \times 21'$ . (b)  $37' \times 19.5'$ . (v) One row on either side and  $1\frac{1}{2}'$  at each end of the plot. (vi) Yes.

## 4. GENERAL :

(i) Satisfactory. (ii) Attack by rust. (iii) Grain and straw yield. (iv) (a) 1944—1948. (b) and (c) No. (v) (a) and (b) No. (vi) The crop did not attain as much height as during the previous year. Yellow rust was in plenty and hence the yield was somewhat below expectation. (vii) Expt. was conducted by E.B.(R).

## 5. RESULTS :

- (i) 1568 lb./ac.  
 (ii) 319.7 lb./ac.  
 (iii) None of the effects is significant.  
 (iv) Av. yield of grain in lb./ac.

	$V_1$	$V_2$	Mean
$D_1$	1934	1246	1590
$D_2$	1400	1482	1441
$D_3$	1749	1609	1679
$D_4$	1637	1485	1561
Mean	1680	1455	1568

S.E. of marginal mean of V = 79.9 lb./ac.  
 S.E. of marginal mean of D = 113.0 lb./ac.  
 S.E. of body of table = 159.8 lb./ac.

Crop :-Barley (*Rabi*).

Ref :-U.P. 50(24).

Site :-Govt. Res. Farm, Kanpur.

Type :-'CM'.

Object :-To study the optimum dose of N in combination with seed rates for Barley.

## 1. BASAL CONDITIONS :

(i) (a) No. (b) *Jowar* for fodder. (c) Nil. (ii) (a) Loam. (b) N.A. (iii) 5.11.1950. (iv) (a) One ploughing with victory plough and two ploughings with *dest* plough. (b) N.A. (c), (d) and (e) N.A. (v) Nil. (vi) N.P.-21. (vii) Irrigated. (viii) Weeding on 28.2.1951. (ix) N.A. (x) 15, 16.4.1951.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 4 levels of N as A/S :  $N_1 = 25$ ,  $N_2 = 50$ ,  $N_3 = 75$  and  $N_4 = 100$  lb./ac.(2) 4 seed rates :  $S_1 = 40$ ,  $S_2 = 60$ ,  $S_3 = 80$  and  $S_4 = 100$  lb./ac.

A/S broadcast at the time of sowing.

## 3. DESIGN :

(i) 4×4 Fact. in R.B.D. (ii) (a) 16 plots in two flanks. (b) N.A. (iii) 4. (iv) (a) 38'×12.75'. (b) 34'×11.25'. (v) 2'×0.75'. (vi) Yes.

## 4. GENERAL ;

(i) Satisfactory. (ii) Smut incidence is about 4 to 5% in all the plots of different treatments. Different doses of manuring and seed rates do not seem to have any effect on disease incidence. (iii) Germination and grain yield. (iv) (a) 1950—1953. (b) No. (c) N.A. (v) (a) No. (b) N.A. (vi) Nil. (vii) The expt. conducted by E.B.(R).

## 5. RESULTS :

- (i) 2037 lb./ac.  
 (ii) 274.9 lb./ac.  
 (iii) Main effect of N alone is highly significant.  
 (iv) Av. yield of grain in lb./ac.

	N <sub>1</sub>	N <sub>2</sub>	N <sub>3</sub>	N <sub>4</sub>	Mean
S <sub>1</sub>	1409	1973	2467	2467	2079
S <sub>2</sub>	1622	1966	2123	2262	1993
S <sub>3</sub>	1387	2079	2284	2343	2023
S <sub>4</sub>	1519	2204	2310	2174	2052
Mean	1484	2056	2296	2312	2037

S.E. of any marginal mean = 68.7 lb./ac.  
 S.E. of body of table = 137.4 lb./ac.

Crop :- Barley (*Rabi*).

Ref :- U.P. 51(17).

Site :- Govt. Res. Farm, Kanpur.

Type :- 'CM'.

Object :- To study the optimum dose of N in combination with seed rates for Barley.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Jowar* for fodder. (c) Nil. (ii) (a) Loam. (b) N.A. (iii) 12.11.1951. (iv) (a) 2 ploughings by victory plough, 1 by cultivator and 2 by *desi* plough. (b) N.A. (c) As per treatments. (d) and (e) N.A. (v) Nil. (vi) C-251. (vii) Irrigated. (viii) Nil. (ix) N.A. (x) 28,29.3.1952.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 4 levels of N as A/S : N<sub>0</sub>=0, N<sub>1</sub>=25, N<sub>2</sub>=50 and N<sub>3</sub>=75 lb./ac.

(2) 4 seed rates : S<sub>1</sub>=40, S<sub>2</sub>=60, S<sub>3</sub>=80 and S<sub>4</sub>=100 lb./ac.

A/S broadcast at sowing time.

## 3. DESIGN :

(i) 4×4 Fact. in R.B.D. (ii) (a) 16 in 2 flanks. (b) N.A. (iii) 4. (iv) (a) 38'×12.75'. (b) 34'×11.25'. (v) 2'×0.75'. (vi) Yes.

## 4. GENERAL :

(i) Satisfactory. (ii) Disease of smut was observed. (iii) Germination and grain yield. (iv) (a) 1950—1953. (b) No. (c) N.A. (v) (a) No. (b) N.A. (vi) Nil. (vii) The experiment was conducted by E.B. (R).

## 5. RESULTS :

- (i) 1550 lb./ac.  
 (ii) 284.2 lb./ac.  
 (iii) Main effect of N alone is highly significant.

(iv) Av. yield of grain in lb./ac.

	N <sub>0</sub>	N <sub>1</sub>	N <sub>2</sub>	N <sub>3</sub>	Mean
S <sub>1</sub>	1116	1468	1622	1808	1504
S <sub>2</sub>	1098	1490	1706	1559	1463
S <sub>3</sub>	1336	1424	1874	1856	1622
S <sub>4</sub>	1102	1537	1856	1958	1613
Mean	1163	1480	1764	1795	1550

S.E. of any marginal mean = 71.0 lb./ac.  
 S.E. of body of table = 142.1 lb./ac.

Crop :- Barley (*Rabi*).

Ref :- U.P. 52(48).

Site :- Govt. Res. Farm, Kanpur.

Type :- 'CM'.

Object :- To study the optimum dose of N in combination with seed rates for Barley.

## 1. BASAL CONDITIONS :

(i) (a) No. (b) *Charl* (*Jowar* for fodder). (ii) (a) Loam. (b) N.A. (iii) 3.11.1952. (iv) (a) One ploughing with victory plough and two with *desi* plough. (b) N.A. (c) As per treatments. (d) and (e) N.A. (v) Nil. (vi) C-251. (vii) Irrigated. (viii) Nil. (ix) N.A. (x) 26/27.3.1953.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 4 levels of N as A/S : N<sub>0</sub>=0, N<sub>1</sub>=25, N<sub>2</sub>=50 and N<sub>3</sub>=75 lb./ac.(2) 4 seed rates : S<sub>1</sub>=40, S<sub>2</sub>=60, S<sub>3</sub>=80 and S<sub>4</sub>=100 lb./ac.

A/S broadcast at sowing time.

## 3. DESIGN :

(i) 4×4 Fact. in R.B.D. (ii) (a) 16. (b) N.A. (iii) 4. (iv) (a) 18'×12'. (b) 14'×10.5'. (v) 2'×0.75'. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Traces of rust. (iii) Germination and grain yield. (iv) (a) 1950—1953. (b) No. (c) N.A. (v) (a) No. (b) N.A. (vi) Nil. (vii) The experiment was conducted by E.B. (R).

## 5. RESULTS :

- (i) 2418 lb./ac.  
 (ii) 373.1 lb./ac.  
 (iii) None of the effects is significant.  
 (iv) Av. yield of grain in lb./ac.

	N <sub>0</sub>	N <sub>1</sub>	N <sub>2</sub>	N <sub>3</sub>	Mean
S <sub>1</sub>	2315	2534	2334	2686	2467
S <sub>2</sub>	2438	2572	2400	2638	2512
S <sub>3</sub>	2143	2372	2543	2419	2369
S <sub>4</sub>	2295	2305	2543	2143	2322
Mean	2298	2446	2455	2472	2418

S.E. of any marginal mean = 92.8 lb./ac.  
 S.E. of body of table = 186.6 lb./ac.

Crop :- Barley (*Rabi*).  
Site :- Govt. Res. Farm, Kanpur.

Ref :- U.P. 53(85).  
Type :- 'CM'.

Object :- To study the optimum dose of N in combination with seedrates for Barley.

### 1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Chari* (for fodder). (c) Nil. (ii) (a) Loam. (b) N.A. (iii) 27.10.1953. (iv) (a) Light *palewa* on 12.10.1953, victory plough on 18.9.1953, cultivator on 30.9.1953, spring harrow and *pata* on 20.1.1953; *desi* plough and *pata* on 26 and 27.10.1953. (b) Sown behind the plough. (c) N.A. (d) 9' apart. (e) N.A. (v) Nil. (vi) C-251 (early). (vii) Irrigated. (viii) Weeding on 30.1.1954. (ix) N.A. (x) 31.3.1954.

### 2. TREATMENTS :

All combinations of (1) and (2)

(1) 4 levels of N as A/S :  $N_0=0$ ,  $N_1=25$ ,  $N_2=50$  and  $N_3=75$  lb./ac.

(2) 4 seed rates :  $S_1=40$ ,  $S_2=60$ ,  $S_3=80$  and  $S_4=100$  lb./ac.

A/S broadcast at sowing time.

### 3. DESIGN :

(i) 4x4 Fact. in R.B.D. (ii) (a) 16. (b) N.A. (iii) 4. (iv) (a) 18'x12'. (b) 14'x10.5' (v) 2'x0.75'. (vi) Yes.

### 4. GENERAL :

(i) Good. (ii) Slight attack of rust and smut. (iii) Germination, sheaf, grain and straw yield. (iv) (a) 1950-1953. (b) No. (c) N.A. (v) (a) No. (b) N.A. (vi) Nil. (vii) The expt. was conducted by E.B. (R).

### 5. RESULTS :

(i) 1486 lb./ac.

(ii) 205.1 lb./ac.

(iii) Main effect of N is highly significant ; effect of S is significant. Interaction is not significant.

(iv) Av. yield of grain in lb./ac.

	$N_0$	$N_1$	$N_2$	$N_3$	Mean
$S_1$	1019	1667	1724	2067	1619
$S_2$	1038	1505	1600	1667	1452
$S_3$	1248	1333	1591	1591	1441
$S_4$	1029	1505	1572	1619	1431
Mean	1084	1502	1622	1736	1486

S.E. of any marginal mean = 51.3 lb./ac.

S.E. of body of table = 102.6 lb./ac.

Crop :- Barley (*Rabi*).

Ref :- U.P. 52(192).

Site :- Students' Instructional Farm, Kanpur.

Type :- 'CM'.

Object :- To study the *jowar+guar* mixtures for fodder along with levels of N and their residual effect on Barley.

### 1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Jowar+guar*. (c) As per treatments. (ii) (a) Sandy loam. (b) N.A. (iii) 23.10.1952. (iv) (a) After preparatory irrigation (*palewa*) the field was ploughed with a watt's plough followed by planking on 14.10.1952. Next day a cultivator was given followed by planking. On 20 to 22.10.1952, a second ploughing with *desi* plough followed by planking. (b) Seeds drilled. (c) 30 seers/ac. (d) and (e) N.A. (v) Nil. (vi) C-251 (early). (vii) Irrigated. (viii) No interculture. (ix) N.A. (x) 9 to 11.3.1953

## 2. TREATMENTS :

## Main-plot treatments :

4 levels of N :  $N_0=0$ ,  $N_1=30$ ,  $N_2=60$  and  $N_3=90$  lb./ac.

## Sub-plot treatments :

5 mixtures of *jowar* and *guar* in the following ratios to give 40 lb./ac. of seed rate :

$M_1$ =*jowar* only,  $M_2=3:1$ ,  $M_3=1:1$ ,  $M_4=1:3$  and  $M_5$ =*guar* only.

N as A/S and castor cake in 1:1 ratio applied to *jowar* and *guar*.

## 3. DESIGN :

(i) Split-plot. (ii) (a) 4 main-plots/block and 5 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 54.5'×16'. (b) 52.5'×14'. (v) 1' ring round the net plot. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) N.A. (iii) Grain yield. (iv) (a) and (b) No. (c) N.A. (v) (a) No. (b) N.A. (vi) Nil. (vii) The expt. was conducted by P.A.C. Plot wise yield data are not available at the station. Only the analysis of variance table and the summary table were available.

## 5. RESULTS :

(i) 1072 lb./ac.

(ii) (a) 258.0 lb./ac.

(b) 109.9 lb./ac.

(iii) Main effect of M and interaction  $M \times N$  are highly significant. N effect is not significant.

(iv) Av. yield of grain in lb./ac.

	$M_1$	$M_2$	$M_3$	$M_4$	$M_5$	Mean
$N_0$	759	892	892	994	1429	993
$N_1$	734	883	960	947	1780	1061
$N_2$	787	852	879	1105	1534	1031
$N_3$	1160	1095	1123	1169	1463	1202
Mean	860	930	964	1054	1551	1072

## S.E. of difference of two

1. N marginal means = 57.7 lb./ac.
2. M marginal means = 27.5 lb./ac.
3. M means at the same level of N = 77.7 lb./ac.
4. N means at the same level of M = 107.2 lb./ac.

Crop :-Barley (*Rabi*).

Site :-Govt. Res. Farm, Kanpur.

Ref :-U.P. 53(121).

Type :-'D'.

Object :-To test the efficiency of various solar treatments for the control of covered smut of Barley.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Lobia* and Pea. (c) Nil. (ii) (a) Loam. (b) N.A. (iii) 25.11.1953. (iv) (a) 4 ploughings with *desi* plough and one with victory plough. (b) Behind the plough in lines. (c) N.A. (d) 2 rows per plot 1' apart. (e) —. (v) Nil. (vi) C-251. (vii) Irrigated. (viii) One weeding on 5.2.1954. (ix) N.A. (x) 7.4.1954.

## 2. TREATMENTS;

1. Control.
2. 4 hours soaking of seeds and drying in sun covered with sand.
3. 4 hours soaking of seeds and drying uncovered.
4. Overnight soaking of seeds and drying in shade.
5. Sun soaking of seeds and overnight drying.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 2. (iv) (a) N.A. (block size = 18'×20'). (b) N.A. (v) N.A. (vi) No.



## 4. GENERAL :

(i) Good. (ii) Smut incidence. (iii) Percentage infection. (iv) (a) No. (b) No. (c) Nil. (v) (a) and (b) No. (vi) Nil. (vii) Experiment conducted by Plant Pathologist to Govt., U.P., Kanpur.

## 5. RESULTS :

(i) to (iv).

Treatments	Mean value of $\log_e (1+x)/\text{plot}$	Mean infection
1.	2.060490	6.850
2.	0.024395	0.025
3.	0.199390	0.245
4.	0.033830	0.035
5.	0.000000	0.000
G.M.	0.463621	
S.E./mean	0.083066	

Note :—The data has been converted into  $\log_e (1+x)$  and then analysed, where  $x$  is the % of infection.

Crop :- Barley (*Rabi*).

Ref :- U.P. 53(362).

Site :- Govt. Res. Farm, Kanpur.

Type :- 'D'.

Object :—To test the efficiency of various chemical treatments for the control of covered smut of Barley.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Lobia* and Pea. (c) Nil. (ii) (a) Loam. (b) N.A. (iii) 25.11.1953. (iv) (a) 4 ploughings with *desi* plough and one with victory plough. (b) Behind the plough in lines. (c) N.A. (d) 2 rows/plot 1' apart. (e) —. (v) Nil. (vi) C-251 (N.A.) (vii) Irrigated. (viii) One weeding on 5.2.1954. (ix) N.A. (x) 7.4.1954.

## 2. TREATMENTS :

1. Control. (Inoculated seed)
2. Agrosan G.N. 1 : 500.
3. Ceresan 1 : 300.
4. Hervasan 1 : 300
5. Ceresan 1 : 500.
6. Agrosan 1 : 300.
7. Hervasan 1 : 500.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 2. (iv) (a) N.A. (block size=19'x20'). (b) N.A. (v) N.A. (vi) No.

## 4. GENERAL :

(i) Good. (ii) Smut incidence. (iii) Percentage infection. (iv) (a) No. (b) No. (c) Nil. (v) (a) and (b) No. (vi) Nil. (vii) Experiment conducted by P.P. to Govt. U.P., Kanpur.

## 5. RESULTS :

(i)  $7.36 \sin^{-1} \sqrt{p/\text{plot}}$ .(ii)  $1.9628 \sin^{-1} \sqrt{p/\text{plot}}$ .

(iii) Treatment differences are highly significant.

(iv) Treatments	Mean value of $\sin^{-1} \sqrt{p/\text{plot}}$	% infection/plot (transformed value)
1.	15.17	7.28
2.	7.86	2.35
3.	1.44	0.56
4.	4.58	1.13
5.	4.55	1.12
6.	7.72	2.28
7.	10.20	3.61
S.E./mean	1.3879	

Note :— $p$  is percentage of infection.

Crop :- Barley (*Rabi*).

Ref :- U.P. 53(124).

Site :- Vivekananda Laboratory, Almora.

Type :- 'DV'.

Object :- To find out the effect of vernalisation on vegetative phase and yield of different varieties of Barley.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) Maize. (c) 200 mds. of compost, 4 mds. of castor cake and 2 mds of a mixture of A/S+ Super. (ii) (a) Loam. (b) N.A. (iii) 27.10.1953. (iv) (a) N.A. (b) Dibbled. (c) N.A. (d) 3'x9". (e) N.A. (v) 200 mds. of compost and 5 mds of castor cake per acre. (vi) As per treatments. (vii) Irrigated. (viii) Hoing done whenever necessary. (ix) 13.08". (x) N.A.

## 2. TREATMENTS :

Main-plot treatments :

3 varieties :  $V_1$ =C-293 (early),  $V_2$ =T-5 (early) and  $V_3$ =Colonial (late).

Sub-plot treatments :

2 methods :  $M_1$ =Control and  $M_2$ =Vernalised.

## 3. DESIGN :

(i) Split-plot. (ii) (a) 3 main-plots/block ; 2 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a), (b) 5'x9". (single row plot). (v) One border row in each flank. (vi) Yes.

## 4. GENERAL :

(i) Good crop. No lodging. (ii) Yellow rust on both the treatments in each variety ; in case of Colonial barley attack of rust very severe. (iii) Vegetative phase (from sowing to ear emergence) and yield data plot wise. (iv) (a) No. (b), (c) No. (v) (a), (b) N.A. (vi) Colonial barley is a late variety and is very susceptible to rust. Its low yield in control plots is only due to severe attack of rust. In other treatment i.e. vernalised, the yield is comparatively very high because the vernalisation shortens the vegetative phase and the plants escape much of the damage caused by the rust in later period. (vii) Although design is given as paired plot design but it was to be split-plot design as in the last years it has been mentioned as split-plot design.

## 5. RESULTS :

- (i) 4381 lb./ac.  
 (ii) (a) 2736.0 lb./ac.  
 (b) 1542.0 lb./ac.  
 (iii) Only the interaction  $V \times M$  is significant.  
 (iv) Av. yield of grain in lb./ac.

	$M_1$	$M_2$	Mean
$V_1$	4233	3086	3659
$V_2$	4764	4855	4810
$V_3$	2723	6625	4674
Mean	3907	4855	4381

S.E. of difference of two

1. V marginal means = 1368.0 lb./ac.  
 2. M marginal means = 630.0 lb./ac.  
 3. M means at the same level of V = 1090.0 lb./ac.  
 4. V means at the same level of M = 1571.0 lb./ac.

Crop :- Barley (*Rabi*).

Ref :- U.P. 50(20).

Site :- Govt. Res. Farm, Kanpur.

Type :- 'DV'.

Object :- To study the effect of seeds treated with Agrosan on the yield of different varieties of Barley.

## 1. BASAL CONDITIONS :

(i) (a) No. (b) *Jowar* for fodder. (c) Nil. (ii) (a) Loam. (b) N.A. (iii) N.A. (iv) (a) Ploughings 1 with victory plough, ploughings 3 with *desi* plough. (b) N.A. (c) 80 lb./ac. (d) Rows 9" apart. (e) N.A. (v) N.A. (vi) N.A. (vii) Irrigated. (viii) Weeding and hoeing on 10, 11.1.1951 and 25.2.1951. (ix) N.A. (x) N.A.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 6 varieties :  $V_1=NP.21$ ,  $V_2=C-251$ ,  $V_3=C-84$ ,  $V_4=C-50$ ,  $V_5=K-12$  and  $V_6=CN-294$ .

(2) 2 methods of treating the seed :  $M_1=$ untreated and  $M_2=$ treated with Agrosan.

The seed was treated one or two days before sowing.

## 3. DESIGN :

(i)  $6 \times 2$  Fact. in R.B.D. (ii) (a) 12. (b) N.A. (iii) 4. (iv) (a)  $24' \times 10.5'$ . (b)  $20' \times 9'$ . (v)  $2' \times 0.75'$ . (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) In untreated Agrosan G.N. plots there was effect of smut. (iii) Germination and grain yield. (iv) (a) to (c) No. (v) (a) No. (b) N.A. (vi) Nil. (vii) The expt. was conducted by E.B. (R).

## 5. RESULTS :

- (i) 1113 lb./ac.  
 (ii) 156.8 lb./ac.  
 (iii) Main effect of V alone is highly significant.  
 (iv) Av. yield of grain in lb./ac.

	$V_1$	$V_2$	$V_3$	$V_4$	$V_5$	$V_6$	Mean
$M_1$	1353	1073	1175	1213	1136	607	1093
$M_2$	1175	1252	1299	1182	1229	653	1132
Mean	1264	1162	1237	1198	1183	630	1113

S.E. of marginal mean of V = 55.4 lb./ac.

S.E. of marginal mean of M = 32.0 lb./ac.

S.E. of body of table = 78.4 lb./ac.

Crop :- Maize (*Kharif*).

Ref :- U.P. 53(377).

Site :- B.R. College Farm, Bichpuri (Agra).

Type :- 'M'.

Object :- To study the effect of application of A/S and Super by furrow placement and broadcasting on growth, development and yield of Maize.

## 1. BASAL CONDITIONS :

- (i) (a) Maize (*charf*)—wheat. (b) Wheat. (c) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis, Agra. (iii) 22.7.1953. (iv) (a) Hot weather cultivation given. 2 ploughings in 2nd week of July. (b) As per treatments. (c) 8 srs./ac. (d) Row to row—2' and plant to plant—1½' (after thinning). (e) —. (v) Nil. (vi) T-414 (N.A.). (vii) Nil. (viii) Thinning on 2.8.1953 and 1 weeding on 6.8.1953 by *khurpi*. (ix) 8.48". (x) 26.9.1953.

## 2. TREATMENTS :

- No manure (control).
- N+P mixture at 3" depth in furrows.
- N+P mixture at 3" depth to the sides of the planting row.
- N+P mixture broadcast and harrowed into a depth of 3".  
 $N+P=45$  lb./ac. of N as A/S+60 lb./ac. of  $P_2O_5$  as Super.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 6. (iv) (a)  $38' \times 26'$ . (b)  $36' \times 24'$ . (v) Block border=4', plot border=2' and main channel=4'. (vi) Yes.

## 4. GENERAL :

(i) Germination—normal. (ii) N.A. (iii) Germination counts, stand of the crop, shoot height and grain yield etc. (iv) (a) to (c) No. (v) (a) and (b) No. (vi) Nil. (vii) The experiment was conducted by Head of Agronomy department B.R. College, Agra.

## 5. RESULTS :

- (i) 1826 lb./ac.  
 (ii) 453.7 lb./ac.  
 (iii) Treatment differences are significant.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	1307
2.	1861
3.	2354
4.	1784
S.E./mean	= 185.2 lb./ac.

Crop :- Maize (*Kharif*).  
 Site :- Govt. Agri. Farm, Atarra.

Ref :- U.P. 49(15).  
 Type :- 'M'.

Object :- To study the effect of N and  $P_2O_5$  manures applied alone and in combination on the yield of Maize.

## 1. BASAL CONDITIONS :

- (i) (a) N.A. (b) N.A. (c) N.A. (ii) (a) *Parwa* (Bundelkhand  $T_2$ ). (b) N.A. (iii) 6.7.1949. (iv) (a) to (e) N.A. (v) Nil. (vi) N.A. (vii) N.A. (viii) N.A. (ix) N.A. (x) 21.12.1949.

## 2. TREATMENTS :

All combinations of (1) and (2)

- (1) 3 levels of N as A/S :  $N_0=0$ ,  $N_1=15$  and  $N_2=30$  lb./ac.  
 (2) 3 levels of  $P_2O_5$  as Super :  $P_0=0$ ,  $P_1=30$  and  $P_2=60$  lb./ac.

Manuring on 6.7.1949.

## 3. DESIGN :

- (i)  $3 \times 3$  Fact. in R.B.D. (ii) (a) 9. (b) N.A. (iii) 6. (iv) (a) N.A. (b)  $68' \times 16'$ . (v) N.A. (vi) Yes.

## 4. GENERAL :

- (i) Good. (ii) Nil. (iii) Yield of straw. (iv) (a) No. (b) and (c) N.A. (v) (a) Kalai, Saidpur, Bharari Pratapgarh and Kalyanpur. (b) N.A. (vi) Nil. (vii) Expt. conducted by Agricultural Chemist.

## 5. RESULTS :

- (i) 5251 lb./ac.  
 (ii) 361.4 lb./ac.  
 (iii) N effect is highly significant, P effect is significant. Interaction  $N \times P$  is not significant.  
 (iv) Av. yield of straw in lb./ac.

	$P_0$	$P_1$	$P_2$	Mean
$N_0$	4291	4564	4844	4566
$N_1$	4965	5278	5251	5165
$N_2$	5979	5939	6146	6021
Mean	5078	5260	5414	5251

S.E. of any marginal mean = 85.2 lb./ac.

S.E. of body of table = 147.5 lb./ac.

Crop :- Maize (*Kharif*).

Ref :- U.P. 52(158).

Site :- Govt. Agri. Farm, Bahraich.

Type :- 'M'.

Object :- To study the effect of trace elements in presence of adequate quantities of N,  $P_2O_5$  and  $K_2O$  on the growth and yield of Maize.

## 1. BASAL CONDITIONS :

- (i) (a) Nil. (b) Fallow. (c) No. (ii) (a) Sandy loam. (b) Refer soil analysis, Bahraich. (iii) 15.7.1952.  
 (iv) (a) N.A. (b) Dibbling. (c) 6 to 8 seers/ac. (d) Line to line  $1\frac{1}{2}'$  and seed to seed 1' apart. (e) N.A.  
 (v) Nil. (vi) Maize T-41 (medium). (vii) N.A. (viii) N.A. (ix) 24.20'. (x) N.A.

## 2. TREATMENTS :

1. Control.
2. Molybdenum (Mo) as molybdic acid at 6 lb./ac. of Mo.
3. Copper (Cu) as Copper sulphate at 6 lb./ac. of Cu.
4. Boron (B) as Commercial Borax at 1 lb./ac. of B.
5. Sulphur (S) as Commercial Sulphur at 50 lb./ac. of S.
6. Zinc (Zn) as Zinc sulphate at 4 lb./ac. of Zn.

A basal dose of A/S at 50 lb./ac. of N+Super at 25 lb./ac. of  $P_2O_5$ +Pot. Sulphate at 25 lb.  $K_2O$ /ac. is applied to all plots

Trace elements are mixed with fine earth and applied as surface dressing. Date of manuring 12.7.1952.

## 3. DESIGN :

- (i) L. Sq. (ii) (a) 6. (b) N.A. (iii) 6. (iv) (a)  $37' \times 27'$ . (b)  $33' \times 23'$ . (v) Plot border 2' around, field border 4' around, plot bund  $1' \times 1'$  high and irrigation channel=2'. (vi) Yes.

## 4. GENERAL :

- (i) Good. (ii) No. (iii) Grain yield. (iv) (a) No. (b) No. (c) No. (v) (a) 'Hardoi, Etawah and Banaras. (b) N.A. (vi) Nil. (vii) Experiment conducted by Crop Physiologist.

## 5. RESULTS :

- (i) 2095 lb./ac.  
 (ii) 167.7 lb./ac.  
 (iii) Treatment differences are not significant.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	2145
2.	2071
3.	2125
4.	2100
5.	1943
6.	2184
S.E./mean	=68.5 lb./ac.

Crop :- Maize (*Kharif*).

Ref :- U.P. 49(16).

Site :- State Mechanised Farm, Bharari.

Type :- 'M'.

Object :- To study the effect of N and  $P_2O_5$  manures applied alone and in combination on the yield and quality of Maize.

## 1. BASAL CONDITIONS :

- (i) (a) to (c) N.A. (ii) (a) *Rakar* (Bundelkhand Type 1). (b) N.A. (iii) 12.7.1949. (iv) (a) to (c) N.A.  
 (v) Nil. (vi) N.A. (vii) N.A. (viii) N.A. (ix) N.A. (x) 2, 3.12.1949.

## 2. TREATMENTS :

All combinations of (1) and (2)

- (1) 3 levels of N as A/S :  $N_0=0$ ,  $N_1=15$  and  $N_2=30$  lb./ac.
- (2) 3 levels of  $P_2O_5$  as Super :  $P_0=0$ ,  $P_1=30$  and  $P_2=60$  lb./ac.

Date of manuring 8, 9.7.1949.

## 3. DESIGN :

- (i)  $3 \times 3$  Fact. in R.B.D. (ii) (a) 9. (b) N.A. (iii) 6. (iv) (a) N.A. (b)  $16' \times 68'$ . (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) The rains were scarce. Germination was good due to initial good rains. Scarcity of moisture resulted in stunted growth and the grain formation was poor. (ii) N.A. (iii) Yield of straw. (iv) (a) No. (b) N.A. (c) N.A. (v) (a) Kalai, Saidpur, Pratappgarh, Kalyanpur and Atarra. (b) N.A. (vi) Nil. (vii) Experiment conducted by A.C.

## 5. RESULTS :

- (i) 3601 lb./ac.  
(ii) 1060 lb./ac.  
(iii) P effect is significant ; N effect is highly significant ; interaction is not significant.  
(iv) Av. yield of straw in lb./ac.

	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>	Mean
N <sub>0</sub>	2763	3630	2803	3065
N <sub>1</sub>	2709	3563	3837	3370
N <sub>2</sub>	3657	4918	4531	4369
Mean	3043	4037	3724	3601

S.E. of any marginal mean = 249.9 lb./ac.

S.E. of body of table = 432.9 lb./ac.

Crop :- Maize (*Kharif*).

Ref :- U.P. 52(155).

Site :- Govt. Agri. Res. Farm, Etawah.

Type :- 'M'.

Object:—To study the effect of trace elements in presence of adequate quantities of N, P<sub>2</sub>O<sub>5</sub> and K<sub>2</sub>O on growth and yield of Maize.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Pea. (c) N.A. (ii) (a) Loam. (b) N.A. (iii) N.A. (iv) (a) N.A. (b) Dibbling. (c) 6 to 8 srs./ac. (d) Line to line 1½' and seed to seed 1' apart. (e) N.A. (v) Nil. (vi) T-41 (medium). (vii) N.A. (viii) N.A. (ix) N.A. (x) N.A.

## 2. TREATMENTS :

- Control.
- Molybdenum (*Mo*) as molybdic acid at 6 lb./ac. of *Mo*.
- Copper (*Cu*) as copper sulphate at 6 lb./ac. of *Cu*.
- Boron (*B*) as commercial borax at 1 lb./ac. of *B*.
- Sulphur (*S*) as commercial sulphur at 50 lb./ac. of *S*.
- Zinc (*Zn*) as zinc sulphate at 4 lb./ac. of *Zn*.

A basal dose of A/S at 50 lb./ac. of N+Super at 25 lb./ac. of P<sub>2</sub>O<sub>5</sub>+Pot. sulphate at 25 lb. K<sub>2</sub>O/ac. is applied to all plots.

## 3. DESIGN :

(i) Latin square. (ii) (a) 6. (b) N.A. (iii) 6. (iv) (a) 35'×27'. (b) 31'×23'. (v) Plot border 2' around, field border 4' around, plot bund 1'×1' high and irrigation channel=2'. (vi) Yes.

## 4. GENERAL :

(i) Normal. (ii) No. (iii) Grain yield. (iv) (a) to (c) No. (v) (a) Bahraich, Hardoi and Varanasi. (b) N.A. (vi) Nil. (vii) Experiment conducted by Crop Physiologist.

## 5. RESULTS :

- (i) 1197 lb./ac.  
(ii) 263.6 lb./ac.  
(iii) Treatment differences are not significant.

(iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	1105
2.	1135
3.	1320
4.	1210
5.	1221
6.	1193
S.E./mean	=107.6 lb./ac.

Crop :- Maize (*Kharif*).

Ref :- U.P. 52(157).

Site :- Regional Res. Stn., Hardoi.

Type :- 'M'.

Object :- To study the effect of trace elements in presence of adequate quantities of N, P<sub>2</sub>O<sub>5</sub> and K<sub>2</sub>O on growth and yield of Maize.

## 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Loam. (b) N.A. (iii) 14.7.1952. (iv) (a) N.A. (b) Dibbling. (c) 6-8 srs./ac. (d) Line to line 1½' and seed to seed 1' apart. (e) N.A. (v) Nil. (vi) Maize T-41 (medium). (vii) N.A. (viii) N.A. (ix) N.A. (x) 10.10.1952.

## 2. TREATMENTS .

1. Control.
2. Molybdenum (M<sub>0</sub>) as molybdic acid at 6 lb./ac. of Mo.
3. Copper (Cu) as copper sulphate at 6 lb./ac. of Cu.
4. Boron (B) as commercial borax at 1 lb./ac. of B.
5. Sulphur (S) as commercial sulphur at 50 lb./ac. of S.
6. Zinc (Zn) as zinc sulphate at 4 lb./ac. of Zn.

A basal dose of A/S at 50 lb./ac. of N+Super at 25 lb./ac. of P<sub>2</sub>O<sub>5</sub>+Pot. sulphate at 25 K<sub>2</sub>O/ac. is applied to all plots. Trace elements mixed with fine earth and then applied uniformly all over plot before sowing.

## 3. DESIGN :

(i) L. Sq. (ii) (a) 6. (b) N.A. (iii) 6. (iv) (a) 43'×23'. (b) 39'×19'. (v) Plot border=2' around, field border=3½', irrigation channel=2' and bund=1'×1' high. (vi) Yes.

## 4. GENERAL :

(i) Satisfactory. (ii) Nil. (iii) Grain yield. (iv) (a) to (c) No. (v) (a) Baharaich, Etawah, Banda and Varanasi. (vi) Nil. (vii) Experiment conducted by Crop Physiologist.

## 5. RESULTS :

- (i) 1829 lb./ac.
- (ii) 234.2 lb./ac.
- (iii) Treatment differences are not significant.
- (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	1771
2.	1973
3.	1722
4.	1756
5.	1740
6.	2012
S.E./mean	=95.60 lb./ac.

Crop :-Maize (*Kharif*).  
Site :-Govt. Agri. Farm, Kalai.

Ref :-U.P. 49(19).

Type :-'M'.

Object :—To study the effect of N and  $P_2O_5$  manures applied alone and in combination on the yield and quality of Maize.

## 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Loam (Aligarh type). (b) N.A. (iii) 14.7.1949. (iv) (a) to (c) N.A. (v) Nil. (vi) to (ix) N.A. (x) 2.11.1949.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 3 levels of N as A/S :  $N_0=0$ ,  $N_1=15$  and  $N_2=30$  lb./ac.

(2) 3 levels of  $P_2O_5$  as Super :  $P_0=0$ ,  $P_1=30$  and  $P_2=60$  lb./ac.

Date of manuring — 13.7.1949.

## 3. DESIGN :

(i)  $3 \times 3$  Fact. in R.B.D. (ii) (a) 9. (b) N.A. (iii) 6. (iv) (a) N.A. (b)  $40' \times 27'$ . (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Nil. (iii) Grain and straw yield. (iv) (a) No. (b) and (c) N.A. (v) (a) Bharari, Saidpur, Pratapgarh, Kalyanpur and Atarra. (b) N.A. (vi) The season was abnormal. Late and excessive rains, with very short interval through out the season, affected the crop very adversely. Due to heavy and continuous rains throughout the growing season no interculture or weeding could be done, hence the general crop was very poor. (vii) The expt. was conducted by A.C.

## 5. RESULTS :

(i) 2198 lb./ac.

(ii) 657.7 lb./ac.

(iii) None of the effects is significant.

(iv) Av. yield of grain in lb./ac.

	$P_0$	$P_1$	$P_2$	Mean
$N_0$	1869	2178	2353	2133
$N_1$	1983	2528	1963	2158
$N_2$	2151	2339	2420	2303
Mean	2001	2348	2245	2198

S.E. of any marginal mean

=155.1 lb./ac.

S.E. of body of table

=268.5 lb./ac.

Crop :-Maize (*Kharif*).  
Site :-Govt. Agri. Farm, Kalai.

Ref :- U.P. 53(348).

Type :-'M'.

Object :—To study the effect of N,  $P_2O_5$  and  $K_2O$  fertilizers applied alone and in combination on the yield of Maize crop.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) (a) Aligarh type 2. (b) N.A. (iii) 23.6.1953. (iv) (a) The field was ploughed 6 times. In addition one ploughing was given by way of drilling of fertilizer. (b) Sown in lines behind the plough. (c) to (e) N.A. (v) Nil. (vi) and (vii) N.A. (viii) One hoeing and one weeding. (ix) 19". (x) 10 and 11.9.1953.

## 2. TREATMENTS :

All combinations of (1), (2) and (3)

(1) 2 levels of N as A/S :  $N_0=0$  and  $N_1=15$  lb./ac. of N.

(2) 2 levels of  $P_2O_5$  as Super :  $P_0=0$  and  $P_1=30$  lb./ac. of  $P_2O_5$ .

(3) 3 levels of  $K_2O$  as sulphate of potash :  $K_0=0$ ,  $K_1=30$  and  $K_2=60$  lb./ac.

A/S broadcasted, P placed 4" deep in bands 9" apart. Potash applied as deep placement along with phosphate.



## 3. DESIGN :

(i)  $3 \times 2 \times 2$  partially balanced (as only one replication of balanced set has been repeated 4 times) as well as partially confounded design in which one degree of freedom corresponding to PK and NPK interaction is partially confounded. (ii) (a) 6 plots/block and 2 blocks/replication. (b) N.A. (iii) 4. (iv) (a) N.A. (b)  $45' \times 24'$ . (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) Growth was irregular due to water logging. (ii) N.A. (iii) Yield of cobs and dry stalk. (iv) (a) 1953—N.A. (b) N.A. (c) Nil. (v) (a) and (b) Nil. (vi) The crop was sown rather late as there were heavy rains. The crop was badly effected and the growth was irregular due to water logging etc. Hence the results obtained are erratic. (vii) The experiment was conducted by A.C.

## 5. RESULTS :

(i) 1919 lb./ac.  
 (ii) 235.6 lb./ac.  
 (iii) Main effects of N and K are highly significant. Others are not significant.  
 (iv) Av. yield of grain in lb./ac.

	P <sub>0</sub>	P <sub>1</sub>	Mean	N <sub>0</sub>	N <sub>1</sub>
K <sub>0</sub>	1980	1750	1865	1560	2170
K <sub>1</sub>	2080	2145	2112	1850	2375
K <sub>2</sub>	1810	1750	1780	1595	1965
Mean	1957	1882	1919	1668	2170
N <sub>0</sub>	1767	1570			
N <sub>1</sub>	2147	2193			

S.E. of marginal mean of N or P = 48.1 lb./ac.  
 S.E. of marginal mean of K = 58.9 lb./ac.  
 S.E. of body of table N×P = 67.9 lb./ac.  
 S.E. of body of table K×P or K×N = 83.2 lb./ac.

Crop :- Maize (*Kharif*)

Ref :- U.P. 49(17).

Site :- Govt. Agri. Res. Farm, Kalyanpur.

Type :- 'M'.

Object :- To study the effect of N and P<sub>2</sub>O<sub>5</sub> manures applied alone and in combination on the yield and quality of Maize.

## 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Loam (Kanpur type 2). (b) N.A. (iii) 12.7.1949. (iv) (a) to (e) N.A. (v) Nil. (vi) N.A. (vii) N.A. (viii) N.A. (ix) N.A. (x) 26, 27.9.1949.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 3 levels of N as A/S : N<sub>0</sub>=0, N<sub>1</sub>=15 and N<sub>2</sub>=30 lb./ac.

(2) 3 levels of P<sub>2</sub>O<sub>5</sub> as Super : P<sub>0</sub>=0, P<sub>1</sub>=30 and P<sub>2</sub>=60 lb./ac.

Date of manuring 27, 28.6.1949.

## 3. DESIGN :

(i)  $3 \times 3$  Fact. in R.B.D. (ii) (a) 9. (b) N.A. (iii) 6. (iv) (a) N.A. (b)  $22' \times 49.5'$ . (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) Satisfactory. (ii) Nil. (iii) Green matter yield. (iv) (a) No. (b) N.A. (c) N.A. (v) (a) Kalai, Saidpur, Bharari, Atarra and Pratapgarh. (b) N.A. (vi) Nil. (vii) The experiment was conducted by Agricultural Chemist.

## 5. RESULTS :

- (i) 2185 lb./ac.  
 (ii) 1065.4 lb./ac.  
 (iii) None of the effects is significant.  
 (iv) Av. yield of green matter in lb./ac.

	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>	Mean
N <sub>0</sub>	1853	1773	2320	1982
N <sub>1</sub>	2413	1933	1960	2102
N <sub>2</sub>	2560	2600	2253	2471
Mean	2275	2102	2178	2185

S.E. of any marginal mean = 251.2 lb./ac.  
 S.E. of body of table = 434.9 lb./ac.

Crop :- Maize (*Kharif*).

Ref :- U.P. 50(310).

Site :- Govt. Agri. College, Kanpur.

Type :- 'M'.

Object :- To study the effect of N, P fertilizers applied singly and in combination on Maize.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Brinjal. (c) Nil. (ii) (a) and (b) N.A. (iii) 9.7.1950. (iv) (a) *Palewa* on 28.5.1950, Punjab plough on 30.5.1950, 5.7.1950 and planked, two subsequent ploughings by *desi* plough. (b) Behind the *desi* plough. (c) 12 seers/ac. (d) Lines 2' apart, plant to plant after thinning from 6" to 1½'. (e) N.A. (v) 100 mds/ac. of F.Y.M. spread on 27.5.1950. (vi) T-41 (vii) Unirrigated. (viii) Thinning was done on 22.7.1950. One weeding by *khurpi* to remove *Hazardana* (*Phyllanthus niruri*) and *hirakhuri* (*convolvulus arvensis*) on 3.8.1950. Earthing done on 6.8.1950 with a high double mould board plough. (ix) 26.72". (x) 26.9.1950.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 3 levels of N as A/S : N<sub>0</sub>=0, N<sub>1</sub>=40 and N<sub>2</sub>=80 lb./ac.(2) 3 levels of P<sub>2</sub>O<sub>5</sub> as Super : P<sub>0</sub>=0, P<sub>1</sub>=50 and P<sub>2</sub>=100 lb./ac.

Fertilizers mixed with sand (3 times) and evenly broadcasted by the side of the plant row. Next day a cultivator was used to incorporate them in the soil.

## 3. DESIGN :

(i) 3×3 Fact. in R.B.D. (ii) (a) 9. (b) N.A. (iii) 4. (iv) (a) 64'×15'. (b) 61'×12'. (v) Discarded two rows on either side and 1½' at each end of the plot. (vi) Yes.

## 4. GENERAL :

(i) Lodging index :- From 24.9% to 32.0% being highest for N<sub>2</sub> and lowest with N<sub>2</sub>P<sub>2</sub> and N<sub>2</sub>P<sub>1</sub> treatments. (ii) Mild attack of grass hopper in the 2nd week after sowing. (iii) Grain yield. (iv) (a) No. (b) No. (c) Nil. (v) (a) and (b) Nil. (vi) Nil. (vii) The experiment was conducted by B.R. College.

## 5. RESULTS :

- (i) 2496 lb./ac.  
 (ii) 111.9 lb./ac.  
 (iii) Effects of N and P are highly significant. Interaction is not significant.

	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>	Mean
N <sub>0</sub>	1973	2078	2292	2114
N <sub>1</sub>	2449	2569	2762	2593
N <sub>2</sub>	2620	2754	2972	2782
Mean	2347	2467	2675	2496

S.E. of any marginal mean = 32.31 lb./ac.  
 S.E. of body of table = 55.96 lb./ac.

Crop :-Maize (Kharif).

Ref :- U.P. 52(176).

Site :- Crop Physiological Res. Stn., Lucknow.

Type :-'M'.

Object :-To study the effect of trace elements in presence of adequate quantities of N, P and K on growth and quality of Maize.

1. BASAL CONDITIONS :

- (i) (a) to (c) N.A. (ii) (a) Sandy loam. (b) N.A. (iii) N.A. (iv) (a) N.A. (b) Dibbling (c) 5 srs./ac. (d) Seed to seed 9" apart and row to row 1½' apart. (e) N.A. (v) Phosphate to be applied in furrows while preparing the field and A/S and Pot. Sul. as top dressing one week before sowing. (vi) Jaunpuri (medium). (vii) Irrigated. (viii) N.A. (ix) N.A. (x) N.A.

2. TREATMENTS :

1. Control.
  2. Molybdenum (Mo) as Molybdic acid at 6 lb./ac. of Mo.
  3. Copper (Cu) as Copper sulphate at 6 lb./ac. of Cu.
  4. Boron (B) as Commercial Borax at 1 lb./ac. of B.
  5. Sulphur (S) as Commercial Sulphur at 50 lb./ac. of S.
  6. Zinc (Zn) as Zinc sulphate at 4 lb./ac. of Zn.
- A basal dose of A/S at 50 lb./ac. of N+Super at 25 lb./ac. of P<sub>2</sub>O<sub>5</sub> +Pot. sulphate at 25 lb./ac. of K<sub>2</sub>O is applied to all plots.  
Trace elements were mixed with fine earth and applied as surface dressing 5-6 days before sowing.

3. DESIGN :

- (i) L. Sq. (ii) (a) 6. (b) N.A. (iii) 6. (iv) (a) 13'×12'. (b) 12'×11'. (v) Irrigation channel 2', Plot bund 1'×1' and Field border 4' around. (vi) Yes.

4. GENERAL :

- (i) Satisfactory. (ii) Nil. (iii) Grain yield. (iv) (a) No. (b), (c) No. (v) (a), (b) Varanasi, Baharaich, Etawah and Hardoi. (vi) Nil. (vii) Expt. conducted by C.P.

5. RESULTS :

- (i) 1987 lb./ac.  
(ii) 567.8 lb./ac.  
(iii) Treatment differences are highly significant.  
(iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	1622
2.	1457
3.	2241
4.	1967
5.	1829
6.	2804
S.E./mean	=231.8 lb./ac.

Crop :-Maize (Kharif).

Ref :-U.P. 49(14).

Site :-Govt. Agri. Farm, Pratapgarh.

Type :-'M'.

Object :-To study the effect of N and P<sub>2</sub>O<sub>5</sub> manures applied alone and in combination on the yield and quality of Maize.

1. BASAL CONDITIONS :

- (i) (a) to (c) N.A. (ii) (a) *Domat* (unclassified). (b) N.A. (iii) 21.6.1949. (iv) (a) to (e) N.A. (v) Nil. (vi) N.A. (vii) N.A. (viii) N.A. (ix) N.A. (x) 6.9.1949.

2. TREATMENTS :

All combinations of (1) and (2)

- (1) 3 levels of N as A/S : N<sub>0</sub>=0, N<sub>1</sub>=15 and N<sub>2</sub>=30 lb./ac.

- (2) 3 levels of P<sub>2</sub>O<sub>5</sub> as Super : P<sub>0</sub>=0, P<sub>1</sub>=30 and P<sub>2</sub>=60 lb./ac.

Date of manuring 20.6.1949.

## 3. DESIGN :

(i) 3×3 Fact. in R.B.D. (ii) (a) 9. (b) N.A. (iii) 6. (iv) (a) N.A. (b) 30'×30'. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Nil. (iii) Straw yield. (iv) (a) to (c) N.A. (v) (a) Kalai, Saidpur, Bharari, Kalyanpur and Atarra. (b) N.A. (vi) Nil. (vii) Expt. conducted by A.C.

## 5. RESULTS :

- (i) 4235 lb./ac.  
 (ii) 1497 lb./ac.  
 (iii) None of the effects is significant.  
 (iv) Av. yield of straw in lb./ac.

	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>	Mean
N <sub>0</sub>	3565	3392	4505	3821
N <sub>1</sub>	4969	4388	4251	4536
N <sub>2</sub>	4082	4493	4469	4348
Mean	4205	4091	4408	4235

S.E. of any marginal mean = 352.9 lb./ac.  
 S.E. of body of table = 611.2 lb./ac.

Crop :- Maize (*Kharif*).

Ref :- U.P. 49(18).

Site :- State Mech. Farm, Saidpur.

Type :- 'M'.

Object :- To study the effect of N and P<sub>2</sub>O<sub>5</sub> manures applied alone and in combination on the yield and quality of Maize.

## 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) *Mar* (Bundelkhand type 3 B). (b) N.A. (iii) 14.7.1949. (iv) (a) to (e) N.A. (v) Nil. (vi) N.A. (vii) N.A. (viii) N.A. (ix) N.A. (x) 4.12.1949.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 3 levels of N as A/S : N<sub>0</sub>=0, N<sub>1</sub>=15 and N<sub>2</sub>=30 lb./ac.

(2) 3 levels of P<sub>2</sub>O<sub>5</sub> as Super : P<sub>0</sub>=0, P<sub>1</sub>=30 and P<sub>2</sub>=60 lb./ac.

Manuring on 9.7.1949.

## 3. DESIGN :

(i) 3×3 Fact. in R.B.D. (ii) (a) 9. (b) N.A. (iii) 6. (iv) (a) N.A. (b) 40'×27'. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) Poor. (ii) Nil. (iii) Grain and straw yield. (iv) (a) No. (b) and (c) N.A. (v) (a) Kalai, Bharari, Pratapgarh, Kalyanpur and Atarra. (v) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 1363 lb./ac.  
 (ii) 565.6 lb./ac.  
 (iii) Main effect of N is significant. Main effect P and interaction N×P are not significant.  
 (iv) Av. yield of straw in lb./ac.

	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>	Mean
N <sub>0</sub>	1014	1066	993	1024
N <sub>1</sub>	1427	1253	1273	1318
N <sub>2</sub>	1360	2134	1747	1747
Mean	1267	1484	1338	1363

S.E. of any marginal mean = 153.3 lb./ac.  
 S.E. of body of table = 230.9 lb./ac.

Crop :- Maize (*Kharif*).

Ref :- U.P. 52(159).

Site :- Regional Res. Stn., Varanasi.

Type :- 'M'.

Object :- To study the effect of trace elements in presence of adequate quantities of N, P and K on growth and yield of Maize.

## 1. BASAL CONDITIONS :

- (i) (a) Nil. (b) Wheat. (c) N.A. (ii) (a) Clay loam. (b) Refer soil analysis, Varanasi. (iii) 16.7.1952.  
 (iv) (a) N.A. (b) Dibbling. (c) 6—8 srs./ac. (d) Line to line 1½' and seed to seed 1'. (e) N.A. (v) Nil.  
 (vi) T-41 (late). (vii) N.A. (ix) N.A. (x) N.A.

## 2. TREATMENTS :

1. Control.
2. Molybdenum (Mo) as Molybdic acid at 6 lb./ac. of Mo.
3. Copper (Cu) as Copper Sulphate at 6 lb./ac. of Cu.
4. Borax (B) as Commercial Borax at 1 lb./ac. of B.
5. Sulphur (S) as Commercial Sulphur at 50 lb./ac. of S.
6. Zinc (Zn) as Zinc Sulphate at 4 lb./ac. of Zn.

A basal dose of A/S at 50 lb./ac. of N+Super at 25 lb./ac. of  $P_2O_5$  + Pot. Sulphate at 25 lb./ac. of  $K_2O$  is applied to all treatments. Date of manuring 15.7.1952.

## 3. DESIGN :

- (i) L. Sq. (ii) (a) 6. (b) N.A. (iii) 6. (iv) (a) 37'×27'. (b) 33'×23'. (v) Plot border=2' around, field border=4' around, plot bund=1'×1' high and irrigation channel=2'. (vi) Yes.

## 4. GENERAL :

- (i) Below normal. (ii) No. (iii) Grain yield. (iv) (a) to (c) No. (v) (a) Hardoi, Baharaich and Etawah.  
 (b) N.A. (vi) Nil. (vii) Expt. conducted by Crop Physiologist.

## 5. RESULTS :

- (i) 437.8 lb./ac.  
 (ii) 144.3 lb./ac.  
 (iii) Treatment differences are not significant.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	305.0
2.	496.8
3.	393.5
4.	499.3
5.	516.5
6.	415.7
S.E./mean	= 58.90 lb./ac.

Crop :-Maize (*Kharif*).

Ref :-U.P. 49(185).

Site :-Koil, Sikandra Rao (Aligarh).

Type :-'M'.

Object :-To draw out fertilizer schedule for agriculturally important soil types.

## 1. BASAL CONDITIONS :

- (i) (a) N.A. (b) N.A. (c) N.A. (ii) Aligarh soil type 1 and type 2. (iii) N.A. (iv) Improved. (v) (a) As practised locally. (b) Seeds sown in lines parallel to the fertilizer band. (c) N.A. (d) 1"—2" away from the fertilizer line. (e) N.A. (vi) (a) 26.6.1949. to 1.8.1949. (vii) N.A. (viii) N.A. (ix) N.A. (x) 11.9.1949. to 20.11.1949.

## 2. TREATMENTS :

1. Control.
2. 15 lb./ac. of N as A/S.
3. 15 lb./ac. of N as A/S+30 lb./ac. of  $P_2O_5$  as Super.

N added to surface at sowing time. Super is placed at a depth of about 3"—4" at the sole of the furrow and in the side of the seed row made by either an iron plough or two *dest* plough one behind the other in the same furrow.

## 3. DESIGN :

(i) and (ii) Villages selected in the district and unreplicated experiment with the above 3 treat. laid out. Four replications or trials were laid out. (iii) N.A., but roughly about 1/40 ac. (net area). (iv) N.A.

## 4. GENERAL :

(i) Satisfactory. (ii) N.A. (iii) Grain and straw yield. (iv) (a) No. (b) N.A. (v) N.A. (vi) Nil. (vii) The experiment was conducted by Agricultural Chemist on cultivators' fields.

## 5. RESULTS :

- (i) 744 lb./ac.  
 (ii) 236.1 lb./ac.  
 (iii) Treatment differences are not significant.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield.
1.	501
2.	859
3.	871
S.E./mean	=118.0 lb./ac.

Crop :- Maize (*Kharif*).  
 Site :- Govt. Res. Farm, Kalyanpur.

Ref :- U.P. 50(214).

Type :- 'M'.

Object :- To find out the optimum spacing for Maize crop.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) N.A. (c) N.A. (ii) N.A. (iii) 21.7.1950. (iv) (a) N.A. (b) to (e) As per treatments. (v) N.A. (vi) T-41 (medium late). (vii) N.A. (viii) N.A. (ix) N.A. (x) 5.10.1950.

## 2. TREATMENTS :

- 2' x 1'—30 hills—3 rows with one seed /hill.
- 2' x 2'—15 hills—3 rows with two seeds/hill.
- 3' x 1'—two rows—1st row 30 hills with two seeds and 2nd row 30 hills with one seed/hill.
- 3' x 2'—two rows—1st row 15 hills with 3 seeds and 2nd row 15 hills with 3 seeds/hill.
- 3' x 3'—two rows—1st row 10 hills with 4 seeds each and 2nd row 10 hills with 5 seeds/hill.
- Control (broadcast).

No. of plants/plot=90 and seed rate=180 sr./ac.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) and (b) 30' x 6'. (v) Nil. (vi) Yes.

## 4. GENERAL :

(i) Good. Blocks No. V and VI completely lodged hence rejected for analysis. (ii) N.A. (iii) Stand at harvest and grain yield. (iv) (a) 1950-1952. (b) No. (c) Nil. (v) (a) and (b) Nil. (vi) Nil. (vii) The experiment was conducted by E.B.(O), experiment was designed with 6 replications, but 2 replications rejected as data was N.A.

## 5. RESULTS :

- (i) 710.9 lb./ac.  
 (ii) 433.6 lb./ac.  
 (iii) Treatment differences are not significant.  
 (vi) Av. yield of grain in lb./ac.

Treatments	Av. yield
1.	926.3
2.	778.0
3.	428.3
4.	762.9
5.	505.8
6.	863.9
S.E./mean	=710.9 lb./ac.

Crop :- Maize (*Kharif*).

Ref :- U.P. 51(193).

Site :- Govt. Agri. Res. Farm, Kalyanpur.

Type :- 'C'.

Object :- To find out the optimum spacing for Maize crop.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) and (b) N.A. (iii) 24.7.1951. (iv) (a) N.A. (b) to (e) As per treatments. (v) N.A. (vi) T-41 (medium-late). (vii) N.A. (viii) N.A. (ix) N.A. (x) 17.10.1951.

2. TREATMENTS :

1. 2'×1'—30 hills—3 rows with one seed/hill.
2. 2'×2'—15 hills—3 rows with two seeds/hill.
3. 3'×1'—two rows—1st row 30 hills with two seeds and 2nd row 30 hills with one seed/hill.
4. 3'×2'—two rows—1st row 15 hills with 3 seeds and 2nd row 15 hills with 3 seeds/hill.
5. 3'×3' two rows—1st row 10 hills with 4 seeds and 2nd row 10 hills with 5 seed each/hill.
6. Control (broadcast).

No. of plants/plot=90 and seed with rate =180 srs./ac.

3. DESIGN :

(i) L. Sq. (ii) (a) 6. (b) N.A. (iii) 6. (iv) (a) and (b) 30'×6'. (v) N.A. (vi) Yes.

4. GENERAL :

(i) N.A. (ii) N.A. (iii) Grain yield. (iv) (a) 1950—1952. (b) and (c) No. (v) (a) and (b) None. (vi) Nil. (vii) The experiment was conducted by E.B. (O). Analysis of co-variance was performed but regression coefficient was not significant hence the results are based on usual analysis.

5. RESULTS :

- (i) 1325 lb./ac.
- (ii) 139.0 lb./ac.
- (iii) Treatment differences are highly significant.
- (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	1310
2.	1412
3.	1209
4.	1311
5.	1114
6.	1593
S.E./mean	= 56.76 lb./ac.

Crop :- Maize (*Kharif*).

Ref :- U.P. 52(249).

Site :- Govt. Agri. Res. Farm, Kalyanpur.

Type :- 'C'.

Object :- To find out the optimum spacing for Maize crop.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) and (c) N.A. (ii) (a) and (b) N.A. (iii) 5.7.1952. (iv) (a) N.A. (b) to (c) As per treatments. (v) N.A. (vi) T-41 (medium-late). (vii) N.A. (viii) N.A. (ix) N.A. (x) 24.9.1952.

2. TREATMENTS :

1. 2'×1'—30 hills—3 rows with one seed/hill.
  2. 2'×2'—15 hills—3 rows with two seeds/hill.
  3. 3'×1'—two rows—1st row 30 hills with two seeds and 2nd row 30 hills with one seed/hill.
  4. 3'×2'—two rows—1st row 15 hills with 3 seeds and 2nd row 15 hills 3 seeds/hill.
  5. 3'×3'—two rows—1st row 10 hills with 4 seeds each and 2nd row 10 hills with 5 seeds/hill.
- No. of plants/plot =90 and seed rate =180 srs./ac.

3. DESIGN :

(i) L. Sq. (ii) (a) 6. (b) N.A. (iii) 6. (iv) (a) N.A. (b) 6'×30'. (v) N.A. (vi) Yes.

**4. GENERAL :**

- (i) N.A. (ii) N.A. (iii) Grain yield. (iv) (a) 1950-1952. (b) No. (c) Nil. (v) (a) and (b) No. (vi) Nil. (vii) The experiment was conducted by E.B. (O). Analysis of co-variance was performed but regression was not significant. Hence the results are based on usual analysis.

**5. RESULTS :**

- (i) 1903 lb./ac.  
 (ii) 284.8 lb./ac.  
 (iii) Treatment differences are significant.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	2208
2.	1684
3.	2057
4.	1958
5.	1754
6.	1754

S.E./mean = 116.3 lb./ac.

Crop :- Maize (*Kharif*).

Ref :- U.P. 53(26).

Site :- Govt. Agri. Res. Farm, Kalyanpur.

Type :- D'.

Object :- To study the effect of seed dressings on the yield of Maize.

**1. BASAL CONDITIONS :**

- (i) (a) Nil. (b) N.A. (c) N.A. (ii) (a) Loam. (b) N.A. (iii) 21.6.1953. (iv) (a) to (e) N.A. (v) F.Y.M. at 10 C.L./ac. spread on 1.5.1953. (vi) T-14. (vii) Irrigated. (viii) N.A. (ix) N.A. (x) 4.9.1953.

**2. TREATMENTS :**

- |                 |                          |
|-----------------|--------------------------|
| 1. Control.     | 5. Harvoason. (1 : 750). |
| 2. Agrosan G.N. | 6. Harvoason (1 : 400).  |
| 3. Ceresan.     | 7. Tritisan.             |
| 4. Fernasan.    | 8. Agrosan Special.      |

**3. DESIGN :**

- (i) R.B.D. (ii) (a) 8. (b) N.A. (iii) 6. (iv) (a) 6'x34'. (b) 4'x34'. (v) N.A. (vi) Yes.

**4. GENERAL :**

- (i) Lodged on 28.7.1953. (ii) N.A. (iii) Stand per plot was taken and no. of cobs and yield. (iv) (a) 1953-continued. (b) No. (c) N.A. (v) (a) No. (b) N.A. (vi) Nil. (vii) The expt. was conducted by E.B. (O).

**5. RESULTS :**

- (i) 523 lb./ac.  
 (ii) 216 lb./ac.  
 (iii) Treatment differences are not significant.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield	Treatment	Av. yield
1.	440	5.	500
2.	647	6.	474
3.	634	7.	467
4.	574	8.	447

S.E./mean = 88.4 lb./ac.



Crop :-Maize (*Kharif*).

Ref :-U.P. 52(146).

Site :-Govt. Agri. Res. Farm, Kalyanpur.

Type :-'DV'.

Object :-To see the effect of fungicides on the grain yield of Maize.

## 1. BASAL CONDITIONS :

(i) (a) No. (b) N.A. (c) N.A. (ii) (a) Sandy loam. (b) N.A. (iii) 5.7.1952. (iv) (a) to (e) N.A. (v) No. (vi) As per treatments. (vii) Unirrigated. (viii) Hand weedings and earthing up. (ix) N.A. (x) 8, 16.9.1952 and 24.9.1952.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 3 varieties :  $V_1=T-41$ ,  $V_2=T-4111$  and  $V_3=K$ -local.(2) 4 fungicides :  $F_0=Control$ ,  $F_1=Agrosan$ ,  $F_2=Tillex$  and  $F_3=Ceresan$ .

## 3. DESIGN :

(i)  $4 \times 3$  Fact. in R.B.D. (ii) (a) 12. (b) N.A. (iii) 4. (iv) (a), (b)  $45' \times 4'$ . (v) No. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) No. (iii) Grain yield. (iv) (a) No. (b) No. (c) N.A. (v) (a) No. (b) N.A. (vi) Nil. (vii) The expt. was conducted by E.B. (O).

## 5. RESULTS :

- (i) 2479 lb./ac.  
(ii) 403.8 lb./ac.  
(iii) N effect is highly significant. F is significant and interaction is not significant.  
(iv) Av. yield of grain in lb./ac.

	$F_0$	$F_1$	$F_2$	$F_3$	Mean
$V_1$	2602	3252	2677	3343	2968
$V_2$	2057	2269	2284	2556	2292
$V_3$	1936	2269	2254	2254	2178
Mean	2198	2597	2405	2718	2479

S.E. of marginal mean of V =100.9 lb./ac.  
S.E. of marginal mean of F =116.8 lb./ac.  
S.E. of body of table =201.9 lb./ac.

Crop :- Maize (*Kharif*).

Ref :- U.P. 51(192).

Site :- Govt Res. Farm, Kanpur.

Type :- 'DV'.

Object :-To study the effect of fungicides on the grain yield of Maize.

## 1. BASAL CONDITIONS :

(i) (a) No. (b) and (c) N.A. (ii) (a) Sandy. (b) N.A. (iii) 22.7.1951. (iv) (a) to (e) N.A. (v) N.A. (vi) As per treatments. (vii) N.A. (viii) N.A. (ix) N.A. (x) 29.9.1951, 3 and 15.10.1951.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 3 varieties :  $V_1=T-41$ ,  $V_2=T-4111$  and  $V=K$ -local.(2) 4 fungicides :  $F_0=Control$ ,  $F_1=Agrosan$ ,  $F_2=Tillex$  and  $F_3=Cersan$ .

## 3. DESIGN :

(i)  $4 \times 3$  Fact. in R.B.D. (ii) (a) 12. (b) N.A. (iii) 4. (iv) (a) and (b)  $6' \times 47'$ . (v) Nil. (vi) Yes.

**4. GENERAL :**

(i) N.A. (ii) N.A. (iii) Grain yield. (iv) (a) to (c) No. (v) (a) and (b) No. (vi) Nil. (vii) The experiment was conducted by E.B. (O). The yield of plot containing the variety T-41 and treatment F<sub>2</sub> was missing in Replication II. Hence the analysis was done by applying missing plot technique.

**5. RESULTS :**

- (i) 1476 lb./ac.  
 (ii) 186.2 lb./ac.  
 (iii) V effect is highly significant. F effect is significant. Interaction is not significant.  
 (iv) Av. yield of grain in lb./ac.

	F <sub>0</sub>	F <sub>1</sub>	F <sub>2</sub>	F <sub>3</sub>	Mean
V <sub>1</sub>	1486	1689	1632	1883	1672
V <sub>2</sub>	1405	1641	1617	1738	1600
V <sub>3</sub>	1130	1207	1178	1101	1154
Mean	1340	1513	1476	1574	1476

- S.E. of difference of two V marginal means, one of them containing a missing value = 67.46 lb./ac.  
 S.E. of difference of two V marginal means (none of them contains a missing value) = 65.84 lb./ac.  
 S.E. of difference of two F marginal means one of them containing a missing value = 78.28 lb./ac.  
 S.E. of difference of two F marginal mean (none of them containing missing value) = 76.02 lb./ac.  
 S.E. of any mean, not containing the missing value, in the body of table = 93.10 lb./ac.  
 S.E. of mean of missing value in the body of table = 94.50 lb./ac.

**Crop :- Lobia.**

**Ref :- U.P. 53(214).**

**Site :- Crop Physiological Res. Stn., Lucknow.**

**Type :- 'IM'.**

**Object :-** To study the effect of varying doses of Calcium, Sulphur, trace elements and iron on growth and yield of *Lobia*.

**1. BASAL CONDITIONS :**

(i) (a) Nil. (b) Wheat. (c) N.A. (ii) (a) Sandy loam. (b) N.A. (iii) 12,16.7.1953. (iv) (a) Ploughing on 15,19.6.1953. (b) Dibbling. (c) N.A. (d) Spacing between rows—2' and between plants—2" to 3". (e) N.A. (v) 60 lb./ac. of P<sub>2</sub>O<sub>5</sub> and T.C. 100 cu. ft. on 5.7.1953. (v) T-1. (vii) N.A. (viii) N.A. (ix) N.A. (x) 17.9.1953.

**2. TREATMENTS :**

1. Control.
  2. Calcium at 40 lb./ac. of Ca.
  3. Sulphur at 50 lb./ac. of S.
  4. Borax at 1 lb./ac. of B.
  5. Zinc at 4 lb./ac. of Zn.
  6. Copper at 6 lb./ac. of Cu.
  7. Molybdenum at 6 lb./ac. of Mo.
  8. Iron at 2 lb./ac. of Fe.
- Date of manuring 5.7.1953 and 2.8.1953 (trace elements).

**3. DESIGN :**

(i) R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a) and (b) 34' × 13½'. (v) No. (vi) Yes.

**4. GENERAL :**

(i) N.A. (ii) N.A. (iii) Grain yield. (iv) (a) to (c) No. (v) (a) and (b) No. (vi) Nil. (vii) Experiment conducted by C.P.

**5. RESULTS :**

- (i) 236 lb./ac.  
 (ii) 64.36 lb./ac.  
 (iii) Treatments are not significant.

(iv) Av. yield of grain in lb./ac.

Treatment	Av. yield	Treatment	Av. yield
1.	174	5.	216
2.	235	6.	220
3.	280	7.	216
4.	293	8.	253

S.E./mean = 32.18 lb./ac.

Crop :- *Lobia*.

Ref :- U.P. 50(95).

Site :- Crop Physiological Res. Stn., Lucknow.

Type :- 'M'.

Object :—To study the effect of varying doses of N fertilizers on the yield of *Lobia*.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Gram and Linseed. (c) Nil. (ii) (a) Sandy loam. (b) N.A. (iii) 7.7.1950. (iv) (a) Two ploughings by mould board and two by *desi* and one by cultivator plough and plankings. (b) Broadcasting. (c) 6 srs./ac. (d) and (e) N.A. (v) Nil. (vi) Jhansi (medium). (vii) Unirrigated. (viii) 2 intercultures. (ix) N.A. (x) 8.10.1950.

## 2. TREATMENTS :

7 doses of N as A/N :  $N_0=0$ ,  $N_1=15$ ,  $N_2=30$ ,  $N_3=45$ ,  $N_4=60$ ,  $N_5=75$  and  $N_6=90$  lb./ac. N applied as top dressing on 6.7.1950.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 15'×29'. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) Poor. (ii) Nil. (iii) Grain yield. (iv) (a) 1950–1951. (b) and (c) No. (v) (a) and (b) No. (vi) Nil. (vii) Experiment conducted by C.P.

## 5. RESULTS :

- (i) 214.4 lb./ac.  
(ii) 43.68 lb./ac.  
(iii) Treatments are highly significant.  
(iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
$N_0$	113.1
$N_1$	144.5
$N_2$	187.0
$N_3$	199.4
$N_4$	267.7
$N_5$	309.1
$N_6$	280.0

S.E./mean = 21.84 lb./ac.

Crop :- *Lobia*.

Ref :- U.P. 51(126).

Site :- Crop Physiological Res. Stn. Lucknow.

Type :- 'M'.

Object :—To study the effect of varying doses of N fertilizers on the yield of *Lobia*.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Wheat. (c) N.A. (ii) (a) Sandy loam. (b) N.A. (iii) 26.7.1951. (iv) (a) Hot weather cultivation. Details N.A. (b) Broadcast. (c) 12 srs./ac. (d) and (e) N.A. (v) Nil. (vi) Jhansi (medium). (vii) N.A. (viii) 2 intercultures. (ix) N.A. (x) 28.10.1951.

## 2. TREATMENTS :

7 doses of N as A/S :  $N_0=0$ ,  $N_1=15$ ,  $N_2=30$ ,  $N_3=45$ ,  $N_4=60$ ,  $N_5=75$  and  $N_6=90$  lb./ac.  
N applied as top dressing on 26.7.1951.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 3. (iv) (a)  $30' \times 20'$ . (b)  $27' \times 17'$ . (v)  $1\frac{1}{2}'$  around the plot. (vi) Yes.

## 4. GENERAL :

(i) Crop dried due to lack of rains. (ii) Nil. (iii) Yield of grain. (iv) (a) 1950—1951. (b) and (c) No.  
(v) (a) and (b) No. (vi) Nil. (vii) Experiment conducted by C.P.

## 5. RESULTS :

- (i) 342.6 lb./ac.  
(ii) 100.8 lb./ac.  
(iii) Treatment differences are not significant.  
(iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
$N_0$	244.2
$N_1$	317.0
$N_2$	292.3
$N_3$	353.9
$N_4$	426.7
$N_5$	414.4
$N_6$	349.4
S.E./mean	= 58.20 lb./ac.

Crop :- Moong (*Kharif*).

Ref :- U.P. 53(342).

Site :- Govt. Agri. Farm, Atarra.

Type :- 'M'.

Object :- To study the residual effect of N and F on the yield of *Moong*.

## 1. BASAL CONDITIONS :

- (i) (a) N.A. (b) Wheat. (c) As per treatments. (ii) (a) *Parwa*. (b) N.A. (iii) 28.5.1953. (iv) (a) 2 plough with Watt's plough. (b) Broadcasting. (c) N.A. (d) and (e) —. (v) Nil. (vi) *Moong* Type 1 (early). (vii) Nil. (viii) N.A. (ix)  $33.28''$ . (x) 1.7.1953 to 15.7.1953 every 2nd day.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 3 levels of N as A/S :  $N_0=0$ ,  $N_1=30$  and  $N_2=60$  lb./ac.

(2) 3 levels of  $P_2O_5$  as Super :  $P_0=0$ ,  $P_1=60$  and  $P_2=120$  lb./ac.

The manures were applied in *rabi*—1952-53 to wheat crop.

## 3. DESIGN :

(i)  $3 \times 3$  Fact. in R.B.D. (ii) (a) 9. (b) N.A. (iii) 6. (iv) (a) N.A. (b)  $20' \times 54.5'$ . (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) N.A. (iii) *Moong* grain yield. (iv) (a) 1953—N.A. (b) N.A. (c) Nil. (v) (a) and (b) Nil. (vi) Nil. (vii) Experiment conducted by A.C.

## 5. RESULTS :

- (i) 152.6 lb./ac.  
(ii) 9.226 lb./ac.  
(iii) Both N and P effects are highly significant. The interaction  $N \times P$  is not significant.  
(iv) Av. yield of *moong* grain in lb./ac.

	$P_0$	$P_1$	$P_2$	Mean
$N_0$	129.9	141.5	163.2	144.9
$N_1$	136.5	154.9	168.2	153.2
$N_2$	145.5	156.5	176.5	159.8
Mean	137.6	151.0	169.3	152.6

S.E. of any marginal mean = 2.175 lb./ac.

S.E. of body of table = 3.767 lb./ac.

Crop :- Moong (*Kharif*).

Ref :- U.P. 52(338).

Site :- Institutional Res. Farm, B. R. College, Bichpuri.

Type :- 'M'.

Object :- To study the effect of P with and without basal dressing of N on *Moong* crop and its residual effect on Wheat.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Wheat. (c) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis, Bichpuri (Agra). (iii) 1.6.1952. (iv) (a) 1 *Palewa*, 1 ploughing and *pata* each by disc harrow and *desi* plough. (b) Behind the plough in lines. (c) 6 seeds/ac. (d) Rows 18" apart. (e) —. (v) Nil. (vi) *Moong* T<sub>1</sub> (early). (vii) Un-irrigated. (viii) Hoeing of the plots with 'Panchangura' done on 10th and 11th June, again weeding and hoeing carried out when the crop was 1½ month old. (ix) 43.03". (x) Pickings on 25, 30.7.1952, 4 and 12.8.1952.

## 2. TREATMENTS :

Main-plot treatments :

2 basal dressings of Farm compost : B<sub>0</sub>=No basal dressing and B<sub>1</sub>=Basal dressing at 20 lb./ac. of N.

Sub-plot treatments :

5 levels of P<sub>2</sub>O<sub>5</sub> as Super : P<sub>0</sub>=0, P<sub>1</sub>=32, P<sub>2</sub>=64, P<sub>3</sub>=96 and P<sub>4</sub>=128 lb./ac.

Vegetative portion for green manures turned down on 20.8.1952. Compost and Super broadcast on 30.5.1952 followed by plough and *pata* to mix the manure.

## 3. DESIGN :

(i) Split-plot. (ii) (a) 2 main-plots/replication and 5 sub-plots/main-plot. (b) 99'×84'. (iii) 4. (iv) (a) 42'×21' and 42'×19'. (b) 15'×36'. (v) Block border 4', plot border 2', channel effect 4' and channel 3'. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) N.A. (iii) Yield of grain and dry weight of shoot. (iv) (a) No. (b) —. (c) Nil. (v) (a) and (b) Nil. (vi) Nil. (vii) The experiment was conducted by B.R.C.

## 5. RESULTS :

(i) 407.9 lb./ac.

(ii) (a) 67.82 lb./ac.

(b) 76.26 lb./ac.

(iii) Only P effect is highly significant.

(iv) Av. yield of grain in lb./ac.

Treatment	Av. yield	Treatment	Av. yield
P <sub>0</sub>	313.8	B <sub>0</sub>	399.2
P <sub>1</sub>	341.2	B <sub>1</sub>	416.6
P <sub>2</sub>	409.0	S.E./mean	=15.16 lb./ac.
P <sub>3</sub>	457.2		
P <sub>4</sub>	518.3		
S.E./mean	=26.96 lb./ac.		

Crop :- Moong.

Ref :- U.P. 50(96).

Site :- Crop Physiological Res. Stn., Lucknow.

Type :- 'M'.

Object :- To study the effect of organic and inorganic manures on the nodulation, yield and growth of *Moong*.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Wheat. (c) N.A. (ii) (a) Sandy loam. (b) N.A. (iii) 24.7.1950. (iv) (a) Hot weather cultivation done in the field. The field was prepared by two ploughings by mould board plough, one by cultivator, two by *desi*. One *desi* ploughing was given to mix fertilizers and manures in the field. (b) Dibbling. (c) 4 seeds/ac. (d) 18"×9". (e) N.A. (v) 40 mds./ac. stable manure was mixed in the field as basal manuring. (vi) T<sub>1</sub> (medium). (vii) N.A. (viii) 2 hoeing and 1 weeding. (ix) N.A. (x) 1st picking on 6.10.1950 and 2nd picking on 9.10.1950.

## 2. TREATMENTS :

10 sources of 40 lb./ac. of N : S<sub>0</sub>=Control (no manure), S<sub>1</sub>=Castor cake, S<sub>2</sub>=Linseed cake, S<sub>3</sub>=G.N.C., S<sub>4</sub>=Neem cake, S<sub>5</sub>=F.Y.M., S<sub>6</sub>=T.C. S<sub>7</sub>=A/S, S<sub>8</sub>=A/N and S<sub>9</sub>=C/N.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 10. (b) N.A. (iii) 2. (iv) (a) and (b) 17'×12'. (v) No. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Nil. (iii) Grain yield. (iv) (a) to (c) No. (v) (a) and (b) No. (vi) Nil. (vii) Experiment conducted by C.P.

## 5. RESULTS :

- (i) 649.3 lb./ac.  
 (ii) 85.12 lb./ac.  
 (iii) Treatments are significantly different.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield	Treatment	Av. yield
S <sub>0</sub>	384.2	S <sub>5</sub>	686.6
S <sub>1</sub>	741.4	S <sub>6</sub>	741.4
S <sub>2</sub>	700.0	S <sub>7</sub>	631.7
S <sub>3</sub>	768.3	S <sub>8</sub>	590.2
S <sub>4</sub>	741.4	S <sub>9</sub>	507.4

S.E./mean = 60.19 lb./ac.

Crop :- Moong (*Kharif*).

Ref :- U.P. 50(128).

Site :- Crop Physiological Res. Stn., Lucknow.

Type :- 'M'.

Object :- To study the residual effect of N applied to previous crop Wheat on the growth and yield of the following *Kharif* crop Moong.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Wheat. (c) As per treatments. (ii) (a) Sandy loam. (b) N.A. (iii) 3.7.1950. (iv) (a) One ploughing by mould board plough, one by cultivator, one cross wise ploughing by *desi* plough and one planking. (b) Dibbling. (c) 3 seers/ac. (d) 1½'×9". (e) N.A. (v) Nil. (vi) T<sub>1</sub> (medium). (vii) N.A. (viii) 1 hoeing and 1 weeding. (ix) N.A. (x) 21, 28.8.1950 and 7.9.1950.

## 2. TREATMENTS :

16 sources to give 60 lb./ac. of N : S<sub>0</sub>=control (no manure), S<sub>1</sub>=A/S, S<sub>2</sub>=A/N, S<sub>3</sub>=Ammo. Phos. S<sub>4</sub>=F.Y.M., S<sub>5</sub>=T.C., S<sub>6</sub>=Stable manure, S<sub>7</sub>=Poultry manure, S<sub>8</sub>=Zoo excreta, S<sub>9</sub>=Castor cake, S<sub>10</sub>=G.N.C., S<sub>11</sub>=Neem cake, S<sub>12</sub>=Mohawa cake, S<sub>13</sub>=Mustard cake, S<sub>14</sub>=Linsced cake and S<sub>15</sub>=Kurdli cake.

Manures applied to wheat crop during 1949-1950.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 16. (b) N.A. (iii) 3. (iv) (a) and (b) 20'×30'. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) N.A. (iii) Grain yield. (iv) (a) to (c) No. (v) (a) and (b) N.A. (vi) Nil. (vii) Experiment conducted by C.P.

## 5. RESULTS :

- (i) 436 lb./ac.  
 (ii) 41.26 lb./ac.  
 (iii) Treatment differences are highly significant.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield	Treatment	Av. yield
S <sub>0</sub>	302	S <sub>8</sub>	373
S <sub>1</sub>	426	S <sub>9</sub>	389
S <sub>2</sub>	438	S <sub>10</sub>	516
S <sub>3</sub>	687	S <sub>11</sub>	302
S <sub>4</sub>	466	S <sub>12</sub>	410
S <sub>5</sub>	386	S <sub>13</sub>	470
S <sub>6</sub>	591	S <sub>14</sub>	339
S <sub>8</sub>	482	S <sub>15</sub>	392

S.E./mean = 23.82 lb./ac.

Crop :-Moong.

Ref :-U.P. 52(182).

Site :-Crop Physiological Res. Stn., Lucknow.

Type :-'M'.

Object :-To study the effect of different trace elements on growth and quality of *Moong*.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Barley+Pea and Mustard. (c) N.A. (ii) (a) Sandy Loam. (b) N.A. (iii) 7.7.1952. (iv) (a) 2 ploughings. (b) In lines by dibbling. (c) 4 sr./ac. (v) 25 lb./ac. of N as, A/S, 15 lb./ac. of  $P_2O_5$  as Super and 15 lb./ac. of  $K_2O$  as Pot. Sul. (double). Phosphate will be applied 6" deep in furrows while preparing the field and A/S and Pot. Sulphate as top dressing one week before sowing of *Moong*. (vi)  $T_1$  (medium). (vii) Unirrigated. (viii) N.A. (ix) N.A. (x) 10.9.1952.

## 2. TREATMENTS :

- |                                 |   |
|---------------------------------|---|
| 1. Control.                     | 6. Copper at 6 lb./ac. of Cu.           |
| 2. Calcium at 40 lb./ac. of Ca. | 7. Manganese at 5 lb./ac. of Mn.        |
| 3. Sulphur at 50 lb./ac. of S.  | 8. Molybdenum at 6 lb./ac. of Mo.       |
| 4. Boron at 2 lb./ac. of B.     | 9. Ferrous sulphate at 2 lb./ac. of Fe. |
| 5. Zinc at 4 lb./ac. of Zn.     | 10. Fallow.                             |

Elements will be applied mixed with fine earth as surface dressing 5 to 6 days before sowing as to secure uniform distribution within the plot.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 10. (b) N.A. (iii) 4. (iv) (a) and (b) 16'×25'. (v) Nil. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) N.A. (iii) Yield of grain. (iv) (a) Nil. (b) and (c) No. (v) (a) and (b) Nil. (vi) Nil. (vii) The experiment was conducted by C.P.

## 5. RESULTS :

- (i) 484.8 lb./ac.  
 (ii) 131.8 lb./ac.  
 (iii) Treatment differences are highly significant.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield	Treatment	Av. yield
1.	381.3	6.	612.5
2.	637.6	7.	346.9
3.	481.3	8.	612.5
4.	459.4	9.	368.8
5.	462.5		

S.E./mean = 65.9 lb./ac.

Crop :-Moong.

Ref :-U.P. 50(130)

Site :-Crop Physiological Res. Stn., Lucknow.

Type :-'M'.

Object :-To study the effect of  $P_2O_5$ , Boron and Calcium on nodulation and yield of *Moong*.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) (a) Sandy loam. (b) N.A. (iii) 17.7.1950. (iv) (a) Two ploughings by mould board plough, one by cultivator, 3 by *desi* plough and planking (b) Dibbling in rows. (c) 3 sr./ac. (d) 18"×9". (e) N.A. (v) 60 mds. stable manure mixed by *desi* plough. (vi)  $T_1$  (medium). (vii) N.A. (viii) 2 hoeings and weedings. (ix) N.A. (x) 9,14.9.1950.

## 2. TREATMENTS :

- All combinations of (1), (2) and (3)  
 (1) 3 levels of  $P_2O_5$  as Super :  $P_0=0$ ,  $P_1=25$  and  $P_2=50$  lb./ac.  
 (2) 2 levels of Gypsum as Ca :  $C_0=0$  and  $C_1=40$  lb./ac.  
 (3) 2 levels of Boron as Borax :  $B_0=0$  and  $B_1=50$  lb./ac.

## 3. DESIGN :

(i) 3×2×2 Fact in R.B.D. (ii) (a) 12. (b) N.A. (iii) 3. (iv) (a) and (b) 20'×30'. (v) Nil. (vi) Yes.

## 4. GENERAL :

- (i) N.A. (ii) No. (iii) No. of nodules per 3 plants, fresh weight of nodules, volume of nodules, dry weight of nodules and yield of grain. (iv) (a) No. (b) and (c) N.A. (v) (a) and (b) Nil. (vi) Nil. (vii) The experiment was conducted by C.P.

## 5. RESULTS :

- (i) 366 lb./ac.  
 (ii) 35.04 lb./ac.  
 (iii) Main effects of B and interactions  $P \times C$  and  $P \times C \times B$  are highly significant, where as main effect of P and interaction  $C \times B$  are significant. Others are not significant.  
 (iv) Av. yield of grain in lb./ac.

	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>	Mean	C <sub>0</sub>	C <sub>1</sub>
B <sub>0</sub>	386	368	432	396	399	392
B <sub>1</sub>	331	325	350	336	308	363
Mean	359	347	391	366	354	378
C <sub>0</sub>	300	356	404			
C <sub>1</sub>	417	337	378			

S.E. of marginal mean of P	=10.11 lb./ac.
S.E. of marginal mean of C or B	= 8.25 lb./ac.
S.E. of body of table $P \times C$ or $P \times B$	=14.30 lb./ac.
S.E. of body of table $C \times B$	=11.68 lb./ac.

Crop :- Moong (*Rabi*).

Ref :- U.P. 53(379).

Site :- Institutional Res. Farm, Bichpuri (Agra).

Type :- 'MV'.

Object :- To study the effect of different methods of placement of Super on the growth, development and yield of *Moong* and the residual effect on Wheat.

## 1. BASAL CONDITIONS :

- (i) (a) Nil. (b) Wheat. (c) N.A. (ii) Sandy loam. (b) Refer soil analysis, B.R. College, Bichpuri (Agra). (iii) 20.7.1953. (iv) (a) 2 ploughings by disc harrow and *pata*. (b) By *desi* plough in furrows 1" deep. (c) —. (d) 2' x 9'. (e) —. (v) Nil. (vi) As per treatments. (vii) Nil. (viii) Thinning done on 4.8.1953. and 9" distance between plants were maintained within the row. Attack of weeds like *Motha* (*Cyperus rotundus*) and other annual weeds (mostly grown in inter spaces) and so weeding done by hand labour on 4, 5.8.1953 and 2, 3.9.1953. (ix) 10.80°. (x) 8, 14 and 23.9.1953.

## 2. TREATMENTS :

All combinations of (1) and (2)

- (1) 2 varieties of *Moong* : V<sub>1</sub>=*Moong* T<sub>1</sub> and V<sub>2</sub>=*China moong*.  
 (2) 3 applications of P<sub>2</sub>O<sub>5</sub> as Super : P<sub>0</sub>=0, P<sub>1</sub>=120 lb./ac. of P<sub>2</sub>O<sub>5</sub> applied at 3" depth in furrows directly below the seed and P<sub>2</sub>=120 lb./ac. of P<sub>2</sub>O<sub>5</sub> applied at 3" depth in two bands, 3" away on either side of sowing line. P<sub>2</sub>O<sub>5</sub> applied on 30.7.1953. Super finely powdered and sieved before application.

## 3. DESIGN :

- (i) 2 x 3 Fact. in R.B.D. (ii) (a) 6. (b) 84' x 61'. (iii) 4. (iv) (a) 42' x 21' and 42' x 19'. (b) 36' x 15'. (v) Block border 4', Plot border 2', channel effect 4' and channel 4'. (vi) Yes.

## 4. GENERAL :

- (i) Due to heavy rains on 26.8.1953. water logging occurred for few days, some leaves of *china moong* plants showed dark colour and began to dry up due to water logging condition. (ii) Entire crop of *china moong* was heavily attacked by the green caterpillars and adults of Blister Beetle (*Mylabria*). Leaves were eaten up by these insects on 28.8.1953. (iii) Pod, grain yield/plant, grain yield/plot etc. (iv) (a), (b) No. (c) Nil. (v) (a), (b) No. (vi) Nil. (vii) The expt. was conducted by B.R.C. Plotwise yield data-N.A.



## 5. RESULTS :

- (i) 225.9 lb./ac.  
 (ii) 63.36 lb./ac.  
 (iii) V effect is highly significant. P vs control is significant. Others are not significant.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield	Treatment	Av. yield
P <sub>0</sub>	178.0	V <sub>1</sub>	358.1
P <sub>1</sub>	250.5	V <sub>2</sub>	93.6
P <sub>2</sub>	249.1	S.E./mean	=18.29 lb./ac.
S.E./mean	=22.40 lb./ac.		

Crop :- Moong (*Rabi*).

Ref :- U.P. 51(98).

Site :- Govt. Res. Farm, Kanpur.

Type :- 'D'.

Object :- To study the effect of spraying trace elements on the yield of *Moong*.

## 1. BASAL CONDITIONS :

- (i) (a) *Moong*—Wheat. (b) Wheat. (c) N.A. (ii) (a) Loam. (b) N.A. (iii) 26.6.1951. (iv) (a), (b) N.A. (c) 3.75 srs./ac. (d), (e) N.A. (v) No. (vi) *Moong* type 1 (medium early). (vii) Irrigated. (viii) N.A. (ix) N.A. (x) 17.9.1951.

## 2. TREATMENTS :

- 5 lb./ac. of Manganese chloride.
  - 5 lb./ac. of Zinc sulphate.
  - 5 lb./ac. of Copper sulphate.
  - 1 lb./ac. of Boric Acid.
  - No spraying—control.
- Date of spraying is 14.8.1951,

## 3. DESIGN :

- (i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 35.3'×20'. (v) N.A. (vi) Yes.

## 4. GENERAL :

- (i) Good. (ii) N.A. (iii) *Moong* yield. (iv) (a) 1951 to 1954. (b) Yes. (c) N.A. (v) (a) No. (b) N.A. (vi) Nil. (vii) The experiment was conducted by A.C.

## 5. RESULTS :

- (i) 606.0 lb./ac.  
 (ii) 121.2 lb./ac.  
 (iii) Treatment differences are not significant.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	630.0
2.	585.0
3.	510.0
4.	660.0
5.	645.0
S.E./mean	=60.6 lb./ac.

Crop :- Moong (*Kharif*).

Ref :- U.P. 52(154).

Site :- Govt. Res. Farm, Kanpur.

Type :- 'D'.

Object :- To study the effect of spraying trace elements on the yield of *Moong*.

## 1. BASAL CONDITIONS :

- (i) (a) *Moong*—Wheat. (b) Wheat. (c) 50 lb./ac. of N as A/S on 27.11.1952. (ii) (a) Loam. (b) N.A. (iii) 8.6.1952. (iv) (a) and (b) N.A. (c) 3.75 srs./ac. (d) and (e) N.A. (v) N.A. (vi) *Moong* type 1 (medium). (vii) Irrigated. (viii) N.A. (ix) N.A. (x) Picking on 19 and 30.8.1952.

**2. TREATMENTS :**

1. 5 lb./ac. of Manganese chloride.
  2. 5 lb./ac. of Zinc sulphate.
  3. 5 lb./ac. of Copper sulphate.
  4. 1 lb./ac. of Boric acid.
  5. Control—no spraying.
- Date of spraying : 26.7.1952.

**3. DESIGN :**

- (i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 36.3'×20'. (v) N.A. (vi) Yes.

**4. GENERAL :**

- (i) Poor. (ii) N.A. (iii) Grain yield. (iv) (a) 1951—1954. (b) Yes. (c) N.A. (v) (a) No. (b) N.A. (vi) Nil. (vii) The experiment was conducted by A.C.

**5. RESULTS :**

- (i) 139.8 lb./ac.  
 (ii) 40.69 lb./ac.  
 (iii) Treatment differences are highly significant.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	174.0
2.	69.0
3.	112.5
4.	180.0
5.	163.5
S.E./mean	=20.35 lb./ac.

**Crop :- Moong (*Kharif*).**

**Ref :- U.P. 53(195).**

**Site :- Govt. Res. Farm, Kanpur.**

**Type :- 'D'.**

**Object :-**To study the effect of spraying trace elements on the yield of *Moong*.

**1. BASAL CONDITIONS :**

- (i) (a) Wheat—*Moong*. (b) Wheat. (c) F.Y.M. and G.M. (ii) (a) Loam. (b) N.A. (iii) 5.7.1953. (iv) (a) and (b) N.A. (c) 6 srs./ac. (d) and (e) N.A. (v) Top dressing with 50 lb./ac. of N as A/S on 13.8.1952. (vi) *Moong* type 1 (medium-early). (vii) Irrigated. (viii) N.A. (ix) N.A. (x) 5.9.1953.

**2. TREATMENTS :**

1. 5 lb./ac. of Manganese chloride.
  2. 5 lb./ac. of Zinc sulphate.
  3. 5 lb./ac. of Copper sulphate.
  4. 1 lb./ac. of Boric acid.
  5. Control.
- Date of spraying : 18.8.1953.

**3. DESIGN :**

- (i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 36.3'×20'. (v) N.A. (vi) Yes.

**4. GENERAL :**

- (i) Satisfactory. (ii) N.A. (iii) Grain yield. (iv) (a) 1951 to 1954. (b) Yes. (c) N.A. (v) (a) No. (b) N.A. (vi) Nil. (vii) The experiment was conducted by A.C.

**5. RESULTS :**

- (i) 198.6 lb./ac.  
 (ii) 18.97 lb./ac.  
 (iii) Treatment differences are highly significant.

(iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	220.5
2.	139.5
3.	178.5
4.	222.0
5.	232.5
S.E./mean	=9.48 lb./ac.

Crop :- Gram.

Site :- Crop Physiological Res. Stn., Lucknow.

Ref :- U.P. 53(138),

Type :- 'M'.

Object :- To study the effect of N, P, K and Ca on the yield of Gram.

## 1. BASAL CONDITIONS :

(i) (a) Maize-Gram. (b) Fallow. (c) Nil. (ii) (a) Loam. (b) N.A. (iii) 21.10.1953. (iv) (a) 3 ploughings (b) Sown behind the plough. (c) 56 mds./ac. (d) N.A. (e) N.A. (v) Nil. (vi) Gram T-87. (vii) Irrigated. (viii) One weeding. (ix) 5.48". (x) 6.4.1954.

## 2. TREATMENTS :

1. A/S at 40 lb./ac. of N.
2. Super at 50 lb./ac. of  $P_2O_5$ .
3. Pot. Sul. at 40 lb./ac. of  $K_2O$ .
4. Gypsum at 60 lb./ac. of Ca.
5. Control (no manure).

## 3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 4. (iv) (a) 25'×20'. (b) 21'×16'. (v) 2' around. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Nil. (iii) Grain and straw yield. (iv) (a) 1953-N.A. (b) No. (c) No. (v) (a) and (b) No. (vi) Nil. (vii) Experiment conducted by C.P. (R).

## 5. RESULTS :

- (i) 1212 lb./ac.  
(ii) 24.63 lb./ac.  
(iii) Treatments differ highly significantly.  
(iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	1359
2.	1509
3.	1184
4.	1124
5.	884
S.E./mean	=17.42 lb./ac.

Crop :- Gram (Rabi).

Site :- Govt. Agri. Farm, Pura.

Ref:-U.P. 53(356).

Type :- 'M'.

Object :- To study the residual effect of N and P on Gram crop, having already tested the residual effect on Paddy crop.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy crop. (c) Nil. (ii) (a) Kanpur type 2, loam. (b) Refer soil analysis, Pura. (iii) N.A. (iv) (a) to (c) N.A. (v) Nil. (vi) N.A. (vii) N.A. (viii) N.A. (ix) N.A. (x) N.A.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 3 levels of N as A/S :  $N_0=0$ ,  $N_1=30$  and  $N_2=60$  lb./ac.

(2) 3 levels of  $P_2O_5$  as Super :  $P_0=0$ ,  $P_1=60$  and  $P_2=120$  lb./ac.

These manures were applied in *rabi* 1952-1953 to the wheat crop. Then residual effect tested on Paddy crop. Then again the present experiment (residual effect).

## 3. DESIGN :

(i)  $3 \times 3$  Fact. in R.B.D. (ii) (a) 9. (b) N.A. (iii) 6. (iv) (a) N.A. (b)  $53' \times 15'$ . (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) N.A. (iii) Grain and straw yield. (iv) (a) 1953—N.A. (b) N.A. (c) Nil. (v) (a) N.A. (b) —. (vi) Nil. (vii) Experiment conducted by A.C.

## 5. RESULTS :

(i) 1478 lb./ac.

(ii) 276.4 lb./ac.

(iii) None of the effects is significant.

(iv) Av. yield of grain in lb./ac.

	$P_0$	$P_1$	$P_2$	Mean
$N_0$	1666	1459	1636	1587
$N_1$	1235	1718	1485	1479
$N_2$	1223	1378	1502	1368
Mean	1375	1518	1541	1478

S.E. of any marginal mean

= 65.1 lb./ac.

S.E. of body of table

= 112.8 lb./ac.

Crop :- Gram (*Rabi*).

Ref :- U.P. 52(276).

Site :- Orai (Jalaun).

Type :- 'M'.

Object :- To draw out fertilizer schedule for agriculturally important soil types.

## 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) Bundelkhand type 2 soils and Bundelkhand type 3 soils. (iii) N.A. (iv) Improved. (v) (a) After application of manure, the field was levelled by drawing a *pata*. (b) Seeds sown in lines parallel to the fertilizer band. (c) N.A. (d) At a distance of  $1''$  to  $2''$  away from the fertilizer line. (e) N.A. (vi) to (x) N.A.

## 2. TREATMENTS :

1. Control.

2. 60 lb./ac. of  $P_2O_5$  as Super (2 plots each replication).

Super is placed at a depth of about  $3''$ — $4''$  in the sole of the furrows and in the side of the seed row made by either an iron plough or two *desi* ploughs one behind the other in the same furrow.

## 3. DESIGN :

(i) and (ii) 12 villages selected in the district and an unreplicated experiment laid out in each village. (iii) (a) N.A. (b) N.A. but is taken to be about  $1/40$  ac. (iv) N.A. on cultivators' fields.

## 4. GENERAL :

(i) N.A. (ii) N.A. (iii) Gram and straw yield. (iv) (a) No. (b) and (c) N.A. (v) N.A. (vi) Nil. (vii) The experiment was conducted by A.C.

## 5. RESULTS :

(i) 587 lb./ac.

(ii) 68.55 lb./ac.

(iii) Treatment differences are highly significant.

## (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	497
2.	632
S.E. for treatment 1	=19.79 lb./ac.
S.E. for treatment 2	=13.99 lb./ac.

Crop :-Gram (*Rabi*).

Ref :-U.P. 53(408).

Site :-Kichha (Nainital).

Type :-'M'.

Object :-To draw out fertilizer schedule for agriculturally important soil types.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) Maize in case of 2 trials and fallow in case of 2 trials. (c) N.A. (ii) *Dumat II* in one trial, loamy in one, sandy loam in one and loam (slightly calcareous) in one. (iii) Nil. (iv) N.A. (v) (a) About 6 to 8 ploughings by *desi* plough. (b) to (e) N.A. (vi) 25.9.1953 to 6.10.1953. (vii) Un-irrigated. (viii) N.A. (ix) N.A. (x) 18.4.1954 to 3.5.1954.

## 2. TREATMENTS :

1. Control (no manure).
  2. 25 lb./ac. of  $P_2O_5$  as Super.
  3. 50 lb./ac. of  $P_2O_5$  as Super.
- $P_2O_5$  applied deep behind victory plough in furrows.

## 3. DESIGN :

(i) and (ii) Two villages with 2 fields/village were selected in the Tahsil. 3 plots/field. (iii) (a) N.A. (b) 33' x 33'. (iv) N.A.

## 4. GENERAL :

(i) Satisfactory in 1 trial, good in 2 trials, good (poor germination) in 1 trial. (ii) Attack of gram caterpillar in all the trials. (iii) Yield of grain & Straw (iv) (a) No. (b) and (c) N.A. (v) N.A. (vi) Nil. (vii) Severe weeds in all the 4 trials water logging in one trial (in  $P_1$  treatments), 1 trial damaged by hailstorm. Expt. conducted by A.C. on cultivators' fields.

## 5. RESULTS :

- (i) 564 lb./ac.
- (ii) 94.28 lb./ac.
- (iii) Treatment differences are significant.
- (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	454
2.	552
3.	685
S.E./mean	= 47.14 lb./ac.

Crop :-Gram (*Rabi*).

Ref :-U.P. 53(373).

Site :-Allahabad Agri. Institute, Allahabad.

Type :-'G'.

Object :-To study the effect of spacing and seed rate on gram yield.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) *Jowar*. (c) N.A. (ii) (a) Loamy. (b) Refer soil analysis, Allahabad. (iii) 4.11.1953. (iv) (a) N.A. (b) N.A. (c) and (d) As per treatments. (e) N.A. (v) N.A. (vi) T-87 (N.A.). (vii) Irrigated. (viii) N.A. (ix) 1.00°. (x) 30.3.1954.

**2. TREATMENTS :****Main-plot treatments :**3 row spacings :— $S_1=8'$ ,  $S_2=12'$  and  $S_3=16'$ .**Sub-plot treatments :**3 seed rates :— $R_1=20$ ,  $R_2=25$  and  $R_3=30$  sr./ac.**3. DESIGN :**(i) Split-plot. (ii) (a) 3 main-plots/replication and 3 sub-plots/main-plot. (b)  $124' \times 30'$  (iii) 5. (iv) (a) Main-plot  $40' \times 30'$ . (b) Sub-plot  $30' \times 12'$  (v) Replications 4' apart, main-plots 2' apart and sub-plots 2' apart. (vi) Yes.**4. GENERAL :**(i) N.A. (ii) N.A. (iii) Grain yield. (iv) (a) No. (b) No. (c) Nil. (v) (a) and (b) Nil. (vi) Nil. (vii) Treatment values of  $S_1R_2$  in replication III and  $S_2R_3$  in replication IV were estimated as the crop in these two plots had been stolen. Experiment conducted by the Head, Department of Agronomy (A.A.I.)**5. RESULTS :**

- (i) 1030 lb./ac.  
(ii) (a) 332.1 lb./ac.  
(b) 158.4 lb./ac.  
(iii) None of the effects is significant.  
(iv) Av. yield of grain in lb./ac.

	$R_1$	$R_2$	$R_3$	Mean
$S_1$	1120	1195	1170	1162
$S_2$	1045	921	1145	1037
$S_3$	871	921	881	891
Mean	1012	1012	1065	1030

**S.E of difference of**

1.  $S_1$  and  $S_2$  or  $S_2$  and  $S_3$  marginal means = 122.13 lb./ac.
2.  $S_1$  and  $S_3$  marginal means = 123.00 lb./ac.
3.  $R_1$  and  $R_2$  or  $R_1$  and  $R_3$  marginal means = 59.99 lb./ac.
4.  $R_2$  and  $R_3$  marginal means = 61.73 lb./ac.
5.  $R_1$  and  $R_2$  means or  $R_2$  and  $R_3$  means at the same level of  $S_2$  = 103.90 lb./ac.
6.  $R_2$  and  $R_3$  or  $R_3$  and  $R_1$  means at the same level of  $S_3$  = 103.90 lb./ac.
7. Two R means at the same level of  $S_2$  = 100.80 lb./ac.
8.  $R_1$  and  $R_3$  means at the same level of  $S_1$  = 100.80 lb./ac.
9.  $R_2$  and  $R_1$  means at the same level of  $S_3$  = 100.80 lb./ac.
10.  $S_1$  and  $S_2$  or  $S_1$  and  $S_3$  means at the same level of  $R_2$  = 152.91 lb./ac.
11.  $S_1$  and  $S_3$  or  $S_2$  and  $S_3$  means at the same level of  $R_3$  = 152.91 lb./ac.
12. Two S means at the same level of  $R_1$  = 146.56 lb./ac.
13.  $S_2$  and  $S_3$  means at the same level of  $R_2$  = 146.56 lb./ac.
14.  $S_1$  and  $S_2$  means at the same level of  $R_3$  = 146.56 lb./ac.

Crop :- Gram (*Rabi*).

Ref :- U.P. 52(248).

Site :- Students' Instructional Farm, Kanpur.

Type :- 'C'.

Object :- To study the effect of topping on Gram yield.

**1. BASAL CONDITIONS :**

(i) (a) No. (b) N.A. (c) N.A. (ii) (a) N.A. (b) N.A. (iii) 10.10.1952. (iv) (a) and (b) N.A. (c) 30 sr./ac. (d) and (e) N.A. (v) N.A. (vi) T-87 (late). (vii) Irrigated. (viii) N.A. (ix) N.A. (x) 18.3.1953.

**2. TREATMENTS :**

1. No topping.
2. One topping.
3. Two toppings.

First topping done on 9.11.1952. Second topping done on 7.12.1952.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 3. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 48'×40'. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) N.A. (iii) Grain yield. (iv) (a) No. (b) No. (c) Nil. (v) (a) and (b) No. (vi) Nil.  
(vii) The experiment was conducted by P.A.C. (K), plotwise data N.A.

## 5. RESULTS :

(i) 735.9.  
(ii) and (iii) N.A.  
(iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	773.5
2.	818.7
3.	615.5

Crop :- Gram (*Rabi*).

Ref :- U.P. 53(308).

Site :- Raghunath Purwa (Gonda).

Type :- 'D'.

Object :- To test the effectiveness of insecticides for the control of cut worms-*Agrotis* Spp.

## 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) to (iv) N.A. (v) (a) to (e) N.A. (vi) to (x) N.A.

## 2. TREATMENTS :

- Dusting the soil with 10% D.D.T. at 25 lb./ac.
  - Dusting the soil with 10% B.H.C. at 25 lb./ac.
  - Dusting the soil with 10% Toxaphene at 20 lb./ac.
  - Poison bait with 5% B.H.C. and bran (1 part 5% B.H.C. in 10 parts of bran) at 30 lb./ac.
  - Control (no treatment).
- Treatments applied on 23.1.1953.

## 3. DESIGN :

(i) and (ii) R.B.D. with 4 replications. (iii) (a) 33'×37'. (b) 33'×33'. (iv) N.A.

## 4. GENERAL :

(i) N.A. (ii) Under study. (iii) Population of cutworms on different dates, % of mortality 2 days after application of treatment on 25.1.1953 and 8 days after application of treatment on 1.2.1953. (iv) (a) No. )b) and (c) N.A. (v) N.A. (vi) Nil. (vii) p is % mortality. Expt. conducted by Ento. (K) on cultivators' fields.

## 5. RESULTS :

(i)  $40.88 \sin^{-1}\sqrt{p}$ /plot.  
(ii)  $7.96 \sin^{-1}\sqrt{p}$ /plot.  
(iii) Treatment differences are highly significant.  
(iv)

Treatment	Mean value ( $\sin^{-1}\sqrt{p}$ )	Av. % mortality (transformed back)
1.	60.46	75.43
2.	59.14	73.45
3.	39.15	39.97
4.	42.68	45.99
5.	2.99	0.77
S.E./mean	=3.98	

Crop :- Gram (*Rabi*).  
Site :- Bardari Farm, (Rampur).

Ref :- U.P. 53(163).  
Type :- 'D'.

Object :- To find out a suitable control measure against Gram pod borer—*Heliothis armigera* Hulen.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) Loam. (iii) Nil. (iv) Improved. (v) (a) to (e) N.A. (vi) October, 1953. (vii) Unirrigated. (viii) and (ix) N.A. (x) April, 1954.

2. TREATMENTS :

1. Dusting the crop with 5% B.H.C. at 25 lb./ac.
2. Dusting the crop with 5% D.D.T. at 25 lb./ac.
3. Spraying the crop with 0.25% D.D.T. suspension at 50 gallons/ac.
4. Spraying the crop with 0.25% B.H.C. suspension at 50 gallons/ac.
5. Control (no treatment).

3. DESIGN :

(i) and (ii) R.B.D. with 4 replications. (iii) (a) 37' x 37'. (b) 33' x 33'. (iv) N.A.

4. GENERAL :

(i) Not good. (ii) Incidence of grain-pod borer observed. (iii) Incidence (%) of gram borer. (iv) (a) 1953 - continued. (b) and (c) N.A. (v) N.A. (vi) Nil. (vii) Expt. conducted by Ento (K). on cultivators' fields. The incidence was very low during the season, hence conclusive results could not be drawn.

5. RESULTS :

- (i) 14.50 degree.
- (ii) 2.2414 degree.
- (iii) Treatments are significantly different.
- (iv)

Treatment	Mean value ( $\sin^{-1}\sqrt{p}$ )	Transformed back mean percentages
1.	14.04	5.32
2.	11.80	4.65
3.	12.89	5.43
4.	16.37	8.37
5.	17.41	9.36
S.E./mean	=1.1207 degrees	

Crop :- Lahi (*Rabi*).  
Site :- Kichha (Nainital.)

Ref :- U.P. 53(407).  
Type :- 'M'.

Object :- To draw out fertilizer schedule for agriculturally important soil types.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) Maize in case of 11 trials, Fallow in case of 2 trials (c) N.A. (ii) Loam in case of 10 trials, sandy loam in case of 2 trials and light loam in case of 1 trial. (iii) Nil. (iv) N.A. (v) (a) About 6 to 8 ploughings. (b) to (e) N.A. (vi) 24.9.1953 to 18.11.1953. (vii) Unirrigated. (viii) N.A. (ix) N.A. (x) 13.12.1953 to 13.2.1954.

2. TREATMENTS :

1. Control.
2. 25 lb./ac. of  $P_2O_5$  as Super.
3. 50 lb./ac. of  $P_2O_5$  as Super.  
Super applied 4" deep behind the plough.

3. DESIGN :

(i) and (ii) 3 villages were selected in the Tahsil. In first village 7 fields, in second, one field and in the third village, 5 fields were selected with 3 plots/field. (iii) (a) N.A. (b) 33' x 33'. (iv) N.A.

4. GENERAL :

(i) Good in 11 trials, normal in 2 trials, occurrence of lodging in 4 trials. (ii) Slight damage by pests in 4 trials and N.A. for 9 trials. (iii) Grain and straw yield. (iv) (a) 1952-1953-continued. (b), (c) N.A. (v) N.A. (vi) Nil (vii) Expt. conducted by A.C. on cultivators' fields.



## 5. RESULTS :

- (i) 842 lb./ac.  
 (ii) 92.89 lb./ac.  
 (iii) Treatment differences are highly significant.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	693
2.	864
3.	970
S.E./mean	=25.76 lb./ac.

Crop : Lahi and Gram (*Rabi*).

Ref :- U.P. 53(410).

Site :- Kichha (Nainital).

Type :- 'M'.

Object : To draw out fertilizer schedule for agriculturally important soil types.

## 1. BASAL CONDITIONS :

- (i) (a) N.A. (b) Maize. (c) N.A. (ii) Sandy loam for 4 trials and loam for 2 trials. (iii) Nil. (iv) N.A. (v) (a) About 6 to 8 ploughings by *dest* plough. (b) N.A. (c) Gram and *Lahi* in the ratio of 8 : 3. (d) and (e) N.A. (vi) 27.9.1953 to 30.9.1953. (vii) Unirrigated. (viii) N.A. (ix) N.A. (x) 13.1.1954 to 10.2.1954.

## 2. TREATMENTS :

- Control.
  - 25 lb./ac. of  $P_2O_5$  as Super.
  - 50 lb./ac. of  $P_2O_5$  as Super.
- Super applied 4" deep in bands behind the victory plough.

## 3. DESIGN :

- (i) and (ii) 6 fields selected in the village in Tehsil with 3 plots/field. (iii) (a) N.A. (b) 33' x 33'. (iv) N.A.

## 4. GENERAL :

- (i) Good in case of 5 trials, Poor to good in case of 1 trial. (ii) Caterpillar and cut worm to green crop. (iii) Grain and straw yield. (iv) (a) No. (b), (c) N.A. (v) N.A. (vi) Nil. (vii) Only yield data for lahi crop has been analysed. The gram crop has failed completely in 5 out of 6 trials. Due to caterpillar and cut worms the gram crop failed completely in case of 3 trials. One trial was not harvested because of poor yield. One trial was spoiled by wild animals. Expt. conducted by A.C. on cultivators' fields.

## 5. RESULTS :

- (i) 1080 lb./ac.  
 (ii) 40.85 lb./ac.  
 (iii) Treatments are highly significantly different.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	969
2.	1094
3.	1176
S.E./mean	=16.68 lb./ac.

Crop :- Peas.

Ref :- U.P. 51(145).

Site :- Govt. Botanical Gardens, Agri. College, Kanpur. Type :- 'CV'.

Object :- To find out the inter-relation of varieties and spacings on early and total yield of Peas.

## 1. BASAL CONDITIONS :

- (i) (a) N.A. (b) Fallow in *kharif*. (c) N.A. (ii) (a) Gangetic alluvial type, light loam brown in colour and of fine texture. (b) N.A. (iii) 7.11.1953. (iv) (a) Ploughing. (b) Dibbling. (c) N.A. (d) As per treatments. (e) N.A. (v) N.A. (vi) As per treatments. (vii) Irrigated. (viii) One weeding with *khurpi*. (ix) N.A. (x) N.A.

**2. TREATMENTS :****Main-plot treatments :**2 spacings :  $S_1=6'$  and  $S_2=9'$ .**Sub-plot treatments :**3 varieties :  $V_1=N.P.22$  (early),  $V_2=1133$  (late) and  $V_3=E.A$  (late).**3. DESIGN :**(i) Split-plot. (ii) (a) 2 main-plots/block and 3 sub-plots/main-plot. (b)  $57' \times 44.5'$ . (iii) 6. (iv) (a) N.A. (b)  $26' \times 13'$ . (v) N.A. (vi) Yes.**4. GENERAL :**

(i) N.A. (ii) N.A. (iii) Early and total grain yield. (iv) (a) to (c) N.A. (v) (a) and (b) N.A. (vi) Nil. (vii) In all three pickings were done by hand. Plot wise yield. The experiment was conducted by P.A.C.

**5. RESULTS :**

- (i) 2051.2 lb./ac.  
 (ii) (a) 754.1 lb./ac.  
 (b) 334.1 lb./ac.  
 (iii) Only V effect is significant.  
 (iv) Av. yield of pods in lb./ac.

	$V_1$	$V_2$	$V_3$	Mean
$S_1$	2298	2029	2029	2119
$S_2$	2323	1786	1843	1984
Mean	2310	1907	1936	2051

**S.E. of difference of two**

1. S marginal means =251.3 lb./ac.  
 2. V marginal means =136.4 lb./ac.  
 3. V means at the same level of S =192.9 lb./ac.  
 4. S means at the same level of V =296.7 lb./ac.

**Crop :- Peas.****Ref :- U.P. 51(220).****Site :- Govt. Vegetable Res. Stn., Lucknow.****Type :- 'D'.****Object :-**To study the effect of Agrosan G.N. and cerasan on yield of Pea.**1. BASAL CONDITIONS :**

(i) (a) Nil. (b) and (c) N.A. (ii) (a) Clayey loam. (b) N.A. (iii) 3.11.1951. (iv) (a) to (e) N.A. (v) N.A. (vi) T-18 (medium). (vii) Irrigated. (viii) N.A. (ix) N.A. (x) 2, 12, 22.2.1952 and 3.3.1952.

**2. TREATMENTS :**

1. Seed treated with Agrosan G.N. with the ratio of 2 : 1000 parts by weight of fungicide to seed.  
 2. Seed treated with Cerasan with the ratio 2 : 1000 parts by weight of fungicide to seed.  
 3. Control.

**3. DESIGN :**(i) R.B.D. (ii) (a) 3. (b)  $49' \times 23\frac{1}{2}'$ . (iii) 4. (iv) (a) N.A. (b)  $15'-8" \times 7'-2"$ . (v) N.A. (vi) Yes.**4. GENERAL :**

(i) No lodging. Crop condition N.A. (ii) N.A. (iii) Green pea yield. (iv) (a) N.A. (b) and (c) No. (v) (a) and (b) No. (vi) Nil. (vii) Experiment conducted by V.R.S.

**5. RESULTS :**

- (i) 9.05 ton/ac.  
 (ii) 0.6053 ton/ac.  
 (iii) Treatment differences are not significant.

(iv) Av. yield of green peas in ton/ac.

Treatment	Av. yield
1.	9.40
2.	8.99
3.	8.76
S.E./mean	=0.3026 ton/ac.

Crop :- Peas. (*Rabi*).

Ref :-U.P. 49(241).

Site :- Castle Grant. Orchard, B. R. College, Agra. Type :-'CDV'.

Object :-To study vernalisation response in relation to the yield of green pods of the two varieties of garden Pea.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fallow. (c) N.A. (ii) (a) N.A. (b) N.A. (iii) As per treatments. (iv) (a) Cultivated in summer months, ploughed twice with soil turning plough and 3 times with *desi* plough, every time followed by levelling with *pata*. (b) Dibbling. (c) N.A. (d) 3'×1". (e) —. (v) Compost at 18 seers/plot. (vi) As per treatments. (vii) Irrigated. (viii) 2 weedings and hoeings. (ix) N.A. (x) 26.1.1950, 3.2.1950 and then pickings at an interval of 7 days upto 5.3.1950.

## 2. TREATMENTS :

Main-plot treatments :

2 sowing dates :  $D_1=20.10.1949$  and  $D_2=5.11.1949$ .

Sub-plot treatments :

All combinations of (1) and (2)

(1) 2 varieties :  $V_1=I.P. 29$  and  $V_2=English$  abundance.(2) 2 vernalisation (doses of chilling) :  $C_0=No$  chilling (control) and  $C_1=21$  days chilling.

Vernalised seeds were sown and also control seeds which were brought to the same stage of germination.

## 3. DESIGN :

(i) Split-plot. (ii) (a) 2 main-plots/block and 4 sub-plots/main-plot. (b) 63'×37'. (iii) 4. (iv) (a) 15'×17'. (b) 12'×14'. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) N.A. (iii) Total yield of green pods and straw and other characters studied. (iv) (a) No. (b) No. (c) Nil. (v) (a) and (b) No. (vi) Nil. (vii) The experiment was conducted by B.R.C. No plot wise yield were available.

## 5. RESULTS :

(i) 183.3 lb./ac.

(ii) (a) 50.67 lb./ac.

(b) 20.08 lb./ac.

(iii) C effect is significant and interaction  $D \times V$  is highly significant. Other effects are not significant.

(iv) Av. yield of green pods in lb./ac.

 $C_0=192.1$  lb./ac. $C_1=174.6$  lb./ac.

S.E./mean = 5.02 lb./ac.

	$V_1$	$V_2$	Mean
$D_1$	215.2	174.4	194.8
$D_2$	162.2	181.5	171.9
Mean	188.7	178.0	183.3

S.E. of difference of two.

- D marginal means] =17.91 lb./ac.
- V marginal means = 7.10 lb./ac.
- V means at the same level of D =10.04 lb./ac.
- D means at the same levels of V =19.27 lb./ac.

Crop :- Garden Pea (*Rabi*).

Ref :- U P. 52(333).

Site :- Institutional Farm, B.R. College Bichpuri, Agra.

Type :- 'C'.

Object :- To study the effect of different dates of sowing and staking on the germination, growth, yield and quality of Garden Pea.

### 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Wheat and the Fallow. (c) Nil. (ii) (a) and (b) N.A. (iii) As per treatments. (iv) (a) Field ploughed four times with disc harrow drawn by tractor. Each ploughing was followed by planking to make the soil fine and compact. (b) Seed drill (nai) attached behind a *desi* plough. (c) to (e) N.A. (v) Top dressing at 20 lb./ac. of N as A/S after one and a half month of sowing under each date of sowing. The fertilizer was placed in bands in between two rows and mixed in soil by hoeing 120 mds/ac. of M.C. before last ploughings. (vi) English Abundance (N.A.). (vii) Irrigated. (viii) One weeding after irrigation. (ix) N.A. (x) From 30.1.1953 to 3.3.1953 at week intervals.

### 2. TREATMENTS :

Main-plot treatments :

3 dates of sowing :  $D_1=30.9.1952$ ,  $D_2=14.10.1952$  and  $D_3=28.11.1952$ .

Sub-plot treatments :

2 levels of staking :  $S_0=$ No staking and  $S_1=$ Staking.

Staking : When the seedlings attained a height of 6" support was given for further growth.

### 3. DESIGN :

(i) Split-plot. (ii) (a) 3 main-plots/replication, 2 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 24' x 16'. (v) N.A. (vi) Yes.

### 4. GENERAL :

(i) N.A. (ii) N.A. (iii) Crop stand, yield of Pea. (iv) (a) No. (b) No. (c) Nil. (v) (a) and (b) No. (vi) Nil. (vii) The experiment was conducted by B.R.C. No plotwise yield data was available.

### 5. RESULTS :

(i) 3572 lb./ac.

(ii) (a) 434.9 lb./ac.

(b) 685.8 lb./ac.

(iii) D effect is highly significant, S effect is significant while interaction  $D \times S$  is not significant.

(iv) Av. yield of pea in lb./ac.

Treatment	Av. yield	Treatment	Av. yield
$D_1$	2678	$S_0$	3192
$D_2$	4908	$S_1$	3952
$D_3$	3131	S.E./mean	=197.98 lb./ac.
S.E./mean	=153.77 lb./ac.		

Crop :- Masoor (*Rabi*).

Ref :- U P. 52(280).

Site :- Malkota (Nainital).

Type :- 'M'.

Object :- To draw out fertilizer schedule for agriculturally important soil types.

### 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) 2 blocks on loam (non calcareous) and block on loam (slightly calcareous). (iii) N.A. (iv) Improved. (v) (a) As practised locally. No details available. After application of manure, the field was levelled by drawing a *pata*. (b) Seeds sown in lines parallel to the fertilizer band. (c) N.A. (d) At a distance of 1"–2" away from the fertilizer line. (e) N.A. (vi) N.A. (vii) N.A. (viii) N.A. (ix) N.A. (x) N.A.

### 2. TREATMENTS :

1. Control.

2. 25 lb./ac. of  $P_2O_5$  as Super.

3. 50 lb./ac. of  $P_2O_5$  as Super.

Super placed at depth of about 3"–4" deep at sole of the furrow and in the side of the seed row made either by the iron plough or two *desi* ploughs one behind the other in the same furrow.

### 3. DESIGN :

(i) and (ii) R.B.D. with 3<sub>r</sub> replications. (iii) (a) and (b) N.A. (iv) N.A.

## 4. GENERAL :

- (i) Very poor and stunted growth. (ii) N.A. (iii) Masoor grain and straw yield. (iv) (a) No. (b) and (c) N.A. (v) N.A. (vi) Nil. (vii) The experiment was conducted by A.C. on cultivator's fields.

## 5. RESULTS :

- (i) 115 lb./ac.  
 (ii) 20.07 lb./ac.  
 (iii) Treatment differences are highly significant.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	80
2.	123
3.	143
S.E./mean	= 11.59 lb./ac.

Crop :- Potato (*Rabi*).

Ref :- U.P. 50(308).

Site :- Castle Grant Orchard B.R. College, Agra.

Type :- 'M'.

Object :- To study the effect of N, P<sub>2</sub>O<sub>5</sub> and K<sub>2</sub>O applied singly and in combination on Potato crop.

## 1. BASAL CONDITIONS :

- (i) (a) Nil. (b) Fallow. (c) Nil. (ii) (a) Sandy loam. (b) Refer soil analysis, B.R. College, Agra. (iii) 10 and 11.10.1950. (iv) (a) 4 ploughings with soil turning ploughing *pata*. (b) Sowing in ridges by hand at 4" depth. (c) 15 mds./ac. (d) 15" × 9". (e) —. (v) Nil. (vi) *Gola* (early). (vii) Irrigated. (viii) 1 hoeing, 1 weeding and 1 earthing. (ix) N.A. (x) 25 to 28.1.1951.

## 2. TREATMENTS :

All combinations of (1), (2) and (3)

- (1) 3 levels of N as A/S : N<sub>0</sub>=0, N<sub>1</sub>=100 and N<sub>2</sub>=200 lb./ac. of N.  
 (2) 3 levels of P<sub>2</sub>O<sub>5</sub> as Super : P<sub>0</sub>=0, P<sub>1</sub>=150 and P<sub>2</sub>=300 lb./ac. of P<sub>2</sub>O<sub>5</sub>.  
 (3) 3 levels of K<sub>2</sub>O as Pot. Sul. : K<sub>0</sub>=0, K<sub>1</sub>=75 and K<sub>2</sub>=150 lb./ac. of K<sub>2</sub>O.

Super spread in rows at a distance of 1½' where the ridges were to be prepared for planting tubers on 7 and 8.10.1950. A/S and Pot. Sub. as top dressing after 40 days of sowing i.e. on 28.11.1950.

## 3. DESIGN :

- (i) 3<sup>3</sup> Confd. (ii) (a) 3 blocks/replication and 9 plots/block. (b) N.A. (iii) 2. (iv) (a) 15' × 12'. (b) 12' × 9'. (v) 1½' × 1½'. (vi) Yes.

## 4. GENERAL :

- (i) Satisfactory. (ii) N.A. (iii) Fresh and dry wt. of tubers, yield per plot etc. (iv) (a) to (c) No. (v) (a) Nil (b) No. (vi) Nil. (vii) The experiment was conducted by B.R.C.

## 5. RESULTS :

- (i) 3.39 ton/ac.  
 (ii) 1.6156 ton/ac.  
 (iii) Only N effect is highly significant.  
 (iv) Av. yield of potato in ton/ac.

Treatment	Av. yield	Treatment	Av. yield	Treatment	Av. yield
N <sub>0</sub>	2.48	P <sub>0</sub>	3.02	K <sub>0</sub>	3.62
N <sub>1</sub>	3.53	P <sub>1</sub>	3.64	K <sub>1</sub>	3.36
N <sub>2</sub>	4.17	P <sub>2</sub>	3.51	K <sub>2</sub>	3.18

S.E./of any mean = 0.3808 ton/ac.

Crop :- Potato (*Rabi*).

Ref :- U.P. 50(307).

Site :- Castle Grant Orchard, B.R. College, Agra.

Type :- 'M'.

Object :- To study the effect of N, P<sub>2</sub>O<sub>5</sub> and K<sub>2</sub>O applied singly and in combination on Potato crop.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) (a) Light sandy loam. (b) Refer soil analysis, B.R. College, Agra. (iii) 1 and 2.11.1950. (iv) (a) Ploughing by *desi* plough followed by *pata* on 12.10.1950, cross ploughing by *desi* plough followed by *pata* on 13 and 18.10.1950, ploughing by soil turning plough, followed by *pata* on 17.10.1950. (b) On ridges by hand at 4" depth. (c) 5 mds./ac. (d) 18"×10". (e) 1. (v) N.A. (vi) *Phulwa*. (N.A.) (vii) Irrigated. (viii) 1 weeding and 1 earthing. (ix) N.A. (x) 28 and 29.3.1951.

## 2. TREATMENTS :

All combinations of (1), (2) and (3)

(1) 3 levels of N as A/S : N<sub>0</sub>=0, N<sub>1</sub>=80 and N<sub>2</sub>=160 lb./ac. of N.(2) 3 levels of P<sub>2</sub>O<sub>5</sub> as Super : P<sub>0</sub>=0, P<sub>1</sub>=240 and P<sub>2</sub>=480 lb./ac. of P<sub>2</sub>O<sub>5</sub>.(3) 3 levels of K<sub>2</sub>O as Pot. Sul. : K<sub>0</sub>=0, K<sub>1</sub>=107 and K<sub>2</sub>=214 lb/ac.

Fertilizers mixed with soil by means of rakes on 21.10.1950 and then ridges made on 26.10.1950.

## 3. DESIGN :

(i) 3<sup>3</sup> confounded. (ii) (a) 3 blocks/replication and 9 plots/block. (b) N.A. (iii) 2. (iv) (a) 24'×15'. (b) 21'×12'. (v) 1.5' around. (vi) Yes.

## 4. GENERAL :

(i) Satisfactory. (ii) N.A. (iii) Height of the plant, no. of green leaves per plant, no. of dry leaves per plant, no. of branches per plant, dry weight of plant, total no. of tubers per plant, fresh wt. of tubers, dry wt. of tubers and yield per plot. (iv) (a) and (b) Nil. (c) Nil. (v) (a) and (b). Nil. (vi) Nil. (vii) The expt. was conducted by B.R.C. Plot wise yield N.A.

## 5. RESULTS :

(i) 6.00 ton/ac.

(ii) 0.5616 ton/ac.

(iii) N, P, K effects and interactions N×P and N×K are all highly significant. Other effects are not significant.

(iv) Av. yield of potato in ton/ac.

	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>	Mean	K <sub>0</sub>	K <sub>1</sub>	K <sub>2</sub>
N <sub>0</sub>	1.99	2.60	3.59	2.73	2.32	2.67	3.19
N <sub>1</sub>	4.53	6.74	7.68	6.32	5.73	6.33	6.87
N <sub>2</sub>	6.46	9.55	10.87	8.96	7.71	8.72	10.45
Mean	4.33	6.30	7.38	6.00	5.25	5.91	6.84

S.E. of any marginal mean

=0.1872 ton/ac.

S.E. of body of any table

=0.2293 ton/ac.

Crop :- Potato (*Rabi*).

Ref :- U.P. 48(126).

Site :- Institutional Res. Farm, B.R. College, Bichpuri (Agra).

Type :- 'M'.

Object :- To study the effect of different N manures on the yield of Potato.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) (a) Light loam, deficient in nitrogen and humus. (b) Refer soil analysis, B.R. College, Bichpuri. (iii) 8 and 9.10.1948. (iv) (a) Ploughings on 13.8.1948 and 6.9.1948, by soil turning plough, on 26.8.1948, 23, 28 and 29.9.1948 by *desi* plough followed by *pata*. (b) Sown behind the plough 6" deep. (c) 6 mds./ac. (d) 18"×12". (e) —. (v) F.Y.M. at 10 C.L. for the field of 1.5 ac. in July was ploughed. (vi) *Phulwa* (in good sprouting condition). (vii) Irrigated. (viii) 2 earthings and 1 weeding. (ix) 3.20". (x) 1 to 9.3.1954.

**2. TREATMENTS :**

All combinations of (1) and (2)

(1) 3 sources of N :  $S_1=A/S$ ,  $S_2=$ castor cake and  $S_3=$ municipal compost.

(2) 4 levels of N :  $N_0=0$ ,  $N_1=60$ ,  $N_2=80$  and  $N_3=100$  lb./ac.

Manuring on 6.10.1948 with compost and powdered cake by spreading. A/S top dressed on 20.11.1948.

**3. DESIGN :**

(i)  $3 \times 4$  Fact. in R.B.D. (ii) (a) 12. (b)  $25' \times 267'$ . (iii) 6. (iv) (a)  $26' \times 21'$ . (b)  $22' \times 18'$ . (v)  $2' \times 1\frac{1}{4}'$ . (vi) Yes.

**4. GENERAL :**

(i) Good growth. (ii) Nil. (iii) Weights of plants, no. of leaves of the plants, no. of branches, fresh and dry wt. of the plant, no. of tubers for two plants, moisture % and yield and gradation in big, medium and small tubers. (iv) (a) No. (b) —. (c) Nil. (v) (a) and (b) Nil. (vi) Nil. (vii) The expt. was (conducted by B R.C. Neither plot wise yield data nor two way table is given.

**5. RESULTS :**

(i) 2.07 ton/ac.

(ii) 0.5298 ton/ac.

(iii) N and S effects are highly significant. Interaction is not significant.

(iv) Av. yield of potato in ton/ac.

Treatment	Av. yield	Treatment	Av. yield
$S_1$	1.76	$N_0$	1.63
$S_2$	1.97	$N_1$	2.18
$S_3$	2.92	$N_2$	2.16
		$N_3$	2.31
S.E./mean	0.1081 ton/ac.	S.E./mean	0.1248 ton/ac.

Crop :- Potato.

Site :- Govt. Potato Res. Farm, Farrukhabad.

Ref :- U.P. 51(8)

Type :- 'M'.

Object :- To study the effect of N and P applied alone and in combination on the yield of Potato.

**1. BASAL CONDITIONS :**

(i) (a) Nil. (b) Maize. (c) Nil. (ii) (a) Loam. (b) N.A. (iii) 3.11.1951. (iv) (a) 2 ploughings by tractor and 2 by *desi* plough. (b) N.A. (c) 26 seeds/rows with 12 rows/plot. (d)  $2' \times 9'$ . (e) N.A. (v) Nil. (vi) *Phulwa (Dohan)*. (vii) Irrigated. (viii) 1 earthing up. (ix) N.A. (x) 9 and 10.3.1952.

**2. TREATMENTS :**

All combinations of (1) and (2)

(1) 3 levels of N as A/S :  $N_0=0$ ,  $N_1=100$  and  $N_2=200$  lb./ac.

(2) 3 levels of  $P_2O_5$  as Super :  $P_0=0$ ,  $P_1=150$  and  $P_2=300$  lb./ac.

All manures applied by broadcast at the time of spray.

**3. DESIGN :**

(i)  $3 \times 3$  Fact. in R.B.D. (ii) (a) 9. (b)  $233' \times 20'$ . (iii) 4. (iv) (a) and (b)  $25' \times 20'$ . (v) Nil. (vi) Yes.

**4. GENERAL :**

(i) Good. (ii) Traces of mosaic incidence. (iii) Germination and Potato yield. (iv) (a) 1951—continued. (b), (c) No. (v) (a), (b) No. (vi) Nil. (vii) Experiment conducted by E.B.(R).

**5. RESULTS :**

(i) 7.28 ton/ac.

(ii) 0.7047 ton/ac.

(iii) NP and effects are highly significant while interaction is not significant.

(iv) Av. yield of potato in ton./ac.

	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>	Mean
N <sub>0</sub>	4.76	5.48	4.86	5.03
N <sub>1</sub>	7.74	8.22	8.94	8.30
N <sub>2</sub>	7.54	9.30	8.66	8.50
Mean	6.68	7.67	7.49	7.28

S.E. of any marginal mean =0.2034 ton./ac.

S.E. of body of table =0.3524 ton./ac.

Crop :- Potato.

Ref :-52(38).

Site :- Govt. Potato Res. Farm, Farrukhabad.

Type :- 'M'.

Object :- To study the effect of N and P applied alone and in combinations on the yield of Potato.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) N.A. (c) N.A. (ii) (a) Loam. (b) N.A. (iii) 24, 25.10.1952. (iv) (a) 4 ploughings. (b) N.A. (c) 24 seeds/row in 16 rows/plot. (d) 1.5'×9". (e) N.A. (v) Nil. (vi) *Phulwa* (cold storage). (vii) Irrigated. (viii) 2 weedings. (ix) N.A. (x) 14.3.1953.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 3 levels of N as A/S : N<sub>0</sub>=0, N<sub>1</sub>=100 and N<sub>2</sub>=200 lb./ac.(2) 3 levels of P<sub>2</sub>O<sub>5</sub> as Super : P<sub>0</sub>=0, P<sub>1</sub>=150 and P<sub>2</sub>=300 lb./ac.

Manures applied by broadcast at sowing time.

## 3. DESIGN :

(i) 3×3 Fact. in R.B.D. (ii) (a) 9. (b) 230'×20'. (iii) 4. (iv) (a) and (b) 25'×20'. (v) Nil. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Nil. (iii) Germination and potato yield. (iv) (a) 1951—continued. (b) and (c) No. (v) (a) and (b) No. (vi) Nil. (vii) The expt. was conducted by E.B.(R).

## 5. RESULTS :

(i) 6.16 ton/ac.

(ii) 1.0401 ton/ac.

(iii) Only N effect is significant.

(iv) Av. yield of potato in ton/ac.

	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>	Mean
N <sub>0</sub>	4.40	6.28	5.44	5.37
N <sub>1</sub>	6.58	6.52	6.66	6.59
N <sub>2</sub>	5.70	6.76	7.06	6.51
Mean	5.56	6.52	6.39	6.16

S.E. of any marginal mean =0.3003 ton/ac.

S.E. of body of table =0.5200 ton/ac.



Crop :- Potato.

Ref :-U.P. 53(15).

Site :- Govt. Potato Res. Farm, Farrukhabad.

Type :- 'M'.

Object :-To study the effect of N and P fertilizers applied alone and in combination on the yield of Potato.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Sanal* for green manuring. (c) Nil. (ii) (a) Loam (b) N.A. (iii) 25-26.10.1953. (iv) (a) and (b) N.A. (c) and (d) 16 rows per plot and 26 seeds per row, total seed used=7.70 mds. (e) N.A. (v) N.A. (vi) *Phulwa* (cold storage) in sprouted condition. (vii) Irrigated. (viii) 1 weeding and 1 hoeing and 2 earthing. (ix) 2.79°. (x) 7, 8.3.1954.

## 2. TREATMENTS :

All combinations of (1) and (2).

(1) 3 levels of N :  $N_0=0$ ,  $N_1=100$  and  $N_2=200$  lb./ac. of N.(2) 3 levels of  $P_2O_5$  :  $P_0=0$ ,  $P_1=150$  and  $P_2=300$  lb./ac. of  $P_2O_5$ .N as A/S and  $P_2O_5$  as super applied on 24/25 oct. 1953.

## 3. DESIGN :

(i)  $3 \times 3$  Fact. in R.B.D. (ii) (a) 9. (b) N.A. (iii) 4. (iv) (a) N.A. (b)  $24' \times 20'$ . (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Mosaic infection below 5 % checked by using bigger and cut seed. (iii) Germination and yield of potato.. (iv) (a) 1951-continued. (b) and (c) No. (v) (a) and (b) No. (vi) Nil. (vii) The experiment was conducted by E.B. (R)

## 5. RESULTS :

(i) 5.50 ton./ac.

(ii) 0.5009 ton./ac.

(iii) N and P effects are highly significant while interaction is not significant.

(iv) Av. yield of potato in ton./ac.

	$P_0$	$P_1$	$P_2$	Mean
$N_0$	4.56	4.98	5.04	4.86
$N_1$	5.08	6.42	6.21	5.90
$N_2$	5.27	5.67	6.25	5.73
Mean	4.97	5.69	5.83	5.50

S.E. of any marginal mean

=0.1446 ton./ac.

S.E. of the body of table

=0.2504 ton./ac.

Crop :-Potato.

Ref :-U.P. 51(105).

Site :-Govt. Potato Res. Farm, Farrukhabad.

Type :-'M'.

Object :-To study the effect of N and P applied alone and in combination on the yield of Potato.

## 1. BASAL CONDITIONS :

(i) (a) No. (b) Maize. (c) N.A. (ii) (a) Loam. (b) N.A. (iii) 3.11.1951. (iv) (a) 2 ploughings with tractor and another 2 by *desi* plough. (b) Seeds were put in the lines. (c) to (e) N.A. (v) Nil. (vi) *Phulwa* (*Dohan*) seeds in sprouted condition. (vii) Irrigated. (viii) 1 earthing and 1 weeding. (ix) N.A. (x) 9.19.1952.

## 2. TREATMENTS :

All combinations of (1) and (2).

(1) 3 levels of N as A/S :  $N_0=0$ ,  $N_1=100$  and  $N_2=200$  lb./ac. of N.(2) 3 levels of  $P_2O_5$  as Super :  $P_0=0$ ,  $P_1=150$  and  $P_2=300$  lb./ac. of  $P_2O_5$ .

Super applied beneath the ridges. A/S applied by broadcast on 2.11.1951.

**3. DESIGN :**

(i) 3×3 Fact. in R.B.D. (ii) (a) 9. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 25'×20' (v) 1' to 3' between plots and 3' to 4' between blocks. (vi) Yes.

**4. GENERAL :**

(i) Satisfactory. (ii) No. (iii) Potato yield. (iv) (a) 1951-N.A. (b) and (c) No. (v) (a) and (b) No. (vi) Nil. (vii) The experiment was conducted by A.C.

**5. RESULTS :**

- (i) 7.09 ton./ac.  
 (ii) 0.6478 ton./ac.  
 (iii) N and P effects are highly significant while interaction is not significant.  
 (iv) Av. Yield of potato in ton./ac.

	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>	Mean
N <sub>0</sub>	4.63	5.34	4.75	4.91
N <sub>1</sub>	7.54	7.88	8.85	8.09
N <sub>2</sub>	7.35	9.05	8.45	8.28
Mean	6.51	7.42	7.35	7.09

S.E. of any marginal mean = 0.1870 ton./ac.

S.E. of body of table = 0.3239 ton./ac.

**Crop :-** Potato.

**Ref :-** U.P. 52(13).

**Site :-** Govt. Potato Res. Farm, Farrukhabad.

**Type :-** 'M'.

**Object :-** To study the effect of N and P applied alone and in combination on the yield of Potato.

**1. BASAL CONDITIONS :**

(i) (a) N.A. (b) *Sanai* for green manuring. (c) Nil. (ii) (a) Loam (Farrukhabad type 2). (b) N.A. (iii) 24, 25.10.1952. (iv) (a) 2 ploughings followed by *pata* towards the end of Sept., 4 further ploughings followed by *pata*. (b) Seed sown on ridges. (c) N.A. (d) 2' apart. (e) N.A. (v) *Sanai* turned in after six weeks of growth. (vi) N.A. (vii) Irrigated. (viii) N.A. (ix) N.A. (x) 11.3.1953.

**2. TREATMENTS :**

All combinations of (1) and (2)

(1) 3 levels of N as A/S : N<sub>0</sub>=0, N<sub>1</sub>=100 and N<sub>2</sub>=200 lb./ac.

(2) 3 levels of P<sub>2</sub>O<sub>5</sub> as Super : P<sub>0</sub>=0, P<sub>1</sub>=150 and P<sub>2</sub>=300 lb./ac.

A/S applied as surface dressing by broadcast and Super placed in bands beneath the ridges on 24, 25.10.1952.

**3. DESIGN :**

(i) 3×3 Fact. in R.B.D. (ii) (a) 9. (b) N.A. (iii) 4. (iv) (a) and (b) 25'×20'. (v) Nil. (vi) Yes.

**4. GENERAL :**

(i) Good. (treated plots appeared to be 3-4 times more vigorous than the control plots). (ii) Nil. (iii) Weight of potato. (iv) (a) 1951—N.A. (b), (c) Yes. (v) (a) Kalai, Raya, Varanasi, Tissuhi, Matkota, Bharari, Atarra and Pura. (b) N.A. (vi) Nil. (vii) The expt. conducted by A.C.

**5. RESULTS :**

- (i) 5.99 ton/ac.  
 (ii) 1.0114 ton/ac.  
 (iii) Only N effect is significant.

(iv) Av. yield of potato in ton/ac.

	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>	Mean
N <sub>0</sub>	4.28	6.11	5.29	5.23
N <sub>1</sub>	6.40	6.34	6.48	6.41
N <sub>2</sub>	5.54	6.57	6.86	6.32
Mean	5.41	6.34	6.21	5.99

S.E. of any marginal mean = 0.2920 ton/ac.  
 S.E. of body of table = 0.5057 ton/ac.

Crop :- Potato (*Rabi*).

Ref :- U.P. 53(360)

Site :- Govt. Potato Res. Farm, Farrukhabad.

Type :- 'M'.

Object :- To study the effects of N and P applied alone and in combination on the yield of Potato.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) *Rabi*-Potato and then *Sanai*. (c) Nil. (ii) (a) Loam. (b) N.A. (iii) 25, 26.10.1953.  
 (iv) (a) 1 ploughing by victory, 2 by Meston and 3 by *desi* plough. *Pata* also applied. (b) Sown on ridges.  
 (c) N.A. (d) 18' x 9'. (e) N.A. (v) *Sanai* turned in. (vi) N.A. (vii) Irrigated. (viii) N.A. (ix) 2.69°. (x) 7, 8.3.1954.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 3 levels of N as A/S : N<sub>0</sub>=0, N<sub>1</sub>=100 and N<sub>2</sub>=200 lb./ac.(2) 3 levels of P<sub>2</sub>O<sub>5</sub> as Super : P<sub>0</sub>=0, P<sub>1</sub>=150 and P<sub>2</sub>=300 lb./ac.

Super applied through dibbling beneath the ridges, before field preparation. A/S broadcasted on 24.10.1953.

## 3. DESIGN :

(i) 3 x 3 Fact. in R.B.D. (ii) (a) 9. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 24' x 20'. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) Good growth. (ii) N.A. (iii) Potato tuber yield. (iv) (a) 1951-N.A. (b) N.A. (c) Nil. (v) (a) and (b) No. (vi) There was rain during the growth period of the potato tubers which made the soil compact from the top. The tubers could not get the chance to develop freely. (vii) Experiment conducted by A.C.

## 5. RESULTS :

(i) 5.46 ton/ac.

(ii) 0.5046 ton/ac.

(iii) N and P effects are highly significant while interaction is not significant.

(iv) Av. yield of potato in ton/ac.

	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>	Mean
N <sub>0</sub>	4.53	4.94	5.00	4.82
N <sub>1</sub>	5.05	6.39	6.18	4.87
N <sub>2</sub>	5.24	5.63	6.22	5.70
Mean	4.94	5.65	5.80	5.46

S.E. of any marginal mean = 0.1457 ton./ac.  
 S.E. of body of table = 0.2523 ton/ac.

Crop :- Potato.

Ref :- U.P. 49(54).

Site :- Govt. Potato Res. Farm, Farrukhabad.

Type :- 'M'.

Object :- To study the effect of different doses of super on the yield of Potato.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Jowar*. (c) N.A. (ii) (a) Loam. (b) N.A. (iii) 24.11.1949. (iv) (a) 4 ploughings. (b) to (e) N.A. (v) F.Y.M. at 200 mds/ac. applied on 19.11.1949, Castor cake at 10 mds/ac. on 21.11.1949, 1 md. 14 seers 4 chs. Super on 22.11.1949 and A/S at 2½ mds/ac. on 2, 3.1.1950. (vi) *Phulwa* (large size 1½"-2") in sprouted condition. (vii) Irrigated. (viii) 1 weeding and 2 earthings. (ix) N.A. (x) 23, 25.3.1950.

## 2. TREATMENTS :

5 doses of  $P_2O_5$  as Super :  $P_0=0$ ,  $P_1=25$ ,  $P_2=50$ ,  $P_3=75$  and  $P_4=100$  lb./ac.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 6. (iv) (a) N.A. (b) 26'×20'. (v) Plots 3' apart and blocks 4' apart. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of potato. (iv) (a) 1949-1950. (b) No. (c) N.A. (v) (a) No. (b) N.A. (vi) Nil. (vii) Experiment conducted by E.B. (R).

## 5. RESULTS :

- (i) 7.41 ton/ac.  
 (ii) 0.4680 ton/ac.  
 (iii) Treatment differences are significant.  
 (iv) Av. yield of potato in ton/ac.

Treatment	Av. yield
$P_0$	7.45
$P_1$	7.40
$P_2$	6.86
$P_3$	7.54
$P_4$	7.78
S.E./mean	=0.1911 ton/ac.

Crop :- Potato.

Ref :- U.P. 50(14).

Site :- Govt. Potato Res. Farm, Farrukhabad.

Type :- 'M'.

Object :- To study the effect of different doses of Super on the yield of Potato.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Ghunyan* (vegetable). (c) Nil. (ii) (a) Loam. (b) N.A. (iii) 14, 15.11.1950. (iv) (a) 6 ploughings before sowing. (b) N.A. (c) 9' apart. (d) 2'×9'. (e) N.A. (v) City refuse at 350 mds/ac. on 2, 3.10.1950. A/S as top dressing at 1½ seer/plot on 3, 4.1.1951. (vi) *Phulwa* (cold storage). (vii) Irrigated. (viii) 2 earthings up. (ix) N.A. (x) 11 to 20.4.1951.

## 2. TREATMENTS :

5 doses of  $P_2O_5$  as Super :  $P_0=0$ ,  $P_1=25$ ,  $P_2=50$ ,  $P_3=75$  and  $P_4=100$  lb./ac.  
 All manures applied at the time of sowing.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 5. (iv) (a) and (b) 26'×20'. (v) plots 2.5' apart and blocks 2' apart. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Nil. (iii) Germination and yield of potato. (iv) (a) 1949-1950. (b) No. (c) No. (v) (a) and (b) No. (vi) Nil. (vii) Experiment conducted by E.B. (R).

## 5. RESULTS :

- (i) 11.81 ton/ac.  
 (ii) 0.9591 ton/ac.  
 (iii) Treatment differences are not significant.

## (iv) Av. yield of potato in ton/ac.

Treatment	Av. yield
P <sub>0</sub>	11.77
P <sub>1</sub>	11.74
P <sub>2</sub>	11.45
P <sub>3</sub>	12.02
P <sub>4</sub>	12.08
S.E./mean	=0.4289 ton./ac.

Crop :- Potato (*Rabi*).

Ref :- U.P. 51(4).

Site :- Govt. Res. Farm, Kanpur.

Type :- 'M'.

Object :- To study effect of N, P and K on quality and yield of Potato.

## 1. BASAL CONDITIONS :

- (i) (a) No. (b) *Jowar*. (c) No. (ii) (a) Loam. (b) N.A. (iii) 25,26.10.1951. (iv) (a) to (c) N.A.  
 (d) 1.75'×9". (e) N.A. (v) No. (vi) *Kalmi Dosala* and *Kalmi* new for 2 replications each. (vii) Irrigated\*  
 (viii) 2 earthings. (ix) N.A. (x) 10 to 13.3.1952.

## 2. TREATMENTS :

All combinations of (1), (2) and (3)

(1) 3 levels of N as A/S : N<sub>0</sub>=0, N<sub>1</sub>=50 and N<sub>2</sub>=100 lb./ac.(2) 3 levels of P<sub>2</sub>O<sub>5</sub> as Super : P<sub>0</sub>=0, P<sub>1</sub>=75 and P<sub>2</sub>=150 lb./ac.(3) 3 levels of K<sub>2</sub>O as Potash : K<sub>0</sub>=0, K<sub>1</sub>=75 and K<sub>2</sub>=150 lb./ac.

N and P broadcast, K applied in furrows at the time of sowing.

## 3. DESIGN :

- (i) 3
- <sup>3</sup>
- Fact. in R.B.D. (ii) (a) 27. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 18'×15' (v) N.A. (vi) Yes.

## 4. GENERAL :

- (i) Good. (ii) No. (iii) Potato yield. (iv) (a) 1951 to 1954. (b) Yes. (c) N.A. (v) (a) No. (b) N.A.
- 
- (vi) Nil. (vii) The experiment was conducted by E.B. (R).

## 5. RESULTS :

(i) 5.53 ton/ac.

(ii) 0.7192 ton/ac.

(iii) N and P effects are highly significant. Other effect and interactions are not significant.

(iv) Av. yield of potato in ton./ac.

	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>	Mean	K <sub>0</sub>	K <sub>1</sub>	K <sub>2</sub>
N <sub>0</sub>	3.98	4.24	4.59	4.27	4.22	4.20	4.40
N <sub>1</sub>	5.12	5.94	6.33	5.80	5.49	6.11	5.79
N <sub>2</sub>	5.86	7.05	6.69	6.53	6.28	6.58	6.74
Mean	4.99	5.74	5.87	5.53	5.33	5.63	5.64
K <sub>0</sub>	4.70	5.63	5.67				
K <sub>1</sub>	5.30	5.64	5.95				
K <sub>2</sub>	4.96	5.96	6.00				

S.E. of any marginal mean

= 0.1199 ton/ac.

S.E. of body of table

= 0.2076 ton/ac.

Crop :- Potato (*Rabi*).  
Site :- Govt. Res. Farm, Kanpur.

Ref :- U.P. 52(22).

Type :- 'M'.

Object :- To study the effect of N, P and K on quality and yield of Potato.

## 1. BASAL CONDITIONS :

- (i) (a) No. (b) *Jowar* for fodder. (c) No. (ii) (a) Loam. (b) N.A. (iii) 24,25.10.1952. (iv) (a) to (c) N.A. (d) 1.75' x 9". (e) N.A. (v) Nil. (vi) *Phulwa* large. (vii) Irrigated. (viii) 2 earthings. (ix) N.A. (x) 18 to 23.2.1953.

## 2. TREATMENTS :

All combinations of (1), (2) and (3)

- (1) 3 levels of N as A/S :  $N_0=0$ ,  $N_1=50$  and  $N_2=100$  lb./ac.  
(2) 3 levels of  $P_2O_5$  as Super :  $P_0=0$ ,  $P_1=75$  and  $P_2=150$  lb./ac.  
(3) 3 levels of  $K_2O$  as Potash :  $K_0=0$ ,  $K_1=75$  and  $K_2=150$  lb./ac.

N and P broadcast, K applied in furrows at the time of sowing.

## 3. DESIGN :

- (i) 3<sup>3</sup> Fact. in R.B.D. (ii) (a) 27. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 18' x 15'. (v) N.A. (vi) Yes.

## 4. GENERAL :

- (i) Good. (ii) Mosaic incidence in minute form (traces). (iii) Potato yield. (iv) (a) 1951 to 1954. (b) Yes. (c) N.A. (v) (a) No. (b) N.A. (vi) Nil. (vii) The experiment was conducted by E.B. (R).

## 5. RESULTS :

- (i) 9.07 ton/ac.  
(ii) 0.8803 ton/ac.  
(iii) N and P effects are highly significant. Other effects and interactions are not significant.  
(iv) Av. yield of potato in ton/ac.

	$P_0$	$P_1$	$P_2$	Mean	$K_0$	$K_1$	$K_2$
$N_0$	6.21	6.40	7.26	6.60	6.59	6.56	6.65
$N_1$	9.38	9.54	9.91	9.61	9.78	9.54	9.52
$N_2$	10.70	11.15	11.19	11.01	10.96	10.93	11.15
Mean	8.76	9.03	9.43	9.07	9.11	9.01	9.11
$K_0$	8.91	9.09	9.33				
$K_1$	8.55	9.11	9.36				
$K_2$	8.83	8.89	9.61				

S.E. of any marginal mean = 0.1467 ton/ac.  
S.E. of body of table = 0.2541 ton/ac.

Crop :- Potato (*Rabi*).  
Site :- Govt. Res. Farm, Kanpur.

Ref :- U.P. 53(7).

Type :- 'M'.

Object :- To test the effect of N, P and K on quality and yield of Potato.

## 1. BASAL CONDITIONS :

- (i) (a) Nil. (b) *Chari*. (c) Nil. (ii) (a) Loam. (b) N.A. (iii) 31.10.1953 and 1.11.1953. (iv) (a) and (b) N.A. (c) 10.01 cwt./ac. (d) 21" x 6". (e) N.A. (v) 50 lb./ac. of N as castor cake. (vi) *Phulwa*. (vii) Irrigated. (viii) 2 earthings. (ix) Not recorded. (x) 10.3.1954. to 14.3.1954.

**2. TREATMENTS :**

All combinations of (1), (2) and (3).

- (1) 3 levels of N as A/S :  $N_0=0$ ,  $N_1=50$  and  $N_2=100$  lb./ac.  
 (2) 3 levels of  $P_2O_5$  as Super :  $P_0=0$ ,  $P_1=75$  and  $P_2=150$  lb./ac.  
 (3) 3 levels of  $K_2O$  as Pot. Sul. :  $K_0=0$ ,  $K_1=75$  and  $K_2=150$  lb./ac.

N and P broadcast, K applied in furrows at the time of sowing.

**3. DESIGN :**

(i)  $3^3$  Fact. in R.B.D. (ii) (a) 27. (b) N.A. (iii) 4. (iv) (a) N.A. (b)  $18' \times 15'$ . (v) N.A. (vi) Yes.

**4. GENERAL :**

(i) Good. (ii) Nil. (iii) Germination and yield of potato. (iv) (a) 1951 to 1954. (b) Yes. (c) N.A. (v) (a) No. (b) N.A. (vi) Nil. (vii) The experiment was conducted by E.B. (R)

**5. RESULTS :**

- (i) 12.06 ton./ac.  
 (ii) 1.1368 ton./ac.  
 (iii) N and P effects are highly significant. Other effect and interactions are not significant.  
 (iv) Av. yield of potato in ton./ac.

	$P_0$	$P_1$	$P_2$	Mean	$K_0$	$K_1$	$K_2$
$N_0$	9.40	10.28	10.58	10.09	10.10	10.12	10.04
$N_1$	11.99	12.63	12.97	12.53	12.62	12.73	12.24
$N_2$	13.05	14.03	13.63	13.57	13.50	13.42	13.79
Mean	11.48	12.31	12.39	12.06	12.07	12.09	12.02
$K_0$	11.22	12.62	12.38				
$K_1$	11.64	12.44	12.19				
$K_2$	11.58	11.88	12.61				

S.E. of any marginal mean  
 S.E. of body of table

=0.1893 ton./ac.  
 =0.3282 ton./ac.

Crop :- Potato (Rabi).

Site :- Govt. Res. Farm, Kanpur.

Ref :- U.P. 48(24).

Type :- 'M'.

Object :- To study the effect of N applied at different times on yield of Potato.

**1. BASAL CONDITIONS :**

(i) (a) Nil. (b) N.A. (c) N.A. (ii) (a) Sandy loam. (b) N.A. (iii) 4.5.11.1948. (iv) (a) to (c) N.A. (d)  $2' \times 9'$ . (e) N.A. (v) Nil. (vi) Phulwa. (vii) Irrigated. (viii) 2 earthings. (ix) N.A. (x) 18 to 20.3.1949.

**2. TREATMENTS :**

All combinations of (1) and (2).

- (1) 3 levels of N as A/S applied at 1st earthing :  $N_0=0$ ,  $N_1=25$  and  $N_2=50$  lb./ac.  
 (2) 3 levels of N as A/S applied at 2nd earthing :  $M_0=0$ ,  $M_1=25$  and  $M_2=50$  lb./ac.

**3. DESIGN :**

(i)  $3 \times 3$  Fact. in R.B.D. (ii) (a) 9. (b) N.A. (iii) 4. (iv) (a) N.A. (b)  $38' \times 24'$ . (v) N.A. (vi) Yes.

**4. GENERAL :**

(i) Satisfactory. (ii) Nil. (iii) Yield of potato. (iv) (a) 1948 to 1952. (b) No. (c) Nil. (v) (a) No. (b) N.A. (vi) Nil. (vii) The experiment was conducted by E.B. (R).

## 5. RESULTS :

- (i) 5.28 ton./ac.  
 (ii) 0.6865 ton./ac.  
 (iii) None of the effects is significant.  
 (iv) Av. yield of potato in ton./ac.

	M <sub>0</sub>	M <sub>1</sub>	M <sub>2</sub>	Mean
N <sub>0</sub>	5.30	4.75	4.91	4.99
N <sub>1</sub>	5.67	5.31	5.12	5.37
N <sub>2</sub>	5.25	5.59	5.58	5.47
Mean	5.41	5.22	5.20	5.28

S.E. of any marginal mean  
 S.E. of body of table

=0.1982 ton./ac.  
 =0.3432 ton./ac.

Crop :- Potato (*Rabi*).

Ref :- U.P. 49(47).

Site :- Govt. Res. Farm, Kanpur.

Type :- 'M'.

Object :- To study the effect of N applied at different times on yield of Potato.

## 1. BASAL CONDITIONS :

- (i) (a) No. (b) and (c) N.A. (ii) (a) Light loam. (b) N.A. (iii) 28.10.1949. (iv) (a) to (e) N.A.  
 (v) Nil. (vi) *Phulwa* large : (ordinary store). (vii) Irrigated. (viii) 3 earthings. (ix) N.A. (x) 6 to 9.4.1950.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 3 levels of N as A/S applied at 1st earthing : N<sub>0</sub>=0, N<sub>1</sub>=25 and N<sub>2</sub>=50 lb./ac.

(2) 3 levels of N as A/S applied at 2nd earthing : M<sub>0</sub>=0, M<sub>1</sub>=25 and M<sub>2</sub>=50 lb./ac.

## 3. DESIGN :

- (i) 3x3 Fact. in R.B.D. (ii) (a) 9. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 30'x23'. (v) N.A. (vi) Yes.

## 4. GENERAL :

- (i) Good. (ii) Nil. (iii) Potato yield. (iv) (a) 1948 to 1951. (b) No. (c) N.A. (v) (a) No. (b) N.A.  
 (vi) Nil. (vii) The expt. was conducted by E.B.(R).

## 5. RESULTS :

- (i) 7.96 ton/ac.  
 (ii) 1.7440 ton/ac.  
 (iii) Only N effect is highly significant.  
 (iv) Av. yield of potato in ton/ac.

	M <sub>0</sub>	M <sub>1</sub>	M <sub>2</sub>	Mean
N <sub>0</sub>	5.45	8.25	6.25	6.65
N <sub>1</sub>	7.58	6.54	9.67	7.93
N <sub>2</sub>	8.04	9.96	9.91	9.30
Mean	7.02	8.25	8.61	7.96

S.E. of any marginal mean  
 S.E. of body of table

=0.5035 ton/ac.  
 =0.8720 ton/ac.



Crop :- Potato (*Rabi*).

Ref :- U.P. 50(3).

Site :- Govt. Res. Farm, Kanpur.

Type :- 'M'.

Object :- To study the effect of N applied at different times on yield of Potato.

## 1. BASAL CONDITIONS :

(i) (a) No. (b) Maize. (c) No. (ii) (a) Loam. (b) N.A. (iii) 4.11.1950. (iv) (a) to (c) N.A. (d) 18°×9°. (e) N.A. (v) Nil. (vi) *Kalmi sala* (late). (vii) Irrigated. (viii) 2 earthings. (ix) N.A. (x) 24 to 28.4.1951.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 3 levels of N as A/S applied at 1st earthing :  $N_0=0$ ,  $N_1=25$  and  $N_2=50$  lb./ac.(2) 3 levels of N as A/S applied at 2nd earthing :  $M_0=0$ ,  $M_1=25$  and  $M_2=50$  lb./ac.

## 3. DESIGN :

(i) 3×3 Fact. in R.B.D. (ii) (a) 9. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 28'×24'. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) No. (iii) Potato yield. (iv) (a) 1948 to 1951. (b) and (c) N.A. (v) (a) No. (b) N.A. (vi) Nil. (vii) The expt. was conducted by E.B. (R).

## 5. RESULTS :

(i) 8.09 ton/ac.

(ii) 0.7323 ton/ac.

(iii) N effect is significant, M effect is highly significant while interaction is not significant.

(iv) Av. yield of potato in ton/ac.

	$M_0$	$M_1$	$M_2$	Mean
$N_0$	6.64	7.02	7.20	6.95
$N_1$	8.04	8.32	8.62	8.33
$N_2$	8.20	9.30	9.47	8.99
Mean	7.63	8.21	8.43	8.09

S.E. of any marginal mean

=0.2114 ton/ac.

S.E. of body of table

=0.3662 ton/ac.

Crop :- Potato (*Rabi*).

Ref :- U.P. 51(3).

Site :- Govt. Res. Farm, Kanpur.

Type :- 'M'.

Object :- To study the effect of N applied at different times on yield of Potato.

## 1. BASAL CONDITIONS :

(i) (a) No. (b) Green manuring with *sana*. (c) No. (ii) (a) Loam. (b) N.A. (iii) 25.10.1951. (iv) (a) to (c) N.A. (d) 2'×9°. (e) N.A. (v) Nil. (vi) *Kalmi Dosala*. (vii) Irrigated. (viii) 2 earthings. (ix) N.A. (x) 7, 8 and 9.3.1952.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 3 levels of N as A/S applied at first earthing :  $N_0=0$ ,  $N_1=25$  and  $N_2=50$  lb./ac.(2) 3 levels of N as A/S applied at second earthing :  $M_0=0$ ,  $M_1=25$  and  $M_2=50$  lb./ac.

## 3. DESIGN :

(i) 3×3 Fact. in R.B.D. (ii) (a) 9. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 24'×20'. (v) N.A. (vi) Yes.

## 4. GENERAL :

- (i) Good. (ii) No. (iii) Potato yield. (iv) (a) 1948 to 1951. (b), (c) N.A. (v) (a) No. (b) N.A. (vi) Nil.  
(vii) The expt. conducted by E.B.(R).

## 5. RESULTS :

- (i) 7.86 ton/ac.  
(ii) 0.8158 ton/ac.  
(iii) N effect is highly significant, M effect is significant while interaction is not significant.  
(iv) Av. yield of potato in ton/ac.

	M <sub>0</sub>	M <sub>1</sub>	M <sub>2</sub>	Mean
N <sub>0</sub>	6.66	7.42	8.13	7.40
N <sub>1</sub>	7.00	7.96	7.71	7.56
N <sub>2</sub>	8.15	8.75	9.00	8.63
Mean	7.27	8.04	8.28	7.86

S.E. of any marginal mean = 0.2355 ton/ac.  
S.E. of body of table = 0.4079 ton/ac.

Crop :- Potato (*Rabi*).

Site :- Govt. Res. Farm, Kanpur.

Ref :- U.P. 52(29).

Type :- 'M'.

Object :- To study the effect of different sources of N on Potato yield.

## 1. BASAL CONDITIONS :

- (i) (a) No. (b) *Moong* type-1. (c) Castor cake at 10 mds./ac. (ii) (a) Loam. (b) N.A. (iii) 15.11.1952. (iv) (a) to (c) N.A. (d) 18"×9". (e) N.A. (v) Nil. (vi) *Phulwa* (well sprouted). (vii) Irrigated. (viii) 1 earthing. (ix) N.A. (x) 21 and 22.3.1953.

## 2. TREATMENTS :

- C/N at 50 lb/ac. of N.
  - A/S/N at 50 lb/ac. of N.
  - A/S at 50 lb/ac. of N.
  - Control (no manure).
- Manures applied on 12.12.1952.

## DESIGN :

- (i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 60'×18'. (v) N.A. (vi) Yes.

## 4. GENERAL :

- (i) Very good. (ii) No. (iii) Potato yield. (iv) (a) 1952 -continued. (b) No. (c) N.A. (v) (a) No. (b) N.A. (vi) Nil. (vii) The expt. conducted by E.B.(R).

## 5. RESULTS :

- (i) 8.62 ton/ac.  
(ii) 0.7591 ton/ac.  
(iii) Treatment differences are highly significant.  
(iv) Av. yield of potato in ton/ac.

Treatment	Av. yield
1.	9.11
2.	8.88
3.	9.34
4.	7.14
S.E./mean	= 0.3796 ton/ac.

Crop :- Potato (*Rabi*).  
Site :- Govt. Res. Farm, Kanpur.

Ref :- U.P. 53(4).  
Type :- 'M'.

Object :- To study the effect of different sources of N on Potato yield.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Sanai* for green manuring. (c) Nil. (ii) (a) Loam. (b) N.A. (iii) 24.10.1953. (iv) (a) and (b) N.A. (c) 3.32 cwts/ac. (d) 18"×6". (e) N.A. (v) 90 md/ac. of night soil. (vi) *Phulwa*. (vii) Irrigated. (viii) 2 earthings (ix) N.A. (x) 4.3.1954.

2. TREATMENTS :

1. C/N at 50 lb./ac. of N.
2. A/S/N at 50 lb./ac. of N.
3. A/S at 50 lb./ac. of N.
4. Control (no manure).

3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 6. (iv) (a) 17.5'×30.5'. (b) 15'×28' (v) 1.25' around. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Mosaic incidence below 5% which was checked by using bigger seed size and cut seed. (iii) Germination and yield of potato. (iv) (a) 1952—continued. (b) No. (c) N.A. (v) (a) No. (b) N.A. (vi) Nil. (vii) The experiment was conducted by E.B. (R)

5. RESULTS :

- (i) 13.67 ton/ac.
- (ii) 0.4937 ton/ac.
- (iii) Treatment differences are highly significant.
- (iv) Av. yield of Potato in ton/ac.

Treatment	Av. yield
1.	14.11
2.	13.35
3.	14.08
4.	13.13
S.E./mean	=0.2016 ton/ac.

Crop :- Potato (*Rabi*).  
Site :- Govt. Res. Farm, Kanpur.

Ref :- U.P. 52(27).  
Type :- 'M'.

Object :- To study the efficacy of different manures and fertilizers on quality and yield of Potato.

1. BASAL CONDITIONS :

(i) (a) No. (b) Green manuring with *Sanai* (c) No. (ii) (a) Loam. (b) N.A. (iii) 8.11.1952. (iv) (a) to (c) N.A. (d) 18"×9". (e) N.A. (v) *Sanai* was turned in at the sowing time. (vi) *Phulwa* large. (vii) Irrigated. (viii) 1 earthing. (ix) N.A. (x) 11.3.1953.

2. TREATMENTS :

1. Control.
2. F.Y.M. at 246 lb./plot.
3. Castor cake at 17.56 lb./plot.
4. A/S at 4.82 lb./plot.
5. A/S/N at 3.94 lb./plot.
6. G.N.C. at 16.15 lb./plot.
7. Castor cake at 14.88 lb. and B.M. at 4.62 lb./plot.
8. F.Y.M. at 205 lb. and B.M. at 4.62 lb./plot.
9. A/S at 4.82 lb. and B.M. at 4.82 lb./plot.

Treatments 2 to 6 give 100 lb. of N, while 7 to 9 give 100 lb. of N+100 lb./ac. of P<sub>2</sub>O<sub>5</sub>. Castor cake was applied a day before sowing on 7.11.1952 in finely powdered form.

3. DESIGN :

(i) R.B.D. (ii) (a) 9. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 21'×20'. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Very good. (ii) No. (iii) Potato yield. (iv) (a) 1952—contd. (b) No. (c) N.A. (v) (a) No. (b) N.A. (vi) Nil. (vii) The experiment was conducted by E.B.(R).

## 5. RESULTS :

- (i) 13.12 ton/ac.  
 (ii) 0.5377 ton/ac.  
 (iii) Treatment differences are highly significant.  
 (iv) Av. yield of potato in ton./ac.

Treatment	Av. yield	Treatment	Av. yield
1.	12.26	6.	13.17
2.	12.72	7.	13.41
3.	13.60	8.	12.60
4.	13.38	9.	12.98
5.	13.95		

S.E./mean = 0.2688 ton/ac.

Crop :- Potato (*Rabi*).

Ref :- U.P. 53(2).

Site :- Govt. Res. Farm, Kanpur.

Type :- 'M'.

Object :- To find the efficacy of different manures and fertilizers on quality and yield of Potato.

## 1. BASAL CONDITIONS :

- (i) (a) Nil. (b) *Sana* for green manuring. (c) Nil. (ii) (a) Loam. (b) N.A. (iii) 20.10.1953. (iv) (a) and (b) N.A. (c) 5.77 cwt./ac. (d) 18"×6". (e) N.A. (v) N.A. (vi) *Phulwa*. (vii) Irrigated. (viii) 2 earthings. (ix) N.A. (x) 7.3.1954.

## 2. TREATMENTS :

- |                                   |  |
|-----------------------------------|--|
| 1. Control.                       | 6. G.N.C. at 16.15 lb./plot.                                 |
| 2. F.Y.M. at 246 lb./plot.        | 7. Castor cake at 14.88 lb./plot. and B.M. at 4.62 lb./plot. |
| 3. Castor cake at 17.56 lb./plot. | 8. F.Y.M. at 205 lb./plot. and B.M. at 4.62 lb./plot.        |
| 4. A/S at 4.82 lb./plot.          | 9. A/S at 4.82 lb. and B.M. at 4.82 lb./plot.                |
| 5. A/S/N at 3.94 lb./plot.        |  |

Treatments 2 to 6 give 100 lb./ac. of N while 7 to 9 give 100 lb./ac. of N+100 lb./ac. of P<sub>2</sub>O<sub>5</sub> applied on 17.10.1953.

## 3. DESIGN :

- (i) R.B.D. (ii) (a) 9. (b) N.A. (iii) 4. (iv) (a) 23.5'×22.5' (b) 21'×20'. (v) 1.25' a/round. (vi) Yes.

## 4. GENERAL :

- (i) Good. (ii) Incidence of mosaic below 5% and checked by using bigger seed size and cut seed. (iii) Germination and yield. (iv) (a) 1952-contd. (b) No. (c) N.A. (v) (a) No. (b) N.A. (vi) Nil. (vii) The experiment was conducted by E.B. (R).

## 5. RESULTS :

- (i) 11.16 ton/ac.  
 (ii) 0.8983 ton/ac.  
 (iii) Treatment differences are highly significant.  
 (iv) Av. yield of potato in ton/ac.

Treatment	Av. yield	Treatment	Av. yield
1.	10.05	6.	12.00
2.	10.36	7.	11.81
3.	12.57	8.	11.50
4.	11.55	9.	10.14
5.	10.48		

S.E./mean = 0.4492 ton/ac.

Crop :- Potato (*Rabi*).

Ref :- U.P. 50(17).

Site :- Govt. Res. Farm, Kanpur.

Type :- 'M'.

Object :- To study the effect of N and  $P_2O_5$  on the quality and yield of Potato.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Maize. (c) Nil. (ii) (a) Loam. (b) N.A. (iii) 3.11.1950. (iv) (a) to (c) N.A. (d) 2'x9"  
(e) N.A. (v) Nil. (vi) *Kalmi Sala*. (vii) Irrigated. (viii) 1 earthing. (ix) N.A. (x) 18 to 20.4.1951.

## 2. TREATMENTS :

All combinations of (1) and (2).

(1) 3 levels of N :  $N_0=0$ ,  $N_1=50$  and  $N_2=100$  lb./ac.(2) 3 levels of  $P_2O_5$  :  $P_0=0$ ,  $P_1=50$  and  $P_2=100$  lb./ac.N as A/S,  $P_2O_5$  as Super—applied just before sowing.

## 3. DESIGN :

(i) 3x3 Fact. in R.B.D. (ii) (a) 9. (b) N.A. (iii) 4. (iv) (a) and (b) 24'x21'. (v) Nil. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Traces of mosaic incidence. (iii) Potato and tuber yield. (iv) (a) and (b) No. (c) N.A. (v)  
(a) No. (b) N.A. (vi) Nil. (vii) The experiment was conducted by E.B. (R).

## 5. RESULTS :

(i) 8.73 ton/ac.

(ii) 0.7516 ton/ac.

(iii) Only N effect is highly significant.

(iv) Av. yield of potato in ton/ac.

	$P_0$	$P_1$	$P_2$	Mean
$N_0$	7.50	6.81	6.89	7.07
$N_1$	8.53	9.35	9.70	9.19
$N_2$	9.45	10.14	10.16	9.92
Mean	8.49	8.77	8.92	8.73

S.E. of any marginal mean

=0.2169 ton/ac.

S.E. of body of table

=0.3758 ton/ac.

Crop :- Potato (*Rabi*).

Ref :- U.P. 49(51).

Site :- Govt. Res. Farm, Kanpur.

Type :- 'M'.

Object :- To study the effect of N and  $P_2O_5$  on quality and yield of *Kalmi* Potato.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) N.A. (c) N.A. (ii) (a) Sandy loam. (b) N.A. (iii) 13.11.1949. (iv) (a) to (e) N.A. (v)  
Nil. (vi) *Kalmi* (large). (vii) Irrigated. (viii) 2 earthings. (ix) N.A. (x) 14 and 15.4.1950.

## 2. TREATMENTS :

All combinations of (1) and (2).

(1) 3 levels of N :  $N_0=0$ ,  $N_1=25$  and  $N_2=50$  lb./ac.(2) 3 levels of  $P_2O_5$  :  $P_0=0$ ,  $P_1=25$  and  $P_2=50$  lb./ac.N as A/S and  $P_2O_5$  as B.M. applied on 16.12.1949.

## 3. DESIGN :

(i) 3x3 Fact. in R.B.D. (ii) (a) 9. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 20'x24'. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of potato. (iv) (a) No. (b) No. (c) N.A. (v) (a) No. (b) N.A. (vi)  
Nil. (vii) The experiment was conducted by E.B. (R)

## 5. RESULTS :

- (i) 9.04 ton/ac.
- (ii) 1.0784 ton/ac.
- (iii) Only N effect is highly significant.
- (iv) Av. yield of potato in ton./ac.

	N <sub>0</sub>	N <sub>1</sub>	N <sub>2</sub>	Mean
P <sub>0</sub>	8.09	10.00	10.36	9.48
P <sub>1</sub>	7.88	8.56	9.96	8.80
P <sub>2</sub>	7.81	9.67	9.00	8.83
Mean	7.93	9.41	9.77	9.04

S.E. of any marginal mean  
S.E. of body of table

=0.3113 ton./ac.  
=0.5392 ton./ac.

Crop :-Potato (*Rabi*).

Site :-Govt. Res. Farm, Kanpur.

Ref :-U.P. 50(19).

Type :-'M'.

Object :-To study the effect of blood manure on quality and yield of Potato.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Groundnut. (c) Nil. (ii) (a) Loam. (b) N.A. (iii) 23.11.1950. (iv) (a) to (c) N.A. (d) 18°×9°. (e) N.A. (v) Nil. (vi) *Kalmi sala*. (vii) Irrigated. (viii) 2 earthings. (ix) N.A. (x) 11/19 and 29.4.1951.

## 2. TREATMENTS :

4 doses of N : N<sub>0</sub>=0, N<sub>1</sub>=50, N<sub>2</sub>=75 and N<sub>3</sub>=100 lb./ac.  
Blood manure applied as powder at the time of planting.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 4. (iv) (a) and (b) 35'×32.5'. (v) Nil. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of tubers/plot. (iv) (a) No. (b) No. (c) N.A. (v) (a) No. (b) N.A. (vi) Nil. (vii) The experiment was conducted by E.B. (R)

## 5. RESULTS :

- (i) 3.63 ton/ac.
- (ii) 0.5872 ton/ac.
- (iii) Treatment differences are significant.
- (iv) Av. yield of potato in ton./ac.

Treatment	Av. yield
N <sub>0</sub>	2.72
N <sub>1</sub>	3.82
N <sub>2</sub>	4.03
N <sub>3</sub>	3.97
S.E./mean	=0.2936 ton/ac.

Crop :-Potato (*Rabi*).

Site :-Govt. Res. Farm, Kanpur.

Ref :-U.P. 49(52).

Type :-'M'.

Object :-To study the effect of coconut cake and castor cake as manure for Potato.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) and (c) N.A. (ii) (a) Sandy loam. (b) N.A. (iii) 14.11.1949. (iv) (a) to (e) N.A. (v) Nil. (vi) *Kalmi* (large). (vii) Irrigated. (viii) 2 earthings. (ix) N.A. (x) 10.4.1950.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 2 manures :  $S_1$ =castor cake and  $S_2$ =coconut cake.

(2) 3 times of application of manures :  $T_1$ =3 weeks before sowing,  $T_2$ =one week before sowing and  $T_3$ =at sowing.

## 3. DESIGN :

(i)  $3 \times 2$  Fact. in R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) N.A. (b)  $12' \times 49'$ . (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Nil. (iii) Potato yield. (iv) (a) and (b) No. (c) N.A. (v) (a) No. (b) N.A. (vi) Nil. (vii) The expt. was conducted by E.B.(R).

## 5. RESULTS :

(i) 7.96 ton/ac.

(ii) 0.8190 ton/ac.

(iii) None of the effects is significant.

(iv) Av. yield of potato in ton/ac.

	$T_1$	$T_2$	$T_3$	Mean
$S_1$	8.32	8.06	8.10	8.16
$S_2$	7.87	7.35	8.08	7.77
Mean	8.10	7.70	8.09	7.96

S.E. of T marginal means =0.2364 ton/ac.

S.E. of S marginal means =0.2896 ton/ac.

S.E. of body of table =0.4095 ton/ac.

Crop :-Potato (*Rabi*).

Site :-Govt. Res. Farm, Kanpur.

Ref:-U.P. 52(28).

Type :-'M'.

Object :-To study the effect of ash (minerals) as top dressing on yield of Potato.

## 1. BASAL CONDITIONS :

(i) (a) No. (b) *Moong* type I. (c) Castor cake at 10 md./ac. (ii) (a) Loam. (b) N.A. (iii) 8 and 9.11.1952. (iv) (a) to (c) N.A. (d)  $18' \times 9'$ . (e) N.A. (v) Nil. (vi) *Phulwa*. (vii) Irrigated. (viii) 2 earthings. (ix) N.A. (x) 24.3.1953.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 2 levels of N as A/S :  $N_0=0$ , and  $N_1=25$  lb./ac.

(2) 2 levels of Ash :  $A_0=0$  and  $A_1=10$  md./ac.

Manures applied on 29.12.1952.

## 3. DESIGN :

(i)  $2 \times 2$  Fact. in R.B.D. (ii) (a) 4. (b) N.A. (iii) 4. (iv) (a) N.A. (b)  $30' \times 10.5'$ . (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) No. (iii) Potato yield. (iv) (a) and (b) No. (c) N.A. (v) (a) No. (b) N.A. (vi) Nil. (vii) The expt. was conducted by E.B.(R).

## 5. RESULTS :

(i) 11.22 ton/ac.

(ii) 0.8195 ton/ac.

(iii) None of the effects is significant.

(iv) Av. yield of potato in ton/ac.

	N <sub>0</sub>	N <sub>1</sub>	Mean
A <sub>0</sub>	11.18	11.84	11.51
A <sub>1</sub>	10.57	11.30	10.93
Mean	10.87	11.57	11.22

S.E. of any marginal mean = 0.2898 ton/ac.  
 S.E. of body of table = 0.4098 ton/ac.

Crop :- Potato (*Kharif*).

Ref :- U.P. 53(13)

Site :- Potato Sub-Stn., Kausani.

Type :- 'M'.

Object :- To determine the comparative efficiency of leaf mold and castor cake.

## 1. BASAL CONDITIONS :

(i) (a) No. (b) Fallow. (c) No. (ii) (a) Hilly tract—6075' high. (b) N.A. (iii) 10.4.1953. (iv) (a) to (c) N.A. (d) 24"×9". (e) N.A. (v) Castor cake at 20 mds./ac. in treatment (2) only on 3.3.1953. (vi) Garhwal. (vii) Irrigated. (viii) 2 weedings and 2 earthings. (ix) N.A. (x) 4.9.1953.

## 2. TREATMENTS :

1. Leaf mold at 225 md./ac.
2. Castor-cake at 20 md./ac.
3. Control (no manure).

## 3. DESIGN :

(i) R.B.D. (ii) (a) 3. (b) N.A. (iii) 4. (iv) (a) and (b) 24'×12'. (v) Nil. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) No. (iii) Germination and potato yield. (iv) (a) 1933—continued. (b), (c) N.A. (v) (a) No. (b) N.A. (vi) Nil. (vii) The expt. was conducted by E.B.(R).

## 5. RESULTS :

- (i) 1.37 ton/ac.
- (ii) 0.7143 ton/ac.
- (iii) Treatments differences are not significant.
- (iv) Av. yield of potato in ton/ac.

Treatment	Av. yield
1.	1.67
2.	1.32
3.	1.11
S.E./mean	= 0.3572 ton/ac.

Crp :- Potato (*Kharif*).

Ref :- U.P. 49(64).

Site :- Crop Physiological Res. Stn., Lucknow.

Type : 'M'.

Object :- To study the effect of N on tuber formation and Potato yield.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Uncultivated. (c) Nil. (ii) (a) Sandy loam. (b) N.A. (iii) 8.11.1949. (iv) (a) One ploughing by tractor, one cross harrowing by tractor and one ploughing by *desi* plough. (b) Sowing on ridges. (c) N.A. (d) 18"×6". (e) N.A. (v) Nil. (vi) Military (late). (vii) Irrigated. (viii) 3 earthings. (ix) N.A. (x) 14.3.1950.



**2. TREATMENTS :**

4 levels of N :  $N_0=0$ ,  $N_1=40$ ,  $N_2=80$  and  $N_3=120$  lb./ac.  
N as A/S applied on 15.11.1949.

**3. DESIGN :**

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 3. (iv) (a) and (b)  $9' \times 8'$ . (v) Nil. (vi) Yes.

**4. GENERAL :**

(i) N.A. (ii) N.A. (iii) Potato yield. (iv) (a) to (c) No. (v) (a), (b) No. (vi) Nil. (vii) The experiment was conducted by C.P.

**5. RESULTS :**

- (i) 8.47 ton/ac.  
(ii) 0.97 ton/ac.  
(iii) Treatments are highly significantly different.  
(iv) Av. yield of potato in ton/ac.

Treatment	Av. yield
$N_0$	6.11
$N_1$	8.46
$N_2$	10.86
$N_3$	8.44
S.E./mean	=0.5629 lb./ac.

Crop :- Potato.

Ref :- U.P. 57(132).

Site :- Crop Physiological Res. Stn., Lucknow.

Type :- 'M'.

Object :- To study the effect of N on tuber formation and yield of Potato.

**1. BASAL CONDITIONS :**

(i) (a) No. (b) *Sana'i*. (c) Nil. (ii) (a) Sandy loam. (b) N.A. (iii) 26.10.1951. (iv) (a) 3 ploughings. (b) to (e) N.A. (v) 60 lb./ac. of N as F.Y.M. and 60 lb./ac. of N as Ammo. Phos. on 20.10.1951. (vi) Military (late). (vii) Irrigated. (viii) 1 weeding and hoeing. (ix) N.A. (x) 8 to 15.3.1952.

**2. TREATMENTS :**

4 doses of N :  $N_0=0$ ,  $N_1=40$ ,  $N_2=80$  and  $N_3=120$  lb./ac.  
N applied on 22.10.1951. Source of N is N.A.

**3. DESIGN :**

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 4. (iv) (a) and (b)  $11' \times 5'$ . (v) Nil. (vi) Yes.

**4. GENERAL :**

(i) Below normal. (ii) N.A. (iii) Potato yield. (iv) (a) to (c) No. (v) (a) and (b) No. (vi) Nil. (vii) Experiment conducted by C.P.

**5. RESULTS :**

- (i) 3.27 ton/ac.  
(ii) 0.9805 ton/ac.  
(iii) Treatments are not significantly different.  
(iv) Av. yield of potato in ton/ac.

Treatment	Av. yield
$N_0$	3.43
$N_1$	3.70
$N_2$	2.82
$N_3$	3.13
S.E./mean	= 0.4902 ton/ac.

Crop :- Potato.

Ref : U.P. 51(85).

Site :- Crop Physiological Res. Stn., Lucknow.

Type :- 'M'.

Object :- To study the effect of application of Pot. Sul. on growth, performance and yield of Potato.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Sanal* for green manuring. (c) No. (ii) (a) Sandy loam. (b) N.A. (iii) 26.10.1951. (iv) (a) 4 times by cultivator and 2 times by *dest* plough and planking etc. (b) On ridges. (c) N.A. (d) 18" x 6". (e) 1. (v) *Sanal* turned in, 60 lb./ac. of N as F.Y.M., 60 lb./ac. of N as Ammo. Phos. applied on 22.10.1951 and 14.12.1951. (vi) Military (late). (vii) Irrigated. (viii) 3 earthings and intercultural operations. (ix) N.A. (x) 15.3.1952.

## 2. TREATMENTS :

4 levels of K as Pot Sul. :  $K_0=0$ ,  $K_1=30$ ,  $K_2=60$  and  $K_3=90$  lb./ac.  
Pot. Sul. applied on 23.10.1951.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 4. (iv) (a) 11' x 5'. (b) 11' x 4½'. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Nil. (iii) Potato yield. (iv) (a) to (c) No. (v) (a) and (b) No. (vi) Nil. (vii) Experiment conducted by C.P.

## 5. RESULTS :

(i) 6.62 ton/ac.  
(ii) 1.9536 ton/ac.  
(iii) Treatments are not significantly different.  
(iv) Av. yield of potato in ton/ac.

Treatment	Av. yield
$K_0$	6.01
$K_1$	6.47
$K_2$	6.82
$K_3$	7.17

S.E./mean. = 0.9838 ton/ac.

Crop :- Potato (*Rabi*).

Ref :- U.P. 53(148).

Site :- Crop Physiological Res. Stn., Lucknow.

Type :- 'M'.

Object :- To study the effect of different doses of K on Potato in presence of N, P and calcium as basal dressing.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) Maize. (c) Nil. (ii) (a) Sandy loam. (b) N.A. (iii) 3.11.1953. (iv) (a) 2 ploughings by mould board plough and 3 by cultivator. Digging by *Kudali* on 2.11.1953. (b) Sowing under ground in lines. (c) 12 tubers of diameter 1" sown/plot. (d) 12" x 9". (e) N.A. (v) 75 lb./ac. of  $P_2O_5$  as Super, 30 lb./ac. of CaO as Calcium, 150 lb./ac. of N as A/S applied on 3.11.1953. (vi) Potato *Phulwa* (early). (vii) Irrigated. (viii) 2 earthings. (ix) 5.78". (x) 2.4.1954.

## 2. TREATMENTS :

5 levels of  $K_2O$  as Pot. Sul. :  $K_0=0$ ,  $K_1=30$ ,  $K_2=60$ ,  $K_3=90$  and  $K_4=120$  lb./ac.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 4. (iv) (a) and (b) 15' x 75'. (v) Nil. (vi) Yes.

## 4. GENERAL :

(i) Good. No lodging. (ii) Nil. (iii) Yield of tubers. (iv) (a) No. (b) No. (c) No. (v) (a) and (b) Nil. (vi) Nil. (vii) Experiment conducted by C.P. (R).

## 5. RESULTS :

(i) 7.32 ton/ac.  
(ii) 0.65 ton/ac.  
(iii) Treatments are not significantly different.

(iv) Av. yield of potato in ton/ac.

Treatment	Av. yield
K <sub>0</sub>	6.49
K <sub>1</sub>	7.11
K <sub>2</sub>	7.38
K <sub>3</sub>	8.00
K <sub>4</sub>	7.64
S.E./mean	=0.32 ton/ac.

Crop :- Potato.

Ref :- U.P. 52(189).

Site :- Crop Physiological Res. Stn., Lucknow.

Type :- 'M'.

Object :- To study the effect of N, P and Ca applied alone and in combination on the growth and yield of Potato.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Juar, Lobia* and Maize. (c) N.A. (ii) (a) Sandey loam. (b) N.A. (iii) 29, 30.11.1952 and 1.12.1952. (iv) (a) Ploughings in September and October. (b) Sown behind the plough in lines. (c) N.A. (d) 18' x 9'. (e) N.A. (v) 60 lb./ac. of N as F.Y.M. and compost + 40 lb./ac. of K<sub>2</sub>O as Pot. Sul. applied on 24, 25.11.1952. (vi) *Gola* potato (vii) N.A. (viii) N.A. (ix) N.A. (x) 26.2.1953 to 5.3.1953.

## 2. TREATMENTS :

All combinations of (1), (2) and (3)

(1) 2 levels of N : N<sub>0</sub>=0 and N<sub>1</sub>=150 lb./ac.(2) 2 levels of P<sub>2</sub>O<sub>5</sub> : P<sub>0</sub>=0 and P<sub>1</sub>=75 lb./ac.(3) 2 levels of Ca : C<sub>0</sub>=0 and C<sub>1</sub>=50 lb./ac.N as A/S + Castor cake in 1 : 1 ratio, P<sub>2</sub>O<sub>5</sub> as Super and Ca as Gypsum applied on 27, 28.11.1952.

## 3. DESIGN :

(i) 2<sup>3</sup> Fact. in R.B.D. (ii) (a) 8, (b) N.A. (iii) 4. (iv) (a) 29' x 28'. (b) 27' x 26'. (v) 1' around. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) Incidence of mosaic. (iii) Potato yield. (iv) (a) 1952—1955. (b) No. (c) No. (v) (a) No. (b) No. (vi) Nil. (vii) Experiment conducted by C.P.

## 5. RESULTS :

(i) 5.40 ton/ac.

(ii) 0.76 ton/ac.

(iii) Only N effect is highly significant.

(iv) Av. yield of potato in ton/ac.

	C <sub>0</sub>	C <sub>1</sub>	Mean	P <sub>0</sub>	P <sub>1</sub>
N <sub>0</sub>	4.77	5.21	4.99	5.06	4.93
N <sub>1</sub>	5.88	5.71	5.80	5.58	6.02
Mean	5.33	5.46	5.40	5.32	5.47
P <sub>0</sub>	5.20	5.44			
P <sub>1</sub>	5.46	5.48			

S.E. of any marginal mean

= 0.1909 ton/ac.

S.E. of body of tables

= 0.2700 ton/ac.

Crop :- Potato (*Rabi*).

Ref :- U.P. 53(142).

Site :- Crop Physiological Res. Stn., Lucknow.

Type :- 'M'.

Object :- To study the effect of N, P and Ca applied singly and in combination on Potato.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Lobla*. (c) Nil. (ii) (a) Sandy loam. (b) N.A. (iii) 28.10.1953. (iv) (a) Two ploughings by mould board plough on 18.9.1953 and 4.10.1953, and 4 by cultivator, 4 cross wise ploughings (and planking on 20.9.1953 and 18.10.1953. (b) Sown behind the plough in lines. (c) 320 tubers of 1" diameter each/plot. (d) 18" x 9". (e) N.A. (v) T.C. and G.N.C. on 21 and 26.10.1953. (vi) *Phulwa* (Patna). (vii) Irrigated. (viii) 2 earthings up. (ix) 5.78". (x) 30.3.1954 and 1.4.1954.

## 2. TREATMENTS :

All combinations of (1), (2) and (3)

(1) 2 levels of N as A/S+G.N.C. in 1 : 1 ratio :  $N_0=0$  and  $N_1=150$  lb./ac.(2) 2 levels of  $P_2O_5$  as Super :  $P_0=0$  and  $P_1=75$  lb./ac.(3) 2 levels of Ca as Gypsum :  $C_0=0$  and  $C_1=50$  lb./ac.

## 3. DESIGN :

(i) 2<sup>3</sup> Fact. in R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a) 24' x 15'. (b) 21' x 12' (v) 1.5' x 1.5'. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Nil. (iii) Tuber yield. (iv) (a) 1952 to 1955. (b) and (c) No. (v) (a) and (b) None. (vi) Nil. (vii) Experiment conducted by C.P.(R).

## 5. RESULTS :

(i) 7.44 ton/ac.

(ii) 0.72 ton/ac.

(iii) N effect is highly significant, P effect is significant while other effect and interactions are not significant.

(iv) Av. yield of potato in ton/ac.

	$C_0$	$C_1$	Mean	$P_0$	$P_1$
$N_0$	6.87	7.00	6.94	6.69	7.18
$N_1$	8.10	7.80	7.95	7.52	8.37
Mean	7.48	7.40	7.44		
$P_0$	7.04	7.16	7.10		
$P_1$	7.92	7.64	7.78		

S.E. of any marginal mean

=0.1802 ton/ac.

S.E. of body of table

=0.2548 ton/ac.

Crop :- Potato (*Rabi*).

Ref :- U.P. 51(84).

Site :- Crop Physiological Res. Stn., Lucknow.

Type :- 'M'.

Object :- To study the effect of calcium alone and in combination with different forms of manures on the growth, performance and yield of Potato.

## 1. BASAL CONDITIONS :

(i) (a) No. (b) *Sana* for G.M. (c) No. (ii) (a) Sandy loam. (b) N.A. (iii) 24.10.1951. (iv) (a) *Sana* turning by mould board, ploughings four times by cultivator and 2 times by *desi* plough and planking etc. (b) Sown on ridges. (c) N.A. (d) 18" x 6". (e) 1. (v) Nil. (vi) *Gola* (vii) Irrigated. (viii) 2 earthings. (ix) N.A. (x) 17 and 18.3.1952.

**2. TREATMENTS :**

All combinations of (1) and (2)

(1) 2 levels of Ca as Gypsum :  $C_0=0$  and  $C_1=60$  lb./ac.

(2) 6 sources of applications of fertilizers :  $M_0=0$ ,  $M_1=75$  lb./ac. of  $P_2O_5$  as single Super,  $M_2=75$  lb./ac. of  $P_2O_5$  as Ammo. Phos.,  $M_3=75$  lb./ac. of  $P_2O_5$  as B.M.,  $M_4=75$  lb./ac. of  $P_2O_5$  as Fish Guano and  $M_5=120$  lb./ac. of N as F.Y.M.

Manures applied on 22 and 23.10.1951.

**3. DESIGN :**

(i)  $2 \times 6$  Fact. in R.B.D. (ii) (a) 12. (b) N.A. (iii) 4. (iv) (a) and (b)  $9' \times 6'$ . (v) N.A. (vi) Yes.

**4. GENERAL :**

(i) Ordinary. (ii) Nil. (iii) Potato yield. (iv) (a) to (c) No. (v) (a) and (b) No. (vi) Nil. (vii) Experiment conducted by C.P.

**5. RESULTS :**

- (i) 3.66 ton/ac.  
 (ii) 1.4425 ton/ac.  
 (iii) None of the effects is significant.  
 (iv) Av. yield of potato in ton/ac.

	$M_0$	$M_1$	$M_2$	$M_3$	$M_4$	$M_5$	Mean
$C_0$	2.89	3.03	4.10	4.31	2.94	4.66	3.65
$C_1$	3.43	4.00	4.03	4.03	2.92	3.61	3.67
Mean	3.16	3.52	4.06	4.17	2.93	4.13	3.66

S.E. of marginal mean of C = 0.2944 ton/ac.  
 S.E. of marginal mean of M = 0.5100 ton/ac.  
 S.E. of body of table = 0.7212 ton/ac.

Crop :-Potato.

Ref :-U.P. 51(139).

Site :-Crop Physiological Res. Stn., Lucknow.

Type :-'M'.

Object : To study the effect of different dosages of super on growth and Potato yield.

**1. BASAL CONDITIONS :**

(i) (a) No. (b) *Sanai*. (c) Nil. (ii) (a) Sandy loam. (b) N.A. (iii) 26.10.1951. (iv) (a) 3 ploughings. (b) over ridges. (c) N.A. (d)  $18' \times 6'$ . (e) N.A. (v) F.Y.M. at 60 lb./ac. of N as A/S applied on 20.10.1951. (vi) Military (late). (vii) Irrigated. (viii) 1 weeding and hoeing. (ix) N.A. (x) 8 to 15.3.1952.

**2. TREATMENTS :**

4 levels of  $P_2O_5$  as Super :  $P_0=0$ ,  $P_1=25$ ,  $P_2=50$  and  $P_3=75$  lb./ac.  
 Super applied on 22.10.1951.

**3. DESIGN :**

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 4. (iv) (a) and (b)  $11' \times 5'$ . (v) Nil. (vi) Yes.

**4. GENERAL :**

(i) N.A. (ii) Nil. (iii) Potato yield. (iv) (a) to (c) No. (v) (a) and (b) No. (vi) Nil. (vii) The experiment conducted by C.P.

**5. RESULTS :**

- (i) 3.92 ton/ac.  
 (ii) 1.44 ton/ac.  
 (iii) Treatments are not significantly different.

(iv) Av. yield of potato in ton/ac.

Treatment	Av. yield
P <sub>0</sub>	3.39
P <sub>1</sub>	4.64
P <sub>2</sub>	3.36
P <sub>3</sub>	4.30
S.E./mean	=0.72 ton/ac.

Crop :-Potato.

Site :-College Farm, B.H.U., Varanasi.

Ref :-U.P. 51/294).

Type :-'M.

Object :—To study the effect of different times of application of fertilizers.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) (a) Medium loam. (b) Refer soil analysis, B.H.U., Varanasi. (iii) 23.10.1951. (iv) (a) Field levelled thoroughly. (b) Planted in lines, ridges made by *kudali* to cover tubers. (c) N.A. (d) 1½'×9". (e) N.A. (v) 100 mds. of well rotten F.Y.M. mixed with soil at the time of preparing the field, 90 lb./ac. of N as A/S+60 lb./ac. of P<sub>2</sub>O<sub>5</sub> was given at the time of sowing. (vi) Patna white variety (Phulwa variety). (vii) Irrigated. (viii) After every irrigation the field was intercultured with *kudali* and weeds removed. Only one earthing up was done after 45 days of sowing. (ix) N.A. (x) First week of April 1952.

## 2. TREATMENTS :

60 lb./ac. of K<sub>2</sub>O as Pot. Sul. applied as follows :

- All at sowing.
- All at germination (20 days after sowing with first irrigation).
- All at earthing (45 days after sowing with first earthing).
- Half at sowing+half at germination.
- Half at sowing+half at earthing.
- Half at germination+half at earthing.
- 1/3rd at sowing+1/3 at germination+1/3 at earthing.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 7. (b) 126'×19.5'. (iii) 4. (iv) (a) 19.5'×16'. (b) 16.5'×13'. (v) 1½' around. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) N.A. (iii) Fresh weight of top, root, tubers and no. of tillers and tubers etc. (iv) (a) No. (b) No. (c) No. (v) (a) and (b) No. (vi) Nil. (vii) The expt. conducted by B.H.U.

## 5. RESULTS :

- 7.35 ton/ac.
- 0.7243 ton/ac.
- Treatments are highly significantly different.
- Av. yield of potato in ton/ac.

Treatment	Av. yield
1.	5.82
2.	6.07
3.	7.68
4.	7.62
5.	8.64
6.	8.81
7.	6.78
S.E./mean	=0.3622 ton/ac.

Crop :- Potato (*Rabi*).  
Site :- College Farm, B.H.U., Varanasi.

Ref :- U.P.51(295).  
Type :- 'M'.

Object :- To study the effect of different times of application of fertilizers.

### 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) (a) Medium loam. (b) Refer soil analysis, B. H. U., Varanasi. (iii) 23.10.1951. (iv) (a) Field levelled thoroughly. (b) Planted in lines. (c) Ridges made by *kudali* to cover tubers. (d)  $1\frac{1}{2}' \times 9''$ . (e) N.A. (v) 100 mds. of well rotten F.Y.M. mixed with soil at the time of preparing the field. 60 lb./ac. of  $P_2O_5$  + 60 lb./ac. of  $K_2O$  at the time of sowing. (vi) Patna white variety (*Phulwa* variety) (vii) Irrigated. (viii) After every irrigation the field was intercultured with *kudali* and weeds removed. Only one earthing up was done after 45 days of sowing. (ix) N.A. (x) 7.4.1952.

### 2. TREATMENTS :

90 lb./ac. of N as A/S top dressed at different stages as follows :-

1. All at sowing.
2. All at germination (20 days after sowing with first irrigation).
3. All at earthing (45 days after sowing with first earthing).
4. Half at sowing + half at germination.
5. Half at sowing + half at earthing.
6. Half at germination + half at earthing.
7.  $\frac{1}{3}$ rd at sowing +  $\frac{1}{3}$ rd at germination +  $\frac{1}{3}$ rd at earthing.

### 3. DESIGN :

(i) R.B.D. (ii) (a) 7. (b)  $126' \times 19.5'$ . (iii) 4. (iv) (a)  $19.5' \times 16'$ . (b)  $16.5' \times 13'$ . (v)  $1\frac{1}{2}'$  around. (vi) Yes.

### 4. GENERAL :

(i) N.A. (ii) N.A. (iii) Fresh weight of root, top, tubers and no. of tillers and tubers. (iv) (a) No. (b) No. (c) Nil. (v) (a) and (b) No. (vi) Nil. (vii) The experiment was conducted by B.H.U.

### 5. RESULTS :

- (i) 5.70 ton./ac.
- (ii) 0.9724 ton./ac.
- (iii) Treatments are highly significantly different.
- (iv) Av. yield of potato in ton./ac.

Treatment	Av. yield
1.	7.52
2.	5.89
3.	4.08
4.	5.26
5.	6.07
6.	5.12
7.	5.98
S.E./mean	= 0.4862 ton./ac.

Crop :- Potato (*Rabi*).  
Site :- College Farm, B.H.U., Varanasi.

Ref :- U.P. 51(296).  
Type :- 'M'.

Object :- To study the effect of different times of application of fertilizers.

### 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) (a) Medium loam. (b) Refer soil analysis, B.H.U., Varanasi. (iii) 23.10.1951. (iv) (a) Field levelled thoroughly, given necessary agricultural operations and made fit for conducting the experiment. (b) Planted in lines, ridges made by *kudali* to cover tubers. (c) N.A. (d)  $1\frac{1}{2}' \times 9''$ . (e) N.A. (v) 100 mds. of well rotten F.Y.M. mixed with soil at the time of preparing the field. 90 lb./ac. of N as A/S + 60 lb./ac. of  $K_2O$  as Pot. Sulphate at the time of sowing. (vi) Patna white variety (*Phulwa* variety). (vii) Irrigations given at an interval of 10 days. (viii) After every irrigation the field was intercultured with *kudali* and weeds removed. Only one earthing up was done after 45 days of sowing. (ix) N.A. (x) 7.4.1952.

## 2. TREATMENTS :

60 lb./ac of  $P_2O_5$  as Super top dressed at different stages as follows :

1. All at sowing :
2. All at germination (20 days after sowing with first irrigation).
3. All at earthing (45 days after sowing with first earthing).
4. Half at sowing+half at germination.
5. Half at sowing+half at earthing.
6. Half at germination+half at earthing.
7.  $\frac{1}{3}$ rd at sowing+ $\frac{1}{3}$ rd at germination+ $\frac{1}{3}$ rd at earthing.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 7. (b)  $126' \times 19.5'$ . (iii) 4. (iv) (a)  $19.5' \times 16'$ . (b)  $16.5' \times 13'$ . (v)  $1\frac{1}{2}'$  around. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) N.A. (iii) Fresh weight of top, root, tubers and no. of tillers and tubers. (iv) (a) No. (b) No. (c) Nil. (v) (a) and (b) No. (vi) Nil. (vii) The experiment was conducted by B.H.U.

## 5. RESULTS :

- (i) 7.38 ton/ac.
- (ii) 0.8399 ton/ac.
- (iii) Treatment differences are not significant.
- (iv) Av. yield of potato in ton/ac.

Treatment	Av. yield
1.	7.86
2.	7.59
3.	6.41
4.	6.80
5.	8.02
6.	7.66
7.	7.30
S.E./mean	=0.4200 ton./ac.

Crop :- Potato (Rabi).

Ref :- U.P. 53(387).

Site :- College Farm, B.H.U., Varanasi.

Type :- 'M'.

Object :- To study the effect of N, P and K applied alone and in combination on growth and yield of Potato.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Sanai*. (c) Nil. (ii) (a) Medium loam. (b) Refer soil analysis, B.H.U., Varanasi. (iii) 23.10.1953. (iv) (a) 2 moston plough, 4 *deshi* ploughs and 3 ladderings. (b) Sown in furrows and then ridges made. (c) N.A. (d)  $18'' \times 9''$ . (e) N.A. (v) Green manuring with *Sanai* at 50 srs./ac. (vi) N.A. (vii) Irrigated. (viii) 1 hoeing and 1 earthing up after 1 month of sowing. (ix) N.A. (x) 22.2.1954.

## 2. TREATMENTS :

All combinations of (1), (2) and (3)

- (1) 3 levels of N as A/S :  $N_0=0$ ,  $N_1=60$  and  $N_2=120$  lb./ac. of N.
- (2) 3 levels of  $P_2O_5$  as Super :  $P_0=0$ ,  $P_1=30$  and  $P_2=60$  lb./ac. of  $P_2O_5$ .
- (3) 3 levels of  $K_2O$  as Pot. Sul. :  $K_0=0$ ,  $K_1=20$  and  $K_2=40$  lb./ac. of  $K_2O$ .

N applied at the earthing stage (after one month of sowing).  $P_2O_5$  applied at the time of sowing on 22.10.1953.  $K_2O$  applied at the time of sowing with Super.

## 3. DESIGN :

(i)  $3^3$  Confd. (ii) (a) 3 blocks/replication and 9 plots/block. (b)  $220' \times 16'$ . (iii) 4. (iv) (a)  $24' \times 16'$ . (b)  $21' \times 13'$ . (v)  $1\frac{1}{2}'$  around. (vi) Yes.



## 4. GENERAL :

(i) N.A. (ii) N.A. (iii) Fresh weight of root, top and tubers/plot. (iv) (a) No. (b) No. (c) Nil. (v) (a) and (b) Nil. (vi) Nil. (vii) The experiment was conducted by B.H.U.

## 5. RESULTS :

(i) 3.91 ton/ac.  
(ii) 0.5374 ton/ac.  
(iii) N.A.  
(iv) Av. yield of potato in ton/ac.

	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>	Mean	K <sub>0</sub>	K <sub>1</sub>	K <sub>2</sub>
N <sub>0</sub>	2.13	2.37	2.88	2.46	2.49	2.49	2.39
N <sub>1</sub>	3.76	4.58	4.88	4.41	4.22	4.59	4.41
N <sub>2</sub>	4.25	4.87	5.50	4.87	4.21	5.28	5.14
Mean	3.38	3.94	4.42	3.91	3.64	4.12	3.98
K <sub>0</sub>	3.07	3.81	4.04				
K <sub>1</sub>	3.60	4.07	4.69				
K <sub>2</sub>	3.48	3.93	4.54				

S.E. of any marginal mean = 0.0896 ton/ac.  
S.E. of body of table = 0.1551 ton/ac.

Crop :- Potato (Rabi).

Ref :- U.P. 53(395).

Site :- College Farm, B.H.U., Varanasi.

Type :- 'M'.

Object :- To study the effect of N applied at different times on yield of Potato.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Sannhemp for green manuring. (c) Nil. (ii) (a) Medium loam. (b) Refer soil analysis, B.H.U., Varanasi. (iii) 10.11.1953. (iv) (a) First ploughing was done with *desi* plough 3 weeks prior to sowing. Subsequent ploughings with *desi* ploughs followed by planking. (b) Sown in furrows. (c) —. (d) 1½' × 9". (e) 1. (v) 60 lb./ac. of P<sub>2</sub>O<sub>5</sub> as Super and 40 lb./ac. of K<sub>2</sub>O as Pot. Sul. were added to all the plots. (vi) *Phulwa* (Patna white). (vii) Irrigated. (viii) Weeds removed during early stage by manual labour, earthing done after 30 days and hoeing 45 days after sowing. (ix) N.A. (x) 17.3.1954.

## 2. TREATMENTS :

All combinations of (1) and (2) + one control (no manure)

(1) 3 doses of N : N<sub>1</sub>=60, N<sub>2</sub>=90 and N<sub>3</sub>=120 lb./ac.

(2) 3 times of application of N : T<sub>1</sub>=Single dose at the time of planting, T<sub>2</sub>=½ dose at the time of planting + ½ dose 30 days after planting and T<sub>3</sub>=½ dose at the time of planting + ½ dose 30 days after planting + ½ dose 45 days after planting.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 10. (b) 92' × 64'. (iii) 4. (iv) (a) 30' × 16'. (b) 26' × 12'. (v) 2' around. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) N.A. (iii) Fresh weight of tops, roots, mean no. of tubers/plot and yield of tubers. (iv) (a) No. (b), (c) Nil. (v) (a) and (b) No. (vi) Nil. (vii) The experiment was conducted by B.H.U.

## 5. RESULTS :

(i) 5.75 ton/ac.  
(ii) and (iii) N.A.

(iv) Av. yield of potato in ton/ac.

Control=3.36 ton/ac.

	T <sub>1</sub>	T <sub>2</sub>	T <sub>3</sub>	Mean
N <sub>1</sub>	5.33	5.64	5.33	5.43
N <sub>2</sub>	5.88	6.07	5.76	5.90
N <sub>3</sub>	6.61	7.16	6.34	6.70
Mean	5.94	6.29	5.81	6.01

Crop :- Potato (*Rabi*).

Ref :- U.P. 51(230).

Site :- Chhibraman (Farrukhabad).

Type :- 'M'.

Object :--To draw out fertilizer schedules for agriculturally important soil type.

## 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) Sandy loam to *domat*. (iii) N.A. (iv) Improved. (v) (a) to (e) N.A. (vi) N.A. (vii) Irrigated. (viii) N.A. (ix) N.A. (x) N.A.

## 2. TREATMENTS :

- Control (no manure).
- 30 lb./ac. of N.
- 30 lb./ac. of N+60 lb./ac. of P<sub>2</sub>O<sub>5</sub>.

## 3. DESIGN :

(i) and (ii) R.B.D. in which villages have been taken as replications (No. of villages—6) ; field selected in a randomly selected village in the district). (iii) (a) N.A. (b) N.A. (iv) N.A.

## 4. GENERAL :

(i) N.A. (ii) N.A. (iii) Yield of early potato. (iv) (a) No. (b) N.A. (c) N.A. (v) N.A. (vi) Nil. (vii) The experiment was conducted by A.C. on cultivators' fields.

## 5. RESULTS :

- 1.91 ton/ac.
- 0.1005 ton/ac.
- Treatments are highly significantly different.
- Av. yield of potato in ton/ac.

Treatment	Av. yield
1.	1.67
2.	1.94
3.	2.11
S.E./mean	=0.0410 ton/ac.

Crop :- Potato (*Rabi*).

Ref :-U.P. 51(231).

Site :- Kannauj (Farrukhabad).

Type :-'M'.

Object :--To draw out fertilizer schedules for agriculturally important soil type.

## 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) Sandy to sandy loam and loamy soil. (iii) N.A. (iv) Improved. (v) (a) to (e) N.A. (vi) N.A. (vii) Irrigated. (viii) N.A. (ix) N.A. (x) N.A.

## 2. TREATMENTS :

- Control (no manure).
- 30 lb./ac. of N.
- 30 lb./ac. of N+60 lb./ac. of P<sub>2</sub>O<sub>5</sub>.

## 3. DESIGN :

(i) and (ii) R.B.D. in which villages have been taken as replications (No. of villages 5). Field selected randomly in the randomly selected village in the district. (iii) (a) N.A. (b) N.A. (iv) N.A.

## 4. GENERAL :

(i) N.A. (ii) N.A. (iii) Yield of late potato. (iv) (a) No. (b) N.A. (c) N.A. (v) N.A. (vi) Nil. (vii) The experiment was conducted by A.C. on cultivators' fields.

## 5. RESULTS :

- (i) 9.85 ton/ac.  
 (ii) 0.4665 ton/ac.  
 (iii) Treatments are highly significantly different.  
 (iv) Av. yield of potato in ton/ac.

Treatment	Av. yield
1.	8.73
2.	10.12
3.	10.71
S.E./mean	=0.2086 ton/ac.

Crop :- Potato (*Rabi*).

Ref :- U.P. 52(286).

Site :- Chhibraman and Karimganj (Farrukhabad). Type :- 'M'.

Object :- To draw out a fertilizer schedules for agriculturally important soil type.

## 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) Farrukhabad type 2 soil. (iii) N.A. (iv) Phulwa improved. (v) (a) After application of  $P_2O_5$  the field was levelled by drawing a *pata*. (b) Seeds sown in lines parallel to the fertilizer band. (c) N.A. (d) 1" to 2" away from the fertilizer line. (e) N.A. (vi) N.A. (vii) to (x) N.A.

## 2. TREATMENTS :

- Control.
- 30 lb./ac. of N as A/S.
- 30 lb./ac. of N as A/S + 60 lb./ac. of  $P_2O_5$  as Super.

N added to surface at sowing time. Super is placed at a depth of about 3"-4" deep at the sole of the furrow and in the side of the seed row made by either an iron plough or two *dest* plough—one behind the other in the same furrow.

## 3. DESIGN :

(i) and (ii) Villages selected in the district and unreplicated expt. with 3 treatments conducted ; 12 replications. (iii) (a) and (b) N.A., but roughly about 1/40 ac. (iv) N.A.

## 4. GENERAL :

(i) N.A. (ii) N.A. (iii) Potato yield. (iv) (a) to (c) N.A. (v) N.A. (vi) Nil. (vii) The expt. was conducted by A.C. on cultivators' fields.

## 5. RESULTS :

- (i) 4.59 ton/ac.  
 (ii) 0.8732 ton/ac.  
 (iii) Treatments are highly significantly different.  
 (iv) Av. yield of potato in ton/ac.

Treatment	Av. yield
1.	3.59
2.	4.57
3.	5.62
S.E./mean	=0.2521 ton/ac.

Crop :- Potato (*Rabi*).

Site :- Govt. Potato Res. Farm, Farrukhabad.

Ref :- U.P. 50(11).

Type :- 'C'.

Object :- To study the effect of different sizes of Potato seeds on its yield.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Charl.* (c) Nil. (ii) (a) Loam. (b) N.A. (iii) 30.10.1950. (iv) (a) 4 ploughings. (b) N.A. (c) 9 rows/plot with 20 seeds/row. (d) 2'×9". (e) N.A. (v) City refuse at 480 mds./ac. on 18 and 19.10.1950 and A/S at 1.5 srs./plot on 15 and 16.12.1950. (vi) *Phulwa*. (vii) Irrigated. (viii) 1 earthing up. (ix) N.A. (x) 13.4.1951.

## 2. TREATMENTS :

3 seed sizes :  $S_1$ =Large,  $S_2$ =Small and  $S_3$ =*Chhari*.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 3. (b) 18'×49'. (iii) 4. (iv) (a) and (b) 18'×15'. (v) Nil. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Nil. (iii) Germination and potato yield. (iv) (a) 1950 to 1951. (b) and (c) No. (v) (a) No. (b) N.A. (vi) Nil. (vii) Experiment conducted by C.P.

## 5. RESULTS :

(i) 8.22 ton/ac.

(ii) 0.7338 ton/ac.

(iii) Treatment differences are highly significant.

(iv) Av. yield of tubers in ton/ac.

Treatment	Av. yield
1.	9.89
2.	7.52
3.	7.26
S.E./mean	=0.3669 ton/ac.

Crop :- Potato.

Site :- Govt. Potato Res. Farm, Farrukhabad.

Ref :- U.P. 51(12).

Type :- 'C'.

Object :- To study the effect of different sizes of potato seeds on its yield.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Chari*. (c) Nil. (ii) (a) Loam. (b) N.A. (iii) 17.11.1951. (iv) (a) 4 ploughings. (b) N.A. (c) 9 rows/plot with 24 seeds/row. (d) 2'×9". (e) N.A. (v) City refuse at 80 mds./ac. on 14.11.1951. A/S at 20 srs./plot on 2.1.1952. (vi) *Phulwa*. (vii) Irrigated. (viii) One earthing up. (ix) N.A. (x) 31.3.1952.

## 2. TREATMENTS :

3 seed sizes :  $S_1$ =Large,  $S_2$ =Small and  $S_3$ =*Chhari*.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 3. (b) 59'×18'. (iii) 4. (iv) (a) and (b) 18'×18'. (v) Nil. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Nil. (iii) Germination and potato yield. (iv) (a) 1950 to 1951. (b), (c) No. (v) (a) and (b) No. (vi) Nil. (vii) The experiment conducted by E.B.(R).

## 5. RESULTS :

(i) 5.55 ton/ac.

(ii) 0.4782 ton/ac.

(iii) Treatment differences are significant.

(iv) Av. yield of tubers in ton/ac.

Treatment	Av. yield
1.	6.14
2.	5.77
3.	4.75
S.E./mean	=0.2391 ton/a.

Crop :- Potato.

Ref :- U.P. 52(42).

Site :- Govt. Potato Res. Farm, Farrukhabad.

Type :- 'C'.

Object :- To see the effect of earthings on the yield of potato.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Jowar*. (c) Nil. (ii) (a) Loam. (b) N.A. (iii) 6.11.1952. (iv) (a) 4 ploughings. (b) N.A. (c) 10 rows/plot with 16 seeds/row. (e) N.A. (v) City refuse at 400 mds./ac. on 26.10.1952. A/S at 2 srs./plot at the time of earthing. (vi) *Phulwa* (cold storage). (vii) Irrigated. (viii) 1 weeding. (ix) N.A. (x) 11.3.1953.

## 2. TREATMENTS :

1. One earthing on 11.12.1952.
2. Two earthings on 7 and 19.12.1952.
3. Three earthings on 3, 11 and 19.12.1952.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 3. (b) 62.5'×12'. (iii) 5. (iv) (a) and (b) 17.5'×12'. (v) Nil. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Nil. (iii) Germination and potato yield. (iv) (a) 1952—continued. (b), (c) No. (v) (a) No. (b) No. (vi) Nil. (vii) The expt. was conducted by E.B. (R).

## 5. RESULTS :

- (i) 5.58 ton/ac.
- (ii) 0.9884 ton/ac.
- (iii) Treatment differences are not significant.
- (iv) Av. yield of tubers in ton/ac.

Treatment	Av. yield
1.	5.30
2.	5.94
3.	5.49
S.E./mean	=0.4420 ton/ac.

Crop :- Potato.

Ref :- U.P. 53(16).

Site :- Govt. Potato Res. Farm., Farrukhabad.

Type :- 'C'.

Object :- To see the effect of earthing on the yield of Potato.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Sanai* for green manuring. (c) Nil. (ii) (a) Loam. (b) N.A. (iii) 31.10.1953. (iv) (a) 5 ploughings. (b) N.A. (c) Total seed used 2.125 md. (d) 2'×9". (e) N.A. (v) Castor cake at 30 md./ac. on 31.10.1953, A/S at 1 sr./plot on 8.12.1953, 12.12.1953 and 16.12.1953. (vi) *Phulwa* (cold storage) in sprouted condition. (vii) Irrigated. (viii) 1 weeding and hoeing. (ix) 2.79". (x) 8.3.1954.

## 2. TREATMENTS :

1. One earthing on 16.12.1953.
2. Two earthings on 12.12.1953 and 24.12.1953.
3. Three earthing on 8.12.1953, 16.12.1953 and 24.12.1953.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 3. (b) N.A. (iii) 5. (iv) (a) N.A. (b) 20'×12'. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Mosaic incidence below 5% checked by using bigger and cut seed. (iii) Germination and yield of potato. (iv) (a) 1952—continued. (b) and (c) N.A. (v) (a) and (b) No. (vi) Nil. (vii) The experiment was conducted by E.B. (R).

## 5. RESULTS :

- (i) 5.70 ton/ac.
- (ii) 0.6490 ton/ac.
- (iii) Treatment differences are not significant.

(iv) Av. yield of tuber in ton/ac.

Treatment	Av. yield
1.	5.80
2.	5.53
3.	5.77
S.E./mean	=0.2902 ton/ac.

Crop :- Potato.

Ref :- U.P. 49(49).

Site :- Govt. Potato Res. Farm, Farrukhabad.

Type :- 'C'.

Object :- To study the effect of storage method on Potato yield.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Sanai* (G.M.) (c) Nil. (ii) (a) Loam. (b) N.A. (iii) 4.5.12.1949. (iv) (a) 8 ploughings. (b) to (e) N.A. (v) Castor cake at 17½ md./ac. on 3.11.1949 and A/S at 9 seers 5 chh./ac. on 5.11.1949. (vi) *Kalmi* (vii) Irrigated. (viii) 2 weedings and 2 earthings. (ix) N.A. (x) 7.3.1950.

## 2. TREATMENTS :

All combinations of (1) and (2).

- (1) 2 storage methods :  $T_1$  = *Kalmi* cold storage and  $T_2$  = *Kalmi* sand store.  
 (2) 2 seed sizes in sprouted condition :  $S_1$  = Large and  $S_2$  = Small.

## 3. DESIGN :

(i) 2x2 Fact. in R.B.D. (ii) (a) 4. (b) N.A. (iii) 6. (iv) (a) N.A. (b) 30'x18'. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) Very good. (ii) Nil. (iii) Germination and yield of potato. (iv) (a) 1949 to 1952. (b) No. (c) N.A. (v) (a) No. (b) N.A. (vi) Nil. (vii) The experiment was conducted by E.B. (R).

## 5. RESULTS :

- (i) 9.15 ton/ac.  
 (ii) 0.6835 ton/ac.  
 (iii) T effect is highly significant, S effect is significant while interaction is not significant.  
 (iv) Av. yield of potato in ton/ac.

	$S_1$	$S_2$	Mean
$T_1$	8.94	8.53	8.74
$T_2$	9.96	9.16	9.56
Mean	9.45	8.84	9.15

S.E. of any marginal mean

=0.1973 ton/ac.

S.E. of body of table

=0.2790 ton/ac.

Crop :- Potato.

Ref :- U.P. 50(12).

Site :- Govt. Potato Res. Farm, Farrukhabad.

Type :- 'C'.

Object :- To study the effect of storage method on Potato yield.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Sanai* for green manuring. (c) Nil. (ii) (a) Loam. (b) N.A. (iii) 31.10.1950. (iv) (a) 3 ploughings. (b) N.A. (c) 12 rows/plot with 16 seeds/row. (d) 2'x9'. (e) N.A. (v) City refuse at 250 mds/ac. on 22.10.1950 and A/S at 1 sr./plot on 6 and 7.12.1950. (vi) *Phulwa* (*Kalmi*). (vii) Irrigated. (viii) 1 weeding and 2 earthing up. (ix) N.A. (x) 15 and 16.3.1951.

**2. TREATMENTS :**

All combinations of (1) and (2)

- (1) 2 storage methods :  $T_1$ =Cold and  $T_2$ =Ordinary.  
 (2) 2 seed sizes :  $S_1$ =Large and  $S_2$ =Small.

**3. DESIGN :**(i)  $2 \times 2$  Fact. in R.B.D. (ii) (a) 4. (b)  $50' \times 26'$ . (iii) 6. (iv) (a) and (b)  $24' \times 12'$ . (v) Nil. (vi) Yes.**4. GENERAL :**

(i) Good. (ii) Nil. (iii) Germination and yield of potato. (iv) (a) 1949—1952. (b) No. (c) No. (v) (a) No. (b) No. (vi) Nil. (vii) The experiment conducted by E.B.(R).

**5. RESULTS :**

- (i) 9.40 ton/ac.  
 (ii) 1.1179 ton/ac.  
 (iii) T effect is highly significant while other effect and interaction  $S \times T$  are not significant.  
 (iv) Av. yield of potato in ton/ac.

	$S_1$	$S_2$	Mean
$T_1$	11.81	10.35	11.08
$T_2$	7.85	7.59	7.72
Mean	9.83	8.97	9.40

S.E. of any marginal mean = 0.3227 ton/ac.

S.E. of body of table = 0.4564 ton/ac.

Crop :- Potato.

Site :- Govt. Potato Res. Farm, Farrukhabad.

Ref :- U.P. 51(9).

Type :- 'C'.

Object :- To study the effect of storage method on Potato yield.

**1. BASAL CONDITIONS :**

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) (a) Loam. (b) N.A. (iii) 9.11.1951. (iv) (a) 8 ploughings. (b) N.A. (c) 12 rows/plot with 24 seeds/row. (d)  $2' \times 9'$ . (e) N.A. (v) F.Y.M. at 200 mds/ac. on 2.11.1951. A/S at 3 srs/plot on 29.12.1951. (vi) *Kalmi Phulwa* (sprouted). (vii) Irrigated. (viii) Earthing up on 29/30. 12.51 and 18.1.1952. (ix) and (x) N.A.

**2. TREATMENTS :**

All combinations of (1) and (2)

- (1) 2 storage methods :  $T_1$ =Cold and  $T_2$ =Sand storage.  
 (2) 2 seed sizes :  $S_1$ =Large and  $S_2$ =Small.

**3. DESIGN :**(i)  $2 \times 2$  Fact. in R.B.D. (ii) (a) 4. (b)  $50' \times 38'$ . (iii) 6. (iv) (a) and (b)  $24' \times 18'$ . (v) Nil. (vi) Yes.**4. GENERAL :**

(i) Good. (ii) Mosaic. (iii) Germination and yield of potato. (iv) (a) 1949—1952. (b) No. (c) No. (v) (a) No. (b) No. (vi) Nil. (vii) Experiment conducted by E.B.(R).

**5. RESULTS :**

- (i) 7.13 ton/ac.  
 (ii) 0.4428 ton/ac.  
 (iii) S effect and interaction  $S \times T$  are highly significant. T effect is not significant.

(iv) Av. yield of potato in ton/ac.

	S <sub>1</sub>	S <sub>2</sub>	Mean
T <sub>1</sub>	7.96	6.68	7.32
T <sub>2</sub>	7.04	6.85	6.94
Mean	7.50	6.77	7.13

S.E. of any marginal mean

=0.1278 ton/ac.

S.E. of body of table

=0.1808 ton/ac.

Crop :- Potato.

Ref :- U.P. 52(40).

Site :- Govt. Potato Res. Farm, Farrukhabad.

Type :- 'C'.

Object :- To study the effect of storage method on Potato yield.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Early *Jowar* for fodder. (c) Nil. (ii) (a) Loam. (b) N.A. (iii) 28.10.1952. (iv) (a) 4 ploughings. (b) N.A. (c) 12 rows/plot with 23 seeds/row. (d) 2'×9". (e) N.A. (v) City refuse at 20 md./ac. on 24.10.1952, A/S at 2.5 srs./plot on 16.2.1952. (vi) *Phulwa (Kalmi)*. (vii) Irrigated. (viii) Earthing up on 16/17.12.1952. (ix) N.A. (x) 6,7.3.1953.

## 2. TREATMENTS :-

All combinations of (1) and (2)

(1) 2 storage methods : T<sub>1</sub>=Cold and T<sub>2</sub>=Sand storage.(2) 2 seed sizes : S<sub>1</sub>=Large and S<sub>2</sub>=Small.

## 3. DESIGN :

(i) 2×2 Fact. in R.B.D. (ii) (a) 4. (b) 110'×16.5'. (iii) 6. (iv) (a) and (b) 24'×16.5'. (v) Nil. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Nil. (iii) Germination and yield of tubers. (iv) (a) 1949 to 1952. (b) and (c) No. (v) (a) and (b) No. (vi) Nil. (vii) Experiment conducted by E. B. (R).

## 5. RESULTS :

(i) 8.30 ton/ac.

(ii) 0.8864 ton/ac.

(iii) Only S effect is highly significant.

(iv) Av. yield of potato in ton/ac.

	S <sub>1</sub>	S <sub>2</sub>	Mean
T <sub>1</sub>	7.56	7.27	7.42
T <sub>2</sub>	9.06	9.33	9.19
Mean	8.31	8.30	8.30

S.E. of any marginal mean

=0.2559 ton/ac.

S.E. of body of table

=0.3619 ton/ac.



Crop :- Potato.

Ref :-U.P. 49(53).

Site :-Govt. Potato Res. Farm, Farrukhabad.

Type :-'C'.

Object :-To study the effect of spacing and seed size on Potato yield.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Jowar*. (c) N.A. (ii) (a) Loam. (b) N.A. (iii) 15, 16.11.1949. (iv) (a) and (b) N.A. (c) N.A. (d) As per treatments. (e) N.A. (v) F.Y.M. at 150 md./ac. on 10 and 11.11.1949, castor cake at 18 md./ac. on 11 and 12.11.1949 and A/S at 1 md. 16 srs. 4 chhs./ac. on 25 to 27.12.1949. (vi) *Phulwa* (cold store). (vii) Irrigated. (viii) 3 weedings and 2 earthings. (ix) N.A. (x) 18 to 22.3.1950.

## 2. TREATMENTS :

All combinations of (1), (2) and (3)

(1) 2 seed sizes :  $S_1$ =Large ( $1''-1\frac{1}{2}''$ ) and  $S_2$ =Small ( $1''-\frac{3}{4}''$ ).(2) 2 distances between rows :  $R_1=2'$  and  $R_2=1\frac{1}{2}'$ .(3) 3 distances between plants :  $P_1=6''$ ,  $P_2=9''$  and  $P_3=12''$ .

## 3. DESIGN :

(i)  $2 \times 2 \times 3$  Fact. in R.B.D. (ii) (a) 12. (b) N.A. (iii) 4. (iv) (a) N.A. (b)  $24' \times 18'$ . (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Nil. (iii) Potato yield. (iv) (a) 1949 to 1952. (b) No. (c) N.A. (v) (a) Kanpur. (b) N.A. (vi) Nil. (vii) Experiment conducted by E.B. (R).

## 5. RESULTS :

(i) 8.44 ton/ac.  
(ii) 0.6189 ton/ac.  
(iii) Only S effect is highly significant.  
(iv) Av. yield of potato in ton/ac.

	$P_1$	$P_2$	$P_3$	Mean	$R_1$	$R_2$
$S_1$	8.79	8.80	8.58	8.72	8.62	8.82
$S_2$	8.47	8.02	7.98	8.16	8.10	8.22
Mean	8.63	8.41	8.28	8.44	8.36	8.52
$R_1$	8.54	8.38	8.15	8.36		
$R_2$	8.72	8.44	8.40	8.52		

S E. of marginal mean of S or R = 0.1264 ton/ac.  
S.E. of marginal mean of P = 0.1547 ton/ac.  
S.E. of body of table S  $\times$  R = 0.1787 ton/ac.  
S.E. of body of table S  $\times$  P or R  $\times$  P = 0.2188 ton/ac.

Crop :- Potato.

Ref :-U.P. 50(10).

Site :-Govt. Potato Res. Farm, Farrukhabad.

Type :-'C'.

Object :-To find out the optimum spacing and seed size for Potato.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Jowar*. (c) Nil. (ii) (a) Loam. (b) N.A. (iii) 28,29.10.1950. (iv) (a) 4 ploughings. (b) and (c) N.A. (d) As per treatments. (e) N.A. (v) City refuse at 48 md/ac. on 18,19.10.1950 and A/S at 1 sr/plot. (vi) *Phulwa (sala)*, cold storage). (vii) Irrigated. (viii) 1 weeding and 2 earthings. (ix) N.A. (x) 7 to 10.3.1951.

## 2. TREATMENTS :

All combinations of (1), (2) and (3)

(1) 2 seed sizes :  $S_1$ =Large ( $1''-1\frac{1}{2}''$ ) and  $S_2$ =Small ( $1''-\frac{3}{4}''$ ).(2) 2 distances between rows :  $R_1=2'$  and  $R_2=1\frac{1}{2}'$ .(3) 3 distances between plants :  $P_1=6''$ ,  $P_2=9''$  and  $P_3=12''$ .

## 3. DESIGN :

(i) 2×2×3 Fact. in R.B.D. (ii) (a) 12. (b) 78'×78'. (iii) 4. (iv) (a) and (b) 24'×18'. (v) Nil. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Nil. (iii) Germination and yield of potato. (iv) (a) 1949 to 1952. (b) and (c) No. (v) (a) and (b) No. (vi) Nil. (vii) The experiment was conducted by E.B. (R).

## 5. RESULTS :

- (i) 11.23 ton/ac.  
 (ii) 0.6485 ton/ac.  
 (iii) S, R and P effects are highly significant while all interactions are not significant.  
 (iv) Av. yield of potato in ton/ac.

	P <sub>1</sub>	P <sub>2</sub>	P <sub>3</sub>	Mean	R <sub>1</sub>	R <sub>2</sub>
S <sub>1</sub>	11.49	11.78	11.16	11.48	10.93	12.02
S <sub>2</sub>	11.23	10.87	10.83	10.98	10.74	11.21
Mean	11.36	11.32	11.00	11.23	10.84	11.61
R <sub>1</sub>	10.93	10.95	10.64	10.84		
R <sub>2</sub>	11.79	11.70	11.35	11.61		

S.E. of marginal mean of S or R = 0.1324 ton/ac.  
 S.E. of marginal mean of P = 0.1621 ton/ac.  
 S.E. of body of table S×R = 0.1872 ton/ac.  
 S.E. of body of table S×P or R×P = 0.2293 ton/ac.

Crop :- Potato.

Ref :- U.P. 51(11).

Site :- Govt. Potato Res. Farm., Farrukhabad.

Type :- 'C'.

Object :- To find out the optimum spacing and seed size for Potato.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Samat* for green manuring. (c) Nil. (ii) (a) Loam. (b) N.A. (iii) 16.11.1951. (iv) (a) 4 ploughings. (b) and (c) N.A. (d) As per treatments. (e) N.A. (v) City refuse at 80 md/ac. on 14.11.1951 and A/S at 3 sr/plot. on 24 to 27.12.1951. (vi) *Phulwa* (*sala* cold storage in sprouted condition). (vii) Irrigated. (viii) 1 weeding and 1 earthing up. (ix) N.A. (x) 30,31.3.1952 and 1,2,4.1952.

## 2. TREATMENTS :

All combinations of (1), (2) and (3).

- (1) 2 seed sizes : S<sub>1</sub>=Large (1"–1½") and S<sub>2</sub>=Small (1"–¾").  
 (2) 2 distances between rows : R<sub>1</sub>=2' and R<sub>2</sub>=1½'.  
 (3) 3 distances between plants : P<sub>1</sub>=6", P<sub>2</sub>=9" and P<sub>3</sub>=12".

## 3. DESIGN :

(i) 2×2×3 Fact. in R.B.D. (ii) (a) 12. (b) 77'×79.7'. (iii) 4. (iv) (a) and (b) 24'×18'. (v) Nil. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Traces of mosaic incidence. (iii) Germination and yield of potato. (iv) (a) 1949 to 1952. (b) and (c) No. (v) (a) and (b) No. (vi) Nil. (vii) The experiment was conducted by E.B. (R).

## 5. RESULTS :

- (i) 8.15 ton/ac.  
 (ii) 0.4265 ton/ac.  
 (iii) S and P effects are highly significant. Interaction S×P is highly significant, interaction P×R is significant while other effects are not significant.

(iv) Av. yield of potato in ton/ac.

	P <sub>1</sub>	P <sub>2</sub>	P <sub>3</sub>	Mean	R <sub>1</sub>	R <sub>2</sub>
S <sub>1</sub>	8.17	8.61	8.22	8.33	8.33	8.33
S <sub>2</sub>	8.63	7.84	7.44	7.97	7.86	8.09
Mean	8.40	8.22	7.83	8.15		
R <sub>1</sub>	8.47	8.29	7.52	8.09		
R <sub>2</sub>	8.33	8.16	8.14	8.21		

S.E. of marginal mean of S or R = 0.0870 ton/ac.  
 S.E. of marginal mean of P = 0.1066 ton/ac.  
 S.E. of body of table S×R = 0.1231 ton/ac.  
 S.E. of body of table S×P or R×P = 0.1508 ton/ac.

Crop :- Potato.

Ref :- U.P. 52(41).

Site :- Govt. Potato Res. Farm, Farrukhabad.

Type :- 'C'.

Object :- To find out the optimum spacing and seed size for Potato.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Jowar* for fodder. (c) Nil. (ii) (a) Loam. (b) N.A. (iii) 29, 30.10.1952. (iv) (a) 4 ploughings. (b) N.A. (c) N.A. (d) As per treatments. (e) N.A. (v) City refuse at 400 mds/ac. on 26.10.1952 and A/S at 2.5 srs/plot on 9, 10, 12 and 13.12.1952. (vi) *Phulwa* (cold storage). (vii) Irrigated. (viii) 2 weedings and 1 earthing. (ix) N.A. (x) 10 and 11.3.1953.

## 2. TREATMENTS :

All combinations of (1), (2) and (3)

(1) 2 seed sizes : S<sub>1</sub>=Large (1"–1½") and S<sub>2</sub>=Small (1"–¾").(2) 2 distances between rows : R<sub>1</sub>=2' and R<sub>2</sub>=1½'.(3) 3 distances between plants : P<sub>1</sub>=6", P<sub>2</sub>=9" and P<sub>3</sub>=12".

## 3. DESIGN :

(i) 2×2×3 Fact. in R.B.D. (ii) (a) 12. (b) 78'×18'. (iii) 4. (iv) (a) and (b) 24'×18'. (v) Nil. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Nil. (iii) Germination and yield of potato. (iv) (a) 1949–1952. (b) No. (c) No. (v) (a) and (b) No. (vi) Nil. (vii) Experiment conducted by E.B.(R).

## 5. RESULTS :

(i) 6.67 ton/ac.

(ii) 0.5845 ton/ac.

(iii) S and P effects are highly significant, interaction S×R is significant. Other effects are not significant.

(iv) Av. yield of potato in ton/ac.

	P <sub>1</sub>	P <sub>2</sub>	P <sub>3</sub>	Mean	R <sub>1</sub>	R <sub>2</sub>
S <sub>1</sub>	7.60	6.99	6.44	7.01	6.74	7.28
S <sub>2</sub>	7.40	5.97	5.61	6.33	6.41	6.25
Mean	7.50	6.48	6.02	6.67		
R <sub>1</sub>	7.38	6.39	5.95	6.57		
R <sub>2</sub>	7.63	6.57	6.10	6.77		

S.E. of marginal mean of S or R	=0.1462 ton/ac.
S.E. of marginal mean of P	=0.1193 ton/ac.
S.E. of body of table S×R	=0.1687 ton/ac.
S.E. of body of table S×P or R×P	=0.2067 ton/ac.

Crop :- Potato.

Ref :-U.P. 49(46).

Site :- Govt. Potato Res. Farm, Farrukhabad.

Type :-'C'.

Object :-To make a comparative study of different methods and dates on sowing on Potato yield.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Sanaï* for G.M. (c) Nil. (ii) (a) Loam. (b) N.A. (iii) As per treatments. (iv) (a) 8 ploughings. (b) As per treatments. (c) to (e) N.A. (v) Castor cake at 12½ mds/ac. on 23.10.1949, A/S at 13 seers 15 chh./ac. on 30.11.1949. (vi) Sala (cold storage). (vii) Irrigated. (viii) 1 weeding and 2 earthings. (ix) N.A. (x) 12 and 13.3.1950.

2. TREATMENTS .

All combinations of (1) and (2)

(1) 3 sowing dates : D<sub>1</sub>=24.10.1949, D<sub>2</sub>=31.10.1949 and D<sub>3</sub>=7.11.1949.

(2) 2 methods of sowing : M<sub>1</sub>=Ridges and M<sub>2</sub>=Flat.

3. DESIGN :

(i) 2×3 Fact. in R.B.D. (ii) (a) 6. (b) N.A. (iii) 6. (iv) (a) N.A. (b) 38'×7'. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of potato. (iv) (a) 1949-1950. (b) No. (c) N.A. (v) (a) Kanpur. (b) N.A. (vi) Nil. (vii) Experiment conducted by E.B.(R).

5. RESULTS :

(i) 9.76 ton/ac.

(ii) 1.0084 ton/ac.

(iii) None of the effects is significant.

(iv) Av. yield of potato in ton/ac.

	D <sub>1</sub>	D <sub>2</sub>	D <sub>3</sub>	Mean
M <sub>1</sub>	9.65	10.25	10.05	9.98
M <sub>2</sub>	9.70	9.47	9.45	9.54
Mean	9.68	9.86	9.75	9.76

S.E. of marginal mean of D =0.2911 ton/ac.

S.E. of marginal mean of M =0.2377 ton/ac.

S.E. of body of table =0.4117 ton/ac.

Crop :- Potato .

Ref :- U.P. 50(9).

Site :- Govt. Potato Res. Farm, Farrukhabad.

Type :- 'C'.

Object :-To make a comparative study of different methods and dates of sowing on Potato yield.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Sanaï* for green manuring. (c) Nil. (ii) (a) Loam. (b) N.A. (iii) As per treatments. (iv) (a) 3 ploughings. (b) As per treatments. (c) 10 rows/plot with 9 seeds/row. (d) 2'×9'. (e) N.A. (v) City refuse at 250 mds./ac. and A/S at 0.75 sr./plot. (vi) Sala cold. (vii) Irrigated. (viii) 1 weeding (*guraï*) and 1 earthing up. (ix) N.A. (x) 15.3.1951.

**2. TREATMENTS :**

All combinations of (1) and (2)

(1) 3 sowing dates :  $D_1=24.10.1950$ ,  $D_2=31.10.1950$  and  $D_3=7.11.1950$ .

(2) 2 sowing methods :  $M_1=Ridge$  and  $M_2=Flat$ .

**3. DESIGN :**

(i)  $2 \times 3$  Fact. in R.B.D. (ii) (a) 6. (b)  $20' \times 49'$ . (iii) 6. (iv) (a) and (b)  $20' \times 7'$ . (v) Nil. (vi) Yes.

**4. GENERAL :**

(i) Good. (ii) Nil. (iii) Germination and potato yield. (iv) (a) 1949 to 1950. (b) and (c) No. (v) (a) and (b) No. (vi) Nil. (vii) Experiment conducted by E.B. (R).

**5. RESULTS :**

(i) 11.91 ton/ac.

(ii) 1.271 ton/ac.

(iii) None of the effects is significant.

(iv) Av. yield of potato in ton/ac.

	$D_1$	$D_2$	$D_3$	Mean
$M_1$	11.33	12.72	11.81	11.95
$M_2$	12.05	11.86	11.72	11.88
Mean	11.69	12.29	11.76	11.91

S.E. of marginal mean of M = 0.300 ton/ac.

S.E. of marginal mean of D = 0.367 ton/ac.

S.E. of body of table = 0.519 ton/ac.

**Crop :- Potato.**

**Site :- Govt. Potato Res. Farm, Farrukhabad.**

**Ref :- U.P. 50(8).**

**Type :- 'C'.**

**Object :-** To study the effect of sowing dates on Potato yield.

**1. BASAL CONDITIONS :**

(i) (a) Nil. (b) *Chari*. (c) Nil. (ii) (a) Loam. (b) N.A. (iii) As per treatments. (iv) (a) 4 ploughings. (b) N.A. (c) N.A. (d)  $2' \times 9'$ . (e) N.A. (v) City refuse at 480 md./ac. on 12.10.1950 and A/S at 1.5 srs./plot on 15,16.12.1950. (vi) *Chari* of Phulwa (Kalmi) cold storage. (vii) Irrigated. (viii) 1 weeding and 1 earthing up. (ix) N.A. (x) 7 and 8.4.1951.

**2. TREATMENTS :**

8 sowing dates :

$D_1=12.10.1950$ ,  $D_2=19.10.1950$ ,  $D_3=26.10.1950$ ,  $D_4=2.11.1950$ ,  $D_5=9.11.1950$ ,  $D_6=16.11.1950$ ,  $D_7=23.11.1950$  and  $D_8=30.11.1950$ .

**3. DESIGN :**

(i) R.B.D. (ii) (a) 8. (b) N.A. (iii) 6. (iv) (a) and (b)  $2' \times 12'$ . (v) Nil. (vi) Yes.

**4. GENERAL :**

(i) Good. (ii) Nil. (iii) Germination and yield of potato. (iv) (a) to (c) No. (v) (a) and (b) No. (vi) Nil. (vii) Experiment conducted by E.B. (R).

**5. RESULTS :**

(i) 14.88 ton/ac.

(ii) 3.057 ton/ac.

(iii) Treatment differences are highly significant.

(iv) Av. yield of potato in ton/ac.			
Treatment	Av. yield	Treatment	Av. yield
D <sub>1</sub>	18.34	D <sub>5</sub>	14.03
D <sub>2</sub>	19.10	D <sub>6</sub>	9.51
D <sub>3</sub>	22.02	D <sub>7</sub>	7.92
D <sub>4</sub>	20.90	D <sub>8</sub>	7.22
S.E./mean		= 1.248 ton/ac.	

Crop :- Potato (*Rabi*).

Ref :- U.P. 53(14).

Site :- Govt. Potato Res. Farm, Farrukhabad.

Type :- 'C'.

Object :- To study the effect of sowing and harvesting dates on Potato yield.

### 1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Chari* for fodder. (c) Nil. (ii) (a) Loam. (b) N.A. (iii) As per treatments. (iv) (a) 5 ploughings. (b) N.A. (c) 28 seeds/row. (d) 1½' × 9". (e) —. (v) 100 mds/ac. as F.Y.M. on 5.10.1953. (vi) *Phulwa chari* in sprouted condition. (vii) Irrigated. (viii) 2 earthings and 1 hoeing and weeding. (ix) 2.79". (x) As per treatments.

### 2. TREATMENTS :

Main-plot treatments :

8 sowing dates : D<sub>1</sub>=15.10.1953, D<sub>2</sub>=22.10.1953, D<sub>3</sub>=29.10.1953, D<sub>4</sub>=5.11.1953, D<sub>5</sub>=12.11.1953, D<sub>6</sub>=19.11.1953, D<sub>7</sub>=26.11.1953 and D<sub>8</sub>=3.12.1953.

Sub-plot treatments :

4 harvesting dates : H<sub>1</sub>=20.2.1954, H<sub>2</sub>=27.2.1954, H<sub>3</sub>=6.3.1954 and H<sub>4</sub>=13.3.1954.

### 3. DESIGN :

(i) Split-plot. (ii) (a) 8 main-plots/replication and 4 sub-plots/main-plot. (b) 48' × 21'. (iii) 4. (iv) (a) and (b) 21' × 1.5'. (v) Nil. (vi) Yes.

### 4. GENERAL :

(i) Good. (ii) Mosaic disease below 5% ; checked by using bigger and cut seeds. (iii) Germination and yield of potato. (iv) (a) 1953—continued. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) Nil. (vii) Sub-plot consists of only one row 21' long. The expt. was conducted by E.B.R.

### 5. RESULTS :

(i) 2.71 ton/ac.

(ii) (a) 1.140 ton/ac.

(b) 0.534 ton/ac.

(iii) Both D and H effects are highly significant. Interaction is not significant.

(iv) Av. yield of potato in ton/ac.

	D <sub>1</sub>	D <sub>2</sub>	D <sub>3</sub>	D <sub>4</sub>	D <sub>5</sub>	D <sub>6</sub>	D <sub>7</sub>	D <sub>8</sub>	Mean
H <sub>1</sub>	2.80	3.27	3.25	2.64	1.94	2.10	1.17	0.75	2.24
H <sub>2</sub>	3.31	3.67	3.77	2.90	2.24	2.34	1.49	0.93	2.58
H <sub>3</sub>	4.37	3.37	4.11	2.82	2.28	2.86	1.63	1.35	2.85
H <sub>4</sub>	4.74	3.57	4.52	3.17	2.52	3.33	2.02	1.61	3.18
Mean	3.80	3.47	3.91	2.88	2.24	2.66	1.58	1.16	2.71

S.E. of difference of two

1. D marginal means = 0.403 ton/ac.

2. H marginal means = 1.334 ton/ac.

3. H means at the same level of D = 0.377 ton/ac.

4. D means at the same level of H = 0.519 ton/ac.

Crop :- Potato.

Ref :- U.P. 50(7).

Site :- Govt. Potato Res. Farm, Farrukhabad.

Type :- 'C'.

Object :- To find out suitable spacings for *Gola* variety of Potato.

## 1. BASAL CONDITIONS:

(i) (a) Nil. (b) *Sanai* for green manuring. (c) Nil. (ii) (a) Loam. (b) N.A. (iii) 11.10.1950. (iv) (a) Five ploughings. (b) and (c) N.A. (d) As per treatments. (e) N.A. (v) City refuse at 305 mds./ac. on 10.10.1950 and A/S at 1.5 lb./plot on 21, 22 and 23.11.1950. (vi) *Gola* cold storage large (1.5"-2" diameter). (vii) Irrigated. (viii) 1 weeding and earthing up. (ix) N.A. (x) 9.1.1951.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 4 row spacings :  $R_1=1.25'$ ,  $R_2=1.5'$ ,  $R_3=1.75'$  and  $R_4=2'$ .(2) 2 seed spacings :  $S_1=6''$  and  $S_2=9''$ .

## 3. DESIGN :

(i)  $2 \times 4$  Fact. in R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a) and (b)  $18' \times 12'$ . (v) Nil. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Nil. (iii) Germination and potato yield. (iv) (a) to (c) No. (v) (a) and (b) No. (vi) Nil. (vii) Experiment conducted by E.B.(R).

## 5. RESULTS :

(i) 9.93 ton/ac.

(ii) 0.893 ton/ac.

(iii) Only R and S effects are highly significant.

(iv) Av. yield of tuber in ton/ac.

	$R_1$	$R_2$	$R_3$	$R_4$	Mean
$S_1$	11.11	11.30	10.37	9.03	10.45
$S_2$	9.45	10.56	8.61	8.98	9.40
Mean	10.28	10.93	9.49	9.01	9.93

S.E. of marginal mean of S

=0.223 ton/ac.

S.E. of marginal mean of R

=0.316 ton/ac.

S.E. of body of table

=0.447 ton/ac.

Crop :- Potato (*Rabi*).

Ref :- U.P. 52(39).

Site :- Govt. Potato Res. Farm, Farrukhabad.

Type :- 'C'.

Object :- To study the effect of sowing sprouted and unsprouted seed on Potato yield.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Sanai* (for green manuring). (c) Nil. (ii) (a) Loam. (b) N.A. (iii) 27.10.1952. (iv) (a) 5 ploughings. (b) N.A. (c) 207 seeds/plot. (d)  $2' \times 9''$ . (e) N.A. (v) *Sanai* green manuring, city refuse at 175 mds/ac. on 23.10.1952, A/S at 2 seers/plot on 9.12.1952. (vi) *Phulwa* (cold stored). (vii) Irrigated. (viii) 1 weeding and earthing up. (ix) N.A. (x) 8, 9.3.1953.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 2 seed sizes :  $S_1$ =Large and  $S_2$ =Small.(2) 2 conditions of seed :  $D_1$ =sprouted and  $D_2$ =unsprouted.

## 3. DESIGN :

(i)  $2 \times 2$  Fact. in R.B.D. (ii) (a) 4. (b) N.A. (iii) 6. (iv) (a) N.A. (b)  $18' \times 16.5'$ . (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Nil. (iii) Germination and potato yield. (iv) (a) No. (b) No. (c) Nil. (v) (a) and (b) No. (vi) Nil. (vii) The experiment was conducted by E.B.R.

## 5. RESULTS :

- (i) 8.43 ton/ac.  
 (ii) 0.774 ton/ac.  
 (iii) None of the effects is significant.  
 (iv) Av. yield of tuber in ton/ac.

	S <sub>1</sub>	S <sub>2</sub>	Mean
D <sub>1</sub>	8.46	8.60	8.53
D <sub>2</sub>	8.89	7.77	8.33
Mean	8.68	8.18	8.43

S.E. of any marginal mean = 0.223 ton/ac.  
 S.E. of body of table = 0.316 ton/ac.

Crop :- Potato.

Ref :-U.P. 49(121).

Site :- Govt. Botanical Gardens, Agri. College Kanpur. Type :- 'C'.

Object :- To study the productivity of seeds raised from cut and whole tubers and sprouts of Potato.

## 1. BASAL CONDITIONS :

- (i) (a) to (c) N.A. (ii) (a) Sandy loam. (b) N.A. (iii) 25.12.1949. (iv) (a) ploughed twice by victory plough followed by *pata*. (b) N.A. (c) N.A. (d) 1.75' x .75'. (e) N.A. (v) 50 lb. of A/S and 20 lb. of Super on the entire field. (vi) N.A. (vii) N.A. (viii) N.A. (ix) N.A. (x) N.A.

## 2. TREATMENTS :

1. Seeds raised from whole tubers.
2. Seeds raised from cut tubers.
3. Seeds raised from sprouts.

## 3. DESIGN :

- (i) R.B.D. (ii) (a) 3. (b) 344 sq. ft. (iii) 2. (iv) (a) N.A. (b) 115 sq. ft. (v) N.A. (vi) Yes.

## 4. GENERAL :

- (i) N.A. (ii) N.A. (iii) Potato yield. (iv) (a) N.A. (b) N.A. (c) N.A. (v) (a) N.A. (b) N.A. (vi) Nil. (vii) The experiment was conducted by P.A.C. Plot wise yield—N.A.

## 5. RESULTS :

- (i) 20.94 ton/ac.  
 (ii) and (iii) N.A.  
 (iv) Av. yield of potato in ton/ac.

Treatment	Av. yield
1.	20.43
2.	19.89
3.	22.50
S.E./mean	= N.A.

Crop :- Potato.

Ref :-U.P. 50(155).

Site :- Govt. Botanical Gardens, Agri. College, Kanpur. Type :- 'C'.

Object :- To study the effect of different sizes of seeds sown by different methods.

## 1. BASAL CONDITIONS :

- (i) (a) N.A. (b) Potato. (c) 50 lbs of A/S and 20 lb of Super. (ii) (a) Sandy loam. (b) N.A. (iii) 18.10.1950. (iv) (a) ploughing by victory plough followed by *pata*. (b) As per treatments. (c) N.A. (d) 1.75' x .75'. (e) N.A. (v) N.A. (vi) N.A. (vii) N.A. (viii) N.A. (ix) N.A. (x) N.A.



## 2. TREATMENTS :

## Main-plot treatments :

2 sizes of potato seeds :  $S_1$ =Small (1.77 cm) and  $S_2$ =Medium (2.5 cm).

## Sub-plot treatments :

3 methods of planting :  $M_1$ =Flat,  $M_2$ =Furrow and  $M_3$ =Ridge.

## 3. DESIGN :

(i) Split plot. (ii) (a) 2 main-plots/block and 3 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) N.A. (b) 172 sq. ft. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) N.A. (iii) Potato yield. (iv) (a) N.A. (b) N.A. (c) N.A. (v) (a) N.A. (b) N.A. (vi) Nil. (vii) The experiment was conducted by P.A.C.

## 5. RESULTS :

- (i) 4.65 ton/ac.  
 (ii) (a) 1.633 ton/ac.  
 (b) 0.930 ton/ac.  
 (iii) None of the effects is significant.  
 (iv) Av. yield of potato in ton/ac.

	$M_1$	$M_2$	$M_3$	Mean
$S_1$	3.60	4.18	5.10	4.29
$S_2$	5.17	5.78	5.06	5.00
Mean	4.38	4.48	5.08	4.65

## S.E. of difference of two

1. S marginal means =0.770 ton/ac.  
 2. M marginal means =0.537 ton/ac.  
 3. M means at the same level of S =0.760 ton/ac.  
 4. S means at the same level of M =0.989 ton/ac.

Crop :-Potato.

Ref :-U.P. 50(156).

Site :-Govt. Botanical Gardens, Agri. College, Kanpur. Type :-'C'.

Object :—To study the effect of different sizes of seed sown at different depths.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) Potato. (c) 50 lb of A/S and 20 lb of Super. (ii) (a) Sandy loam. (b) N.A. (iii) 15.10.1950.  
 (iv) (a) Ploughed twice by victory plough followed by *pata*. (b) N.A. (c) N.A. (d) Spacing between rows 14" and between plants 9". Number of tubers in a row 24. (e) —. (v) 50 lb of A/S and 20 lb of Super on the entire field. (vi) N.A. (vii) N.A. (viii) N.A. (ix) N.A. (x) N.A.

## 2. TREATMENTS :

## Main-plot treatments :

3 sizes of potato seeds :  $S_1$ =Small (1.77 cm):  $S_2$ =Medium (2.5 cm) and  $S_3$ =Large (3.9 cm).

## Sub-plot treatments :

3 depths of sowing :  $D_1$ =2",  $D_2$ =2½" and  $D_3$ =3".

## 3. DESIGN :

(i) Split-plot. (ii) (a) 3 main-plots/block and 3 sub-plots/main plot. (b) N.A. (iii) 6. (iv) (a) N.A. (b) 93.35 sq. ft. (v) 3½' border. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) N.A. (iii) Potato yield. (iv) (a) N.A. (b) N.A. (c) N.A. (v) (a) N.A. (b) N.A. (vi) Nil (vii) The plot wise yield data is N.A. The experiment was conducted by P.A.C.

## 5. RESULTS :

- (i) 7.64 ton/ac.  
 (ii) (a) 0.587 ton/ac.  
 (b) 0.603 ton/ac.  
 (iii) S effect and interaction S×D are highly significant while D effect is significant.  
 (iv) Av. yield of potato in ton/ac.

	D <sub>1</sub>	D <sub>2</sub>	D <sub>3</sub>	Mean
S <sub>1</sub>	6.76	7.01	7.02	6.96
S <sub>2</sub>	7.83	8.23	8.14	8.07
S <sub>3</sub>	7.34	8.03	8.26	7.88
Mean	7.31	7.79	7.81	7.64

S.E. of difference of two

1. S marginal means = 0.196 ton/ac.  
 2. D marginal means = 0.201 ton/ac.  
 3. D means at the same level of S = 3.348 ton/ac.  
 4. S means at the same level of D = 0.345 ton/ac.

Crop :- Potato.

Ref :- U.P. 49(118).

Site :- Govt. Botanical Gardens, Agri. College, Kanpur. Type :- 'C'.

Object :- To study the effect of different sizes of Potato seeds on growth and yield.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) Cucurbity. (c) N.A. (ii) (a) Sandy loam. (b) N.A. (iii) N.A. (iv) (a) Ploughed twice by victory plough followed by *pata*. (b) and (c) N.A. (d) 1.75' × .75'. (e) N.A. (v) 50 lb. of A/S and 20 lb. of Super to the entire field. (vi) to (x) N.A.

## 2. TREATMENTS :

3 sizes of potato seeds : S<sub>1</sub> = 1", S<sub>2</sub> = 1" and S<sub>3</sub> = 1 1/4".

## 3. DESIGN :

(i) R.B.D. (ii) (a) 3. (b) N.A. (iii) 6. (iv) (a) and (b) 219 sq. ft. (v) Border 3 1/4'. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) N.A. (iii) Potato yield. (iv) (a) to (c) N.A. (v) (a) and (b) N.A. (vi) Nil. (vii) Experiment was conducted by P.A.C.

## 5. RESULTS :

- (i) 12.15 ton/ac.  
 (ii) 0.8643 ton/ac.  
 (iii) Treatment differences are significant.  
 (iv) Av. yield of potato in ton/ac.

Treatment	Av. yield
S <sub>1</sub>	11.07
S <sub>2</sub>	12.58
S <sub>3</sub>	12.81
S.E./mean	= 0.3528 ton/ac.

Crop :- Potato (*Rabi*).

Ref :- U.P. 49(50).

Site :- Govt. Res. Farm, Kanpur.

Type :- 'C'.

Object :- To study the effect of different methods and dates of sowing on Potato yield.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) and (c) N.A. (ii) (a) Sandy loam. (b) N.A. (iii) As per treatments. (iv) (a) N.A. (b) As per treatments. (c) to (e) N.A. (v) Nil. (vi) *Phulwa* large (cold storage). (vii) Irrigated. (viii) 2 earthings. (ix) N.A. (x) 12 to 13.4.1950.

**2. TREATMENTS :**

All combinations of (1) and (2)

(1) 2 dates of sowing :  $D_1=11.11.1949$  and  $D_2=15.11.1949$ .(2) 2 methods of sowing :  $M_1=Ridge$  and  $M_2=Flat$ .**3. DESIGN :**(i)  $2 \times 2$  Fact. in R.B.D. (ii) (a) 4. (b) N.A. (iii) 6. (iv) (a) N.A. (b)  $28' \times 18'$ . (v) N.A. (vi) Yes.**4. GENERAL :**

(i) Good. (ii) Nil. (iii) Potato yield. (iv) (a) and (b) No. (c) N.A. (v) (a) No. (b) N.A. (vi) Nil.

(vii) The experiment conducted by E.B. (R).

**5. RESULTS :**

(i) 7.71 ton/ac.

(ii) 0.681 ton/ac.

(iii) None of the effects is significant.

(iv) Av. yield of potato in ton/ac.

	$D_1$	$D_2$	Mean
$M_1$	8.03	7.71	7.87
$M_2$	7.36	7.73	7.54
Mean	7.70	7.72	7.71

S.E. of any marginal mean = 0.197 ton/ac.

S.E. of body of table = 0.278 ton/ac.

Crop :- Potato (Rabi).

Site :- Govt. Res. Farm, Kanpur.

Ref :- U.P. 50(16).

Type :- 'C'.

Object :- To study the effect of different sowing methods on Potato yield.

**1. BASAL CONDITIONS :**(i) (a) Nil. (b) *Sanal* for green manuring. (c) Nil. (ii) (a) Loam. (b) N.A. (iii) 2.11.1950. (iv) (a) N.A. (b) As per treatments. (c) 384 seeds/plot. (d)  $2' \times 9'$ . (e) N.A. (v) *Sanal* turned in for green manuring. (vi) *Kalmi sala*. (vii) Irrigated. (viii) 2 earthings up. (ix) N.A. (x) 13 and 14.4.1951.**2. TREATMENTS :**

All combinations of (1) and (2)

(1) 2 seed sizes :  $S_1=Large$  and  $S_2=Small$ .(2) 2 directions of sowing :  $D_1=North-south$  and  $D_2=East-west$ .**3. DESIGN :**(i)  $2 \times 2$  Fact. in R.B.D. (ii) (a) 4. (b) N.A. (iii) 6. (iv) (a) and (b)  $24' \times 18'$ . (v) Nil. (vi) Yes.**4. GENERAL :**

(i) Good. (ii) Nil. (iii) Tubers yield. (iv) (a) and (b) No. (c) N.A. (v) (a) No. (b) N.A. (vi) Nil.

(vii) The expt. was conducted by E.B.(R).

**5. RESULTS :**

(i) 8.99 ton/ac.

(ii) 0.703 ton/ac.

(iii) Only S effect is significant.

(iv) Av. yield of potato in ton/ac.

	S <sub>1</sub>	S <sub>2</sub>	Mean
M <sub>1</sub>	9.31	8.61	8.96
M <sub>2</sub>	9.45	8.58	9.01
Mean	9.38	8.60	8.99

S.E. of any marginal mean = 0.204 ton/ac.  
S.E. of body of table = 0.289 ton/ac.

Crop :- Potato (*Rabi*).

Ref :- U.P. 50(18).

Site :- Govt. Res. Farm, Kanpur.

Type :- 'C'.

Object :- To study the effect of different sowing methods on Potato yield.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Maize. (c) Nil. (ii) (a) Loam. (b) N.A. (iii) 5.11.1950. (iv) (a) N.A. (b) As per treatments. (c) N.A. (d) 1.75' x .75'. (e) N.A. (v) F.Y.M. at 200 mds./ac. broadcast during preparation of field. (vi) *Phulwa*. (vii) Irrigated. (viii) One earthing up. (ix) N.A. (x) 28 and 29.4.1951.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 2 sizes of the seed : S<sub>1</sub>=Large and S<sub>2</sub>=Small.(2) 2 methods of sowing : M<sub>1</sub>=Ridge and M<sub>2</sub>=Flat.

## 3. DESIGN :

(i) 2x2 Fact. in R.B.D. (ii) (a) 4. (b) N.A. (iii) 6. (iv) (a) and (b) 24.5' x 15'. (v) Nil. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Traces of mosaic incidence. (iii) Tuber yield. (iv) (a) 1950 to 1952. (b) No. (c) N.A. (v) (a) No. (b) N.A. (vi) Nil. (vii) The expt. was conducted by E.B.(R).

## 5. RESULTS :

(i) 6.29 ton/ac.

(ii) 0.735 ton/ac.

(iii) Only S effect is significant.

(iv) Av. yield of potato in ton/ac.

	M <sub>1</sub>	M <sub>2</sub>	Mean
S <sub>1</sub>	7.06	6.37	6.72
S <sub>2</sub>	5.59	6.13	5.86
Mean	6.33	6.25	6.29

S.E. of any marginal mean = 0.212 ton/ac.  
S.E. of body of table = 0.300 ton/ac.

Crop :- Potato (*Rabi*).

Ref :- U.P. 51(2).

Site :- Govt. Res. Farm, Kanpur.

Type :- 'C'.

Object :- To study the effect of different sowing methods on Potato yield.

## 1. BASAL CONDITIONS :

(i) (a) No. (b) Maize. (c) No. (ii) (a) Loam. (b) N.A. (iii) 23, 24.10.1951. (iv) (a) N.A. (b) As per treatments. (c) N.A. (d) Seeds 10" apart. (e) N.A. (v) F.Y.M. (vi) *Kalmi sala*. (vii) Irrigated. (viii) One earthing. (ix) N.A. (x) 8.3.1952.

**2. TREATMENTS :**

All combinations of (1) and (2)

- (1) 2 sizes of the seed :  $S_1$ =Large and  $S_2$ =Small.  
 (2) 2 methods of sowing :  $M_1$ =Ridge and  $M_2$ =Flat.

**3. DESIGN :**(i)  $2 \times 2$  Fact. in R.B.D. (ii) (a) 4. (b) N.A. (iii) 8. (iv) (a) F.A. (b)  $16' \times 18'$ . (v) N.A. (vi) Yes.**4. GENERAL :**

(i) Good. (ii) No. (iii) Potato yield. (iv) (a) 1950—1952. (b) No. (c) N.A. (v) (a) No. (b) N.A. (vi) Nil. (vii) The experiment was conducted by E.B.(R).

**5. RESULTS :**

- (i) 5.79 ton/ac.  
 (ii) 0.983 ton/ac.  
 (i.i) Only M effect is significant.  
 (iv) Av. yield of potato in ton/ac.

	$M_1$	$M_2$	Mean
$S_1$	5.66	6.84	6.07
$S_2$	5.12	5.90	5.51
Mean	5.39	6.19	5.79

S.E. of any marginal mean = 0.246 ton/ac.  
 S.E. of body of table = 0.348 ton/ac.

**Crop :- Potato (Rabi).****Site :- Govt. Res. Farm, Kanpur.****Ref :- U.P. 52(24).****Type :- 'C'.****Object :-**To study the effect of different sowing methods on yield of Potato.**1. BASAL CONDITIONS :**

(i) (a) No. (b) Green manuring with *Sanai*. (c) No. (ii) (a) Loam. (b) N.A. (iii) 24, 25.10.1952. (iv) (a) N.A. (b) As per treatments. (c) 240 seeds/plot. (d)  $1.75' \times 9'$ . (e) N.A. (v) *Sanai* was turned in and castor cake at 20 mds/ac. 3 weeks before sowing. (vi) *Phulwa*. (vii) Irrigated. (viii) 3 earthings. (ix) N.A. (x) 12.3.1953.

**2. TREATMENTS :**

All combinations of (1) and (2)

- (1) 2 sizes of the seed :  $S_1$ =Large and  $S_2$ =Small.  
 (2) 2 methods of sowing :  $M_1$ =Ridge and  $M_2$ =Flat.

**3. DESIGN :**(i)  $2 \times 2$  Fact. in R.B.D. (ii) (a) 4. (b) N.A. (iii) 6. (iv) (a) N.A. (b)  $21' \times 15'$ . (v) N.A. (vi) Yes.**4. GENERAL :**

(i) Good. (ii) Traces of mosaic incidence. (iii) Potato yield. (iv) (a) 1950—1952. (b) No. (c) N.A. (v) (a) No. (b) N.A. (vi) Nil. (vii) The experiment was conducted by E.B.(R).

**5. RESULTS :**

- (i) 15.19 ton/ac.  
 (ii) 1.106 ton/ac.  
 (iii) Only M effect is highly significant.

(iv) Av. yield of potato in ton/ac.

	M <sub>1</sub>	M <sub>2</sub>	Mean
S <sub>1</sub>	14.29	16.59	15.44
S <sub>2</sub>	14.16	15.71	14.93
Mean	14.22	16.15	15.19

S.E. of any marginal mean  
S.E. of body of table

=0.319 ton/ac.  
=0.451 ton/ac.

Crop :- Potato (*Rabi*).

Ref :- U.P. 49(44).

Site :- Govt. Res. Farm, Kanpur.

Type :- 'C'.

Object :- To study the effect of sowing dates on yield of Potato.

## 1. BASAL CONDITIONS :

(i) (a) No. (b) and (c) N.A. (ii) (a) Sandy loam. (b) N.A. (iii) As per treatments. (iv) (a) to (e) N.A. (v) Nil. (vi) *Phulwa*. (vii) Unirrigated. (viii) 2 earthings. (ix) N.A. (x) 17.4.1950.

## 2. TREATMENTS :

6 sowing dates : D<sub>1</sub>=18.10.1949, D<sub>2</sub>=8.11.1949, D<sub>3</sub>=15.11.1949, D<sub>4</sub>=22.11.1949, D<sub>5</sub>=29.11.1949 and D<sub>6</sub>=6.12.1949.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 27' × 8'. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Nil. (iii) Potato yield. (iv) (a) 1948—continued. (b) No. (c) N.A. (v) (a) No. (b) N.A. (vi) Nil. (vii) The experiment was conducted by E.B. (R).

## 5. RESULTS :

(i) 5.89 ton/ac.  
(ii) 0.763 ton/ac.  
(iii) Treatment differences are highly significant.  
(iv) Av. yield of potato in ton/ac.

Treatment	Av. yield
D <sub>1</sub>	6.11
D <sub>2</sub>	8.06
D <sub>3</sub>	6.39
D <sub>4</sub>	6.44
D <sub>5</sub>	5.00
D <sub>6</sub>	3.33
S.E./mean	=0.381 ton/ac.

Crop :- Potato (*Rabi*).

Ref :- U.P. 50 (1).

Site :- Govt. Res. Farm, Kanpur.

Type :- 'C'.

Object :- To study the effect of sowing dates on Potato yield.

## 1. BASAL CONDITIONS :

(i) (a) No. (b) *Jowar* for fodder. (c) No. (ii) (a) Loamy with kankars. (b) N.A. (iii) As per treatments. (iv) (a) to (c) N.A. (d) 1½' × ½'. (e) N.A. (v) Green manure with castor cake at 12 md./ac. (vi) *Phulwa* (well sprouted). (vii) Irrigated. (viii) 2 earthings. (ix) N.A. (x) 7 to 9.4.1951.

## 2. TREATMENTS :

8 sowing dates :  $D_1=14.10.1950$ ,  $D_2=21.10.1950$ ,  $D_3=28/29.10.1950$ ,  $D_4=5.11.1950$ ,  $D_5=12.11.1950$ ,  
 $D_6=19/20.11.1950$ ,  $D_7=27.11.1950$  and  $D_8=4.12.1950$ .

## 3. DESIGN :

(i) R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a) N.A. (b)  $22.5' \times 4.5'$ . (v) N.A. (vi) No.

## 4. GENERAL :

(i) Good. (ii) Traces of mosaic incidence and white fungus growing on potato tubers were observed.  
 (iii) Potato yield. (iv) (a) 1948-continued. (b) No. (c) N.A. (v) (a) No. (b) N.A. (vi) Nil. (vii)  
 The experiment was conducted by E.B. (R).

## 5. RESULTS :

- (i) 13.96 ton/ac.  
 (ii) 1.529 ton/ac.  
 (iii) Treatment differences are highly significant.  
 (iv) Av. yield of potato in ton/ac.

Treatment	Av. yield	Treatment	Av. yield
$D_1$	14.22	$D_5$	12.94
$D_2$	13.73	$D_6$	14.82
$D_3$	11.95	$D_7$	17.29
$D_4$	13.14	$D_8$	13.63

S.E./mean = 0.765 ton/ac.

Crop :- Potato (*Rabi*).

Site :- Govt. Res. Farm, Kanpur.

Ref :- U.P. 51(1).

Type :- 'C'.

Object :- To study the effect of sowing dates on Potato yield.

## 1. BASAL CONDITIONS:

(i) (a) No. (b) Green manuring with *Sanai*. (c) No. (ii) (a) Loam. (b) N.A. (iii) As per treatments.  
 (iv) (a) to (c) N.A. (d)  $1.5' \times 9'$ . (e) N.A. (v) *Sanai* was turned in. (vi) *Phulwa*. (vii) Irrigated. (viii) 3  
 earthings. (ix) N.A. (x) 16.3.1952.

## 2. TREATMENTS :

6 sowing dates :  $D_1=19.10.1951$ ,  $D_2=26.10.1951$ ,  $D_3=2.11.1951$ ,  $D_4=9.11.1951$ ,  $D_5=16.11.1951$  and  
 $D_6=23.11.1951$ .

## 3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) N.A. (b)  $21' \times 6'$ . (v) N.A. (vi) No.

## 4. GENERAL :

(i) Very good. (ii) Mosaic incidence, very very minute. (iii) Potato yield. (iv) (a) 1948—continuing.  
 (b) Yes. (c) N.A. (v) (a) No. (b) N.A. (vi) Nil. (vii) The experiment was conducted by E.B. (R). Only  
 three lines instead of four lines were sown in the last treatment.

## 5. RESULTS :

- (i) 7.47 ton/ac.  
 (ii) 0.870 ton/ac.  
 (iii) Treatment differences are significant.  
 (iv) Av. yield of potato in ton/ac.

Treatment	Av. yield
$D_1$	8.18
$D_2$	8.65
$D_3$	7.38
$D_4$	7.14
$D_5$	7.14
$D_6$	6.35
S.E./mean	= 0.435 ton/ac.

Crop :-Potato (*Rabi*).

Ref :-U.P. 52(21).

Site :-Govt. Res. Farm, Kanpur.

Type :-'C'.

Object :-To study the effect of sowing and harvesting dates on Potato yield.

## 1. BASAL CONDITIONS :

(i) (a) No. (b) N.A. (c) N.A. (ii) (a) Loam. (b) N.A. (iii) As under treatments. (iv) (a) to (c) N.A. (d) 1.75'×9". (e) N.A. (v) N.A. (vi) *Phulwa*. (vii) Irrigated. (viii) 1 earthing. (ix) N.A. (x) As under treatments.

## 2. TREATMENTS :

Main-plot treatments :

8 sowing dates : D<sub>1</sub>=15.10.1952, D<sub>2</sub>=22.10.1952, D<sub>3</sub>=29.10.1952, D<sub>4</sub>=5.11.1952, D<sub>5</sub>=12.11.1952, D<sub>6</sub>=19.11.1952, D<sub>7</sub>=26.11.1952. and D<sub>8</sub>=3.12.1952.

Sub-plot treatments :

4 harvesting dates : H<sub>1</sub>=31.1.1953, H<sub>2</sub>=15.2.1953, H<sub>3</sub>=3.3.1953 and H<sub>4</sub>=18.3.1953.

## 3. DESIGN :

(i) Split-plot. (ii) (a) 8 main-plots/block and 4 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 21'×1.5'. (v) N.A. (vi) No.

## 4. GENERAL :

(i) Good. (ii) No. (iii) Yield of potatoes. (iv) (a) 1948-continuing. (b) Yes. (c) N.A. (v) (a) No. (b) N.A. (vi) Nil. (vii) The experiment was conducted by E.B. (R).

## 5. RESULTS :

- (i) 10.60 ton/ac.  
 (ii) (a) 1.170 ton/ac.  
       (b) 1.184 ton/ac.  
 (iii) All the effects are highly significant.  
 (iv) Av. yield of potato in t. n/ac.

	D <sub>1</sub>	D <sub>2</sub>	D <sub>3</sub>	D <sub>4</sub>	D <sub>5</sub>	D <sub>6</sub>	D <sub>7</sub>	D <sub>8</sub>	Mean
H <sub>1</sub>	13.88	9.96	8.71	7.61	5.87	6.07	3.47	2.53	7.26
H <sub>2</sub>	12.37	13.50	12.55	10.56	9.11	8.60	7.49	6.86	10.13
H <sub>3</sub>	12.06	12.47	11.89	13.34	11.43	11.02	10.32	9.73	11.53
H <sub>4</sub>	13.23	14.13	13.44	14.44	13.22	12.22	12.53	13.60	13.48
Mean	12.88	12.52	11.65	11.49	9.91	9.73	8.45	8.18	10.60

## S.E. of difference of two

1. D marginal means =0.414 ton/ac.  
 2. H marginal means =0.296 ton/ac.  
 3. H means at the same level of D =0.837 ton/ac.  
 4. D means at the same level of H =0.835 ton/ac.

Crop :-Potato (*Rabi*).

Ref :-U.P. 53(1).

Site :-Govt. Res. Farm, Kanpur.

Type :-'C'.

Object :-To study the effect of different sowing and harvesting dates on Potato yield.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy (c) Nil. (ii) (a) Loam. (b) N.A. (iii) As per treatments. (iv) (a) to (c) N.A. (d) Rows 1½' apart, distance between treatments 1½', between blocks 3' and seed to seed spacing 6". (e) N.A. (v) 50 mds./ac. of night soil. (vi) *Phulwa*. (vii) Irrigated. (viii) 3 earthings. (ix) N.A. (x) As per treatments.



## 2. TREATMENTS :

## Main-plot treatments :

9 sowing dates :  $D_1=8.10.1953$ ,  $D_2=15.10.1953$ ,  $D_3=22.10.1953$ ,  $D_4=29.10.1953$ ,  $D_5=5.11.1953$ ,  
 $D_6=12.11.1953$ ,  $D_7=19.11.1953$ ,  $D_8=26.11.1953$  and  $D_9=3.12.1953$ .

## Sub-plot treatments :

4 harvesting dates :  $H_1=10.2.1954$ ,  $H_2=25.2.1954$ ,  $H_3=12.3.1954$  and  $H_4=24.3.1954$ .

## 3. DESIGN :

(i) Split-plot. (ii) (a) 9 main-plots/block and 4 sub-plots/main-plot. (b) N.A. (iii) 6. (iv) (a) N.A.  
 (b)  $15' \times 1\frac{1}{2}'$ . (v) N.A. (vi) No.

## 4. GENERAL :

(i) Good. (ii) Mosaic incidence below 5%. Checked by using bigger seed size and cut seed. (iii) Germination and yield of potato. (iv) (a) 1948—continuing. (b) Yes. (c) N.A. (v) (a) No. (b) N.A. (vi) Nil. (vii) The expt. was conducted by E.B.(R).

## 5. RESULTS :

- (i) 7.00 ton/ac.  
 (ii) (a) 1.313 ton/ac.  
 (b) 1.009 ton/ac.  
 (iii) Both D and H effects are highly significant while interaction is significant.  
 (iv) Av. yield of potato in ton/ac.

	D <sub>1</sub>	D <sub>2</sub>	D <sub>3</sub>	D <sub>4</sub>	D <sub>5</sub>	D <sub>6</sub>	D <sub>7</sub>	D <sub>8</sub>	D <sub>9</sub>	Mean
H <sub>1</sub>	6.76	6.86	7.78	7.67	7.54	6.91	5.33	5.78	4.35	6.55
H <sub>2</sub>	6.89	7.59	7.41	8.22	8.25	7.62	6.59	6.67	5.86	7.23
H <sub>3</sub>	6.22	7.24	8.25	7.18	8.13	7.62	6.67	7.49	6.41	7.25
H <sub>4</sub>	6.22	7.24	8.06	6.16	7.37	7.87	6.79	7.37	5.65	6.97
Mean	6.52	7.23	7.88	7.31	7.82	7.50	6.34	6.83	5.57	7.00

S.E. of the difference of two

1. D marginal means =0.379 ton/ac.  
 2. H marginal means =0.194 ton/ac.  
 3. H means at the same level of D =0.582 ton/ac.  
 4. D mean at the same level of H =0.631 ton/ac.

Crop :-Potato (Rabi).

Site :-Govt. Res. Farm, Kanpur.

Ref :-U.P. 52(25).

Type :-'C'.

Object :-To study the effect of spacing and seed size on Potato yield.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) Green manuring with *sanai*. (c) No. (ii) (a) Loam. (b) N.A. (iii) 26.10.1952. (iv) (a) and (b) N.A. (c) to (e) As per treatments. (v) *Sanai* was turned in. (vi) *Phulwa*. (vii) Irrigated. (viii) 2 earthings. (ix) N.A. (x) 19.3.1953.

## 2. TREATMENTS :

Treatment	Seed size	Spacing	particulars	No. of seeds/row
1.	Small	9"	Single	27
2.	Small	9"	Double	54
3.	Large	9"	Single	27
4.	Medium	9"	Single	27
5.	Medium	9"	Double	54
6.	Small	6"	Single	40
7.	Small	6"	Double	80
8.	Large	6"	Single	40
9.	Medium	6"	Single	40
10.	Medium	6"	Double	80
11.	Small	4 $\frac{1}{2}$ "	Single	54
12.	Medium	4 $\frac{1}{2}$ "	Single	54
13.	Small	3"	Single	80
14.	Medium	3"	Single	80

## 3. DESIGN :

(i) R.B.D. (ii) (a) 14. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 1/994.97 ac. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Nil. (iii) Potato yield. (iv) (a) 1952—continued. (b) No. (c) N.A. (v) (a) No. (b) N.A. (vi) Nil. (vii) The expt. was conducted by E.B.(R).

## 5. RESULTS :

(i) 9.01 ton/ac.

(ii) 1.436 ton/ac.

(iii) Treatment differences are highly significant.

(iv) Av. yield of potato in ton/ac.

Treatment	Av. yield	Treatment	Av. yield
1.	8.00	8.	9.54
2.	7.92	9.	8.35
3.	10.36	10.	9.52
4.	7.52	11.	8.10
5.	9.99	12.	10.47
6.	7.75	13.	7.96
7.	8.50	14.	12.17

S.E./mean = 0.718 ton/ac.

Crop :- Potato (*Rabi*).

Site :- Govt. Res. Farm, Kanpur.

Ref :- U.P. 53(6).

Type :- 'C'.

Object :- To study the effect of spacing and seed size on Potato yield.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Maize. (c) Nil. (ii) (a) Loam. (b) N.A. (iii) 28.10.1953. (iv) (a) to (c) N.A. (d) Rows 21" apart. (e) As per treatments. (v) 100 mds/ac. of night soil. (vi) *Phulwa*. (vii) Irrigated. (viii) 2 earthings. (ix) N.A. (x) 5.3.1954.

## 2. TREATMENTS :

Treatment	Seed size	Spacing	particulars	No. of seeds per row
1.	Small	9"	Single	20
2.	Small	9"	Double	40
3.	Large	9"	Single	20
4.	Medium	9"	Single	20
5.	Medium	9"	Double	40
6.	Small	6"	Single	30
7.	Small	6"	Double	60
8.	Large	6"	Single	30
9.	Medium	6"	Single	30
10.	Medium	6"	Double	60
11.	Small	4.5"	Single	40
12.	Medium	4.5"	Single	40
13.	Small	3"	Single	60
14.	Medium	3"	Single	60

## 3. DESIGN :

(i) R.B.D. (ii) (a) 14. (b) N.A. (iii) 4. (iv) (a) and (b) 15'×1½'. (v) N.A. (vi) No.

## 4. GENERAL :

(i) Good. (ii) Below 5% incidence of mosaic. (iii) Germination and yield of potato. (iv) (a) 1952—continued. (b) Yes. (c) N.A. (v) (a) No. (b) N.A. (vi) Nil. (vii) The experiment was conducted by E.B.(R).

## 5. RESULTS :

(i) 10.79 ton/ac.

(ii) 1.608 ton/ac.

(iii) Treatment differences are highly significant.

(iv) Av. yield of potato in ton/ac.

Treatment	Av. yield	Treatment	Av. yield
1.	9.60	8.	11.83
2.	10.50	9.	10.83
3.	11.22	10.	13.45
4.	9.74	11.	9.00
5.	12.83	12.	11.19
6.	8.60	13.	9.69
7.	10.86	14.	11.72
	S.E./mean	0.804 ton/ac.	

Crop :- Potato (*Rabi*).

Ref:- U.P. 48(23).

Site :- Govt. Res. Farm, Kanpur.

Type :- 'C'.

Object :- To study the effect of seed size and spacing on Potato.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Sanai* for G.M. (c) Nil. (ii) (a) Sandy loam. (b) N.A. (iii) 27.10.1948. (iv) (a) to (c) N.A. (d) As per treatments. (e) N.A. (v) Applied 9 C.L. of F.Y.M. (vi) *Phulwa*. (vii) Irrigated. (viii) 1 earthing. (ix) N.A. (x) 2 to 5.3.1949.

## 2. TREATMENTS :

All the 12 combinations of (1), (2) and (3)

- (1) 2 seed sizes :  $S_1$ =small ( $\frac{1}{2}'' \times 1''$ ) and  $S_2$ =large ( $1\frac{1}{2}'' \times 2''$ ).  
 (2) 3 spacings between plants :  $P_1=6''$ ,  $P_2=9''$  and  $P_3=12''$ .  
 (3) 2 spacing between rows :  $R_1=1\frac{1}{2}'$  and  $R_2=2'$ .

## 3. DESIGN :

(i)  $3 \times 2 \times 2$  Fact. in R.B.D. (ii) (a) 12. (b) N.A. (iii) 4. (iv) (a) N.A. (b)  $24' \times 18'$ . (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Nil. (iii) Yield of potato. (iv) (a) 1945—1949. (b) No. (c) N.A. (v) (a) No. (b) N.A. (vi) Nil. (vii) The experiment was conducted by E.B.(R). Crop failed during 1949.

## 5. RESULTS :

- (i) 5.39 ton/ac.  
 (ii) 0.246 ton/ac.  
 (iii) S effect is highly significant, interaction  $S \times P$  is significant while all other effects are not significant.  
 (iv) Av. yield of potato in ton/ac.

	$P_1$	$P_2$	$P_3$	Mean	$R_1$	$R_2$
$S_1$	5.20	4.97	5.13	5.10	5.06	5.14
$S_2$	5.51	5.66	5.90	5.69	5.67	5.71
Mean	5.36	5.31	5.51	5.39	5.36	5.42
$R_1$	5.31	5.28	5.50			
$R_2$	5.40	5.34	5.52			

S.E. of marginal mean of S or R

= 0.050 ton/ac.

S.E. of marginal mean of P

= 0.061 ton/ac.

S.E. of body of table  $S \times R$ 

= 0.071 ton/ac.

S.E. of body of table  $S \times P$  or  $R \times P$ 

= 0.087 ton/ac.

Crop :- Potato (*Rabi*).  
Site :- Govt. Res. Farm, Kanpur.

Ref :- U.P. 52(23).  
Type :- 'C'.

Object :- To study the effect of earthing up of Potato crop on yield.

1. BASAL CONDITIONS :

(i) (a) No. (b) Green manuring for fodder. (c) No. (ii) (a) Loam. (b) N.A. (iii) 24,25.10.1952.  
(iv) (a) to (c) N.A. (d) 1.75'×6". (e) N.A. (v) Castor cake at 20 mds./ac. (vi) *Phulwa*. (vii) Irrigated.  
(viii) As per treatments. (ix) N.A. (x) 14,15.3.1953.

2. TREATMENTS :

1. One earthing on 9.1.1953.
2. Two earthings on 10.12.1952 and 5.1.1953.
3. Three earthings on 28.11.1952 and 9.1.1953.

In case of treatment '3', only two earthings were done due to vigorous foliage growth of the crop and delay in time of earthing.

3. DESIGN :

(i) R.B.D. (ii) (a) 3. (b) N.A. (iii) 8. (iv) (a) N.A. (b) 21'×15'. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Mosaic incidence in minute form. (iii) Potato yield. (iv) (a) 1952-continued. (b) No.  
(c) N.A. (v) (a) No. (b) N.A. (vi) Nil. (vii) The expt. was conducted by E.B.(R).

5. RESULTS :

- (i) 14.37 ton/ac.
- (ii) 0.782 ton/ac.
- (iii) Treatment differences are not significant.
- (iv) Av. yield of potato in ton/ac.

Treatment	Av. yield
1.	14.00
2.	14.64
3.	14.48
S.E./mean	= 0.276 ton/ac.

Crop :- Potato (*Rabi*).  
Site :- Govt. Res. Farm, Kanpur.

Ref :- U.P. 53(3).  
Type :- 'C'.

Object :- To study the effect of earthing up of Potato on yield.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Sanai* for green manuring. (c) Nil. (ii) (a) Loam. (b) N.A. (iii) 20.10.1953. (iv) (a) and  
(b) N.A. (c) 1.93 cwts./ac. (d) 1.75'×6". (e) N.A. (v) Nil. (vi) *Phulwa*. (vii) Irrigated. (viii) As  
per treatments. (ix) N.A. (x) 9,10.3.1954.

2. TREATMENTS :

1. One earthing on 29.11.1953.
2. Two earthings on 29.11.1953 and 12.12.1953.
3. Three earthings on 29.11.1953, 12.12.1953 and 18.1.1954.

3. DESIGN :

(i) R.B.D. (ii) (a) 3. (b) N.A. (iii) 6. (iv) (a) 22.5'×23.5'. (b) 20'×21'. (v) 1.25' around. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Mosaic incidence below 5% ; Checked by using bigger seed size and cut seed. (iii) Germination and yield of potato. (iv) (a) Yes. 1952-53 continued. (b) No. (c) N.A. (v) (a) No. (b) N.A.  
(vi) Nil. (vii) The expt. was conducted by E.B.(R).

5. RESULTS :

- (i) 8.89 ton/ac.
- (ii) 1.570 ton/ac.
- (iii) Treatment differences are not significant.

## (iv) Av. yield of potato in ton/ac.

Treatment	Av. yield
1.	9.21
2.	9.10
3.	8.37
S.E./mean	=0.641 ton/ac.

Crop :- Potato (*Rabi*).

Ref :- U.P. 48 (25).

Site :- Govt. Res. Farm, Kanpur..

Type :- 'C'.

Object :- To study the effect of different storage methods on yield of Potato.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Sanai* for G.M. (c) Nil. (ii) (a) Sandy loam. (b) N.A. (iii) 11,12.11.1949. (iv) (a) to (e) N.A. (v) F.Y.M. at 34 mds. (vi) *Phulwa*. (vii) Irrigated. (viii) 1 earthing. (ix) N.A. (x) 26, 28, 30.3.1949.

## 2. TREATMENTS :

1. Cold store.
2. Ordinary store.
3. *Phulwa* P-P. store.

Nature of seed material just in sprouting condition.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 3. (b) N.A. (iii) 6. (iv) (a) N.A. (b) 24' x 20'. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Nil. (iii) Potato yield. (iv) (a) and (b) No. (c) N.A. (v) (a) No. (b) N.A. (vi) Nil. (vii) The experiment was conducted by E.B. (R).

## 5. RESULTS :

(i) 4.55 ton/ac.

(ii) 0.397 ton/ac.

(iii) Treatment differences are not significant.

(iv) Av. yield of potato in ton/ac.

Treatment	Av. yield
1.	4.77
2.	4.53
3.	4.36

S.E./mean = 0.162 ton/ac.

Crop :- Potato (*Kharif*).

Ref :- U.P. 53(11).

Site :- Potato Sub-Stn., Kausani.

Type :- 'C'.

Object :- To study the effect of earthing up on yield of Potato.

## 1. BASAL CONDITIONS :

(i) (a) No. (b) Fallow. (c) No. (ii) (a) Hill tract—6075' ht. (b) N.A. (iii) 20.3.1953. (iv) (a) N.A. (b) Flat sown. (c) N.A. (d) 2' x 9". (e) N.A. (v) F.Y.M. on 3.3.1953 and castor cake at 20 md./ac. (vi) Garhwal. (vii) Unirrigated. (viii) 1 weeding. (ix) N.A. (x) 26.8.1953.

## 2. TREATMENTS :

1. No earthing.
2. One earthing.
3. Two earthings.

**3. DESIGN :**

(i) R.B.D. (ii) (a) 3. (b) N.A. (iii) 6. (iv) (a) and (b) 12'×10.5'. (v) Nil. (vi) Yes.

**4. GENERAL :**

(i) Good. (ii) No. (iii) Germination and potato yield. (iv) (a) 1953—continued. (b) and (c) N.A. (v) (a) No. (b) N.A. (vi) Nil. (vii) The experiment was conducted by E.B. (R).

**5. RESULTS :**

- (i) 3.54 ton/ac.  
 (ii) 1.002 ton/ac.  
 (iii) Treatment differences are not significant.  
 (iv) Av. yield of potato in ton/ac.

Treatment	Av. yield
1.	2.91
2.	3.70
3.	4.02
S.E./mean	=0.409 ton/ac.

Crop :-Potato (*Kharif*).

Ref :-U.P. 52(30).

Site :-Potato Sub-Stn., Kausani.

Type :-'C'.

Object :-To determine the optimum sowing dates of Potato.

**1. BASAL CONDITIONS :**

(i) (a) No. (b) Fallow. (c) No. (ii) (a) Loam mixed with gravel. (b) N.A. (iii) As per treatments. (iv) (a), (b) N.A. (c) 20 seeds./row. (d) 2'×9". (e) N.A. (v) F.Y.M. at 90 mds./ac. broadcast at the sowing time. (vi) Garhwal. (vii) Irrigated. (viii) 1 earthing. (ix) N.A. (x) 6.9.1952.

**2. TREATMENTS :**

6 sowing dates : D<sub>1</sub>=10.4.1952, D<sub>2</sub>=17.4.1952, D<sub>3</sub>=24.4.1952, D<sub>4</sub>=1.5.1952, D<sub>5</sub>=8.5.1952 and D<sub>6</sub>=15.5.1952

**3. DESIGN :**

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 2. (iv) (a) N.A. (b) 15'×20'. (v) N.A. (vi) Yes.

**4. GENERAL :**

(i) Good. (ii) Minor [attack of disease occurred. (iii) Potato yield. (iv) (a) 1952—continued. (b) No. (c) N.A. (v) (a) No. (b) N.A. (vi) Nil. (vii) The expt. was conducted by E.B.(R).

**5. RESULTS :**

- (i) 4.78 ton/ac.  
 (ii) 0.735 ton/ac.  
 (iii) Treatment differences are highly significant.  
 (iv) Av. yield of potato in ton/ac.

Treatment	Av. yield
D <sub>1</sub> .	5.98
D <sub>2</sub> .	6.53
D <sub>3</sub> .	5.63
D <sub>4</sub> .	5.88
D <sub>5</sub> .	2.73
D <sub>6</sub> .	1.95
S.E./mean	=0.520 ton/ac.

Crop :- Potato (*Kharif*).  
Site :- Potato Sub-Stn., Kausani.

Ref :- U.P. 53(8).  
Type :- 'C'.

Object :- To determine the optimum sowing time of Potato.

1. BASAL CONDITIONS :

(i) (a) No. (b) Fallow. (c) No. (ii) (a) Loam mixed with gravel, slopy and uneven. (b) N.A. (iii) As per treatments. (iv) (a), (b) N.A. (c) 18 seeds/row. Seed used 2 mds. 24 srs. 12 chs. (d) 2'x9'. (e) N.A. (v) F.Y.M. on 3.8.1953. and castor cake at 20 mds./ac. (vi) Garhwal. (vii) Unirrigated. (viii) First earthing is due when plants are 8"-10" in height. Successive earthings follow at a certain interval to save the crop from exposure to sun and for the developments of shoots. (ix) N.A. (x) 18.8.1953.

2. TREATMENTS :

7 sowing dates : D<sub>1</sub>=16.3.1953, D<sub>2</sub>=23.3.1953, D<sub>3</sub>=30.3.1953, D<sub>4</sub>=6.4.1953, D<sub>5</sub>=13.4.1953, D<sub>6</sub>=20.4.1953 and D<sub>7</sub>=27.4.1953.

3. DESIGN :

(i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 14'x8'. (v) N.A. (vi) Not strictly randomised due to certain practical difficulties.

4. GENERAL :

(i) Good. (ii) No. (iii) Yield and germination of potato. [(iv) (a) 1952—continued. (b) No. (c) N.A. (v) (a) No. (b) N.A. (vi) Nil. (vii) The experiment was conducted by E.B.(R).

5. RESULTS :

- (i) 3.54 ton/ac.  
(ii) 0.957 ton/ac.  
(iii) Treatment differences are highly significant.  
(iv) Av. yield of potato in ton/ac.

Treatment	Av. yield
D <sub>1</sub>	5.63
D <sub>2</sub>	3.97
D <sub>3</sub>	5.27
D <sub>4</sub>	3.37
D <sub>5</sub>	2.87
D <sub>6</sub>	1.76
D <sub>7</sub>	1.89
S.E./mean	=0.479 ton/ac.

Crop :- Potato (*Kharif*).  
Site :- Potato Sub-Stn., Kausani.

Ref :- U.P. 50(6).  
Type :- 'C'.

Object :- To study the effect of whole vs cut Potato on yield.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Hilly tract. (b) N.A. (iii) 29,30.4.1950. (iv) (a) and (b) N.A. (c) 13 seeds/row. (d) 2'x9'. (e) N.A. (v) N.A. (vi) Garhwal. (vii) No. (viii) 1 earthing. (ix) N.A. (x) 29, 30.9.1950.

2. TREATMENTS :

- Whole potato sown.
- Cut potato sown.

3. DESIGN :

(i) R.B.D. (ii) (a) 2. (b) N.A. (iii) 9. (iv) (a) N.A. (b) 12'x10'. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Good. (ii) No. (iii) Potato yield. (iv) (a) 1950 to 1952. (b) No. (c) N.A. (v) (a) No. (b) N.A. (vi) Nil. (vii) The expt. was conducted by E.B.(R).

## 5. RESULTS :

- (i) 1.04 ton/ac.  
 (ii) 0.373 ton/ac.  
 (iii) Treatment difference is significant.  
 (iv) Av. yield of potato in ton/ac.
- | Treatment | Av. yield |
|-----------|-----------|
| 1.        | 1.28      |
| 2.        | 0.80      |
- S.E./mean = 0.124 ton/ac.

Crop :- Potato (*Kharif*).

Site :- Potato Sub-Stn., Kausani.

Ref :- U.P. 51(7).

Type :- 'C'.

Object :- To study the effect of whole and cut Potatoes on yield.

## 1. BASAL CONDITIONS :

- (i) (a) to (c) N.A. (ii) (a) Hilly tract. (b) N.A. (iii) 14.3.1951. (iv) (a) and (b) N.A. (c) 14 seeds/row. (d) 2'x9'. (e) N.A. (v) N.A. (vi) Garhwal. (vii) Unirrigated. (viii) 1 earthing. (ix) N.A. (x) 4.9.1951 to 5.9.1951.

## 2. TREATMENTS :

1. Whole potatoes sown.  
 2. Cut potatoes sown.

## 3. DESIGN :

- (i) R.B.D. (ii) (a) 2. (b) N.A. (iii) 6. (iv) (a) N.A. (b) 10'x12'. (v) N.A. (vi) Yes.

## 4. GENERAL :

- (i) Good. (ii) No. (iii) Potato yield. (iv) (a) Yes. 1950 to 1952. (b) No. (c) N.A. (v) (a) No. (b) N.A. (vi) Nil. (vii) The expt. was conducted by E.B.(R).

## 5. RESULTS :

- (i) 3.24 ton/ac.  
 (ii) 0.451 ton/ac.  
 (iii) Treatment difference is not significant.  
 (iv) Av. yield of potato in ton/ac.
- | Treatment | Av. yield |
|-----------|-----------|
| 1.        | 3.24      |
| 2.        | 3.24      |
- S.E./mean = 0.184 ton/ac.

Crop :- Potato (*Kharif*).

Site :- Potato Sub-Stn., Kausani.

Ref :- U.P. 52(33).

Type :- 'C'.

Object :- To compare the effect of sowing whole tubers vs cut tubers.

## 1. BASAL CONDITIONS :

- (i) (a) No. (b) Fallow. (c) No. (ii) (a) Hilly tract (6075' high). (b) N.A. (iii) 17.4.1952. (iv) (a) to (c) N.A. (d) 2'x9'. (e) N.A. (v) F.Y.M. at 90 md/ac. broadcast at the time of preparation of field. (vi) Garhwal. (vii) Unirrigated. (viii) 1 earthing. (ix) N.A. (x) 7.9.1952.

## 2. TREATMENTS :

1. Whole tubers sown.  
 2. Cut tubers sown.

## 3. DESIGN :

- (i) R.B.D. (ii) (a) 2. (b) N.A. (iii) 6. (iv) (a) N.A. (b) 20'x15'. (v) N.A. (vi) No.



## 4. GENERAL :

- (i) Good. (ii) Some plants were diseased. (iii) Potato yield. (iv) (a) Yes. 1950 to 1952. (b) No. (c) N.A.  
 (v) (a) No. (b) N.A. (vi) Nil. (vii) The experiment was conducted by E.B. (R).

## 5. RESULTS :

- (i) 2.21 ton/ac.  
 (ii) 0.616 ton/ac.  
 (iii) Treatment difference is not significant.  
 (iv) Av. yield of potato in ton/ac.

Treatment	Av. yield
1.	2.38
2.	2.04
S.E./mean	0.251 ton/ac.

Crop :- Potato (*Kharif*).

Ref :- U.P. 53(9).

Site :- Potato Sub-Stn., Kausani.

Type :- 'C'.

Object :—To determine the efficacy of cut and whole tubers.

## 1. BASAL CONDITIONS :

- (i) (a) No. (b) Fallow. (c) No. (ii) (a) Hill tract, 6075' ht. (b) N.A. (iii) As per treatments. (iv) (a) to (c) N.A. (d) 24"×9". (e) N.A. (v) F.Y.M. on 3.3.1953 and cake at 20 md/ac. on 10.5.1953. (vi) Garhwal (vii) Unirrigated. (viii) 1 weeding and 1 earthing. (ix) N.A. (x) 22 and 28.8.1953.

## 2. TREATMENTS :

All combinations of (1) and (2)

- (1) 2 dates of sowing :  $D_1=17.3.1953$  and  $D_2=2.4.1953$ .  
 (2) 2 types of potatoes :  $T_1$ =cut potato sown and  $T_2$ =whole potato sown.

## 3. DESIGN :

- (i) 2×2 Fact. in R.B.D. (ii) (a) 4. (b) N.A. (iii) 6. (iv) (a) and (b) 12'×8'. (v) Nil. (vi) No.

## 4. GENERAL :

- (i) Good. (ii) No. (iii) Germination and yield of potato. (iv) (a) 1953—continued. (b) N.A. (c) N.A.  
 (v) (a) No. (b) N.A. (vi) Nil. (vii) The experiment was conducted by E.B. (R).

## 5. RESULTS :

- (i) 3.13 ton/ac.  
 (ii) 0.914 ton/ac.  
 (iii) Tubers (cut vs whole) are highly significant ; sowing dates and interaction are not significant.  
 (iv) Av. yield of tuber in ton/ac.

	$D_1$	$D_2$	Mean
$T_1$	2.92	1.81	2.36
$T_2$	4.03	3.75	3.89
Mean	3.48	2.78	3.13

S.E. of any marginal mean = 0.264 ton/ac.

S.E. of body of table = 0.373 ton/ac.

Crop :- Potato (*Kharif*).  
Site :- Potato Sub-Stn., Kausani.

Ref :- U.P. 50(5).  
Type :- 'C'.

Object :- To study the efficacy of sprouted potatoes on yield.

1. BASAL CONDITIONS :

(i) (a) No. (b) N.A. (c) N.A. (ii) (a) Hilly tract. (b) N.A. (iii) 29.4.1950. (iv) (a), (b) N.A. (c) 20 seeds/row. (d) 2'x9'. (e) N.A. (v) No. (vi) Garhwal. (vii) No. (viii) 1 earthing only. (ix) N.A. (x) 27 to 28.9.1950.

2. TREATMENTS :

1. Sprouted seed.
2. Unsprouted seed.

3. DESIGN :

(i) R.B.D. (ii) (a) 2. (b) N.A. (iii) 6. (iv) (a) N.A. (b) 15'x12'. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Good. (ii) No. (iii) Potato yield. (iv) (a) 1950 to 1951. (b) No. (c) N.A. (v) (a) No. (b) N.A. (vi) Nil. (vii) The experiment was conducted by E.B.(R).

5. RESULTS :

- (i) 2.40 ton/ac.
- (ii) 0.406 ton/ac.
- (iii) Treatment difference is highly significant.
- (iv) Av. yield of tuber in ton/ac.

Treatment	Av. yield
1.	2.84
2.	1.95
S.E./mean	=0.166 ton/ac.

Crop :- Potato (*Kharif*).  
Site :- Potato Sub-Stn., Kausani.

Ref :- U.P. 51(5).  
Type :- 'C'.

Object :- To study the efficacy of sprouted potatoes on yield.

1. BASAL CONDITIONS :

(i) (a) No. (b) and (c) N.A. (ii) (a) Hilly tract. (b) N.A. (iii) 13.3.1951. (iv) (a), (b) N.A. (c) 14 seeds/row. (d) 2'x9'. (e) N.A. (v) N.A. (vi) Garhwal. (vii) Unirrigated. (viii) Earthing only. (ix) N.A. (x) 24 to 26.8.1951.

2. TREATMENTS :

1. Sprouted seed.
2. Unsprouted seed.

3. DESIGN :

(i) R.B.D. (ii) (a) 2. (b) N.A. (iii) 6. (iv) N.A. (b) 10'x12'. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) No. (iii) Potato yield. (iv) (a) 1950 to 1951. (b) No. (c) N.A. (v) (a) No. (b) N.A. (vi) The germination and growth of sprouted seeds was better than the unsprouted one. Later on, due to lack of soil nutrition the plants in both the treatments were sickly in appearance. The % of small tubers were more in each case. (vii) The experiment was conducted by E.B.(R).

5. RESULTS :

- (i) 6.67 ton/ac.
- (ii) 2.860 ton/ac.
- (iii) Treatment difference is not significant.

(iv) Av. yield of potato in ton/ac.

Treatment	Av. yield
1.	6.67
2.	6.67
S.E./mean	=1.168 ton./ac

**Crop :- Potato (Kharif).**  
**Site :- Potato Sub-Stn., Kausani.**

**Ref :- U.P. 52(31).**  
**Type :- 'C'.**

**Object :-** To determine the comparative efficacy of different Potato seed material on yield.

**1. BASAL CONDITIONS :**

(i) (a) No. (b) Fallow. (c) No. (ii) (a) Hilly tract. (b) N.A. (iii) 12.4.1952. (iv) (a) to (c) N.A. (d) 2' x 9". (e) N.A. (v) F.Y.M. at 90 mds./ac. broadcast at the sowing time. (vi) Garhwal. (vii) Unirrigated. (viii) 1 weeding and earthing. (ix) N.A. (x) 28 and 29.8.1952.

**2. TREATMENTS :**

1. Potato sown sprouted.
2. Potato sown desprouted.
3. Potato sown unsprouted.

Desprouted has been added this year only. This was done by desprouting the sprouted tubers. The sprouts were about 4" to 6" long.

**3. DESIGN :**

(i) R.B.D. (ii) (a) 3. (b) N.A. (iii) 6. (iv) (a) N.A. (b) 12' x 8". (v) N.A. (vi) Yes.

**4. GENERAL :**

(i) Satisfactory. (ii) No. (iii) Potato yield. (iv) (a) 1952—continued. (b) No. (c) N.A. (v) (a) No. (b) N.A. (vi) Nil. (vii) The expt. was conducted by E.B.(R).

**5. RESULTS :**

- (i) 2.01 to /ac.
- (ii) 0.477 ton/ac.
- (iii) Treatment differences are not significant.
- (iv) Av. yield of potato in ton/ac.

Treatment	Av. yield
1.	2.05
2.	2.01
3.	1.98
S.E./mean	= 0.195 ton/ac.

**Crop :- Potato (Kharif).**  
**Site :- Potato Sub-Stn., Kausani.**

**Ref :- U.P. 53(10).**  
**Type :- 'C'.**

**Object :-** To determine comparative efficacy of different potato seed material on yield.

**1. BASAL CONDITIONS :**

(i) (a) No. (b) Fallow. (c) No. (ii) (a) Hilly tract, 6015' high. (b) N.A. (iii) 18.3.1953. (iv) (a) to (c) N.A. (d) 2' x 9". (e) N.A. (v) F.Y.M. on 3.3.1953 and castor cake at 20 mds./ac. (vi) Garhwal. (vii) Irrigated. (viii) 1 weeding and 1 earthing. (ix) N.A. (x) 3.9.1953.

**2. TREATMENTS :**

1. Potato sown sprouted.
2. Potato sown desprouted.
3. Potato sown unsprouted.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 3. (b) N.A. (iii) 6. (iv) (a) and (b) 12'×9'. (v) Nil. (vi) No.

## 4. GENERAL :

(i) Germination was 90% or more, premature "drying up" recorded during 2nd fortnight of June, 1953.  
 (ii) No. (iii) Germination and potato yield. (iv) (a) 1952—continued. (b) No. (c) N.A. (v) (a) No.  
 (b) N.A. (vi) Nil. (vii) The expt. was conducted by E.B.(R).

## 5. RESULTS :

- (i) 2.62 ton/ac.  
 (ii) 0.528 ton/ac.  
 (iii) Treatment differences are significant.  
 (iv) Av. yield of potato in ton/ac.

Treatment	Av. yield
1.	2.25
2.	3.30
3.	2.32
S.E./mean	=0.215 ton/ac.

Crop :- Potato (*Kharif*).

Site :- Potato Sub-Stn., Kausani.

Ref :- U.P. 50(144).

Type :- 'C'.

Object :- To study the effect of seed size and spacing on Potato yield.

## 1. BASAL CONDITIONS :

(i) (a) No. (b) and (c) N.A. (ii) (a) Hilly tract (6075' high). (b) N.A. (iii) 30.4.1950 to 1.5.1950. (iv) (a) to (c) N.A. (d) As per treatments. (e) N.A. (v) N.A. (vi) Garhwal (late). (vii) Unirrigated. (viii) N.A. (ix) N.A. (x) 3 to 13.10.1950.

## 2. TREATMENTS :

All combinations of (1), (2) and (3)

- (1) Seed size :  $S_1$  = Large ( $1'' - 1\frac{1}{2}''$ ) and  $S_2$  = Small ( $1'' - \frac{1}{2}''$ ).  
 (2) Distance between rows :  $R_1 = 1\frac{1}{2}'$  and  $R_2 = 2'$ .  
 (3) Distance between plants :  $P_1 = 6''$ ,  $P_2 = 9''$  and  $P_3 = 12''$ .

## 3. DESIGN :

(i)  $3 \times 2 \times 2$  Fact. in R.B.D. (ii) (a) 12. (b) N.A. (iii) 6. (iv) (a) N.A. (b)  $10' \times 6'$  for  $R_2$  and  $10' \times 8'$  for  $R_1$ . (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) No. (iii) Potato yield. (iv) (a) 1950—1952. (b) No. (c) N.A. (v) (a) No. (b) N.A. (vi) Nil. (vii) The expt. was conducted by E.B.(R).

## 5. RESULTS :

- (i) 2.64 ton/ac.  
 (ii) 0.939 ton/ac.  
 (iii) S effect is highly significant. P effect is significant. Other effects are not significant.  
 (iv) Av. yield of potato in ton/ac.

	$P_1$	$P_2$	$P_3$	Mean	$R_1$	$R_2$
$S_1$	3.71	3.04	2.59	3.11	3.14	3.09
$S_2$	2.39	2.39	1.84	2.17	2.41	1.93
Mean	3.05	2.66	2.22	2.64		
$R_1$	3.30	2.75	2.28	2.78		
$R_2$	2.80	2.58	2.15	2.51		

S.E. of marginal mean of P	=0.192 ton/ac.
S.E. of marginal mean of R or S	=0.156 ton/ac.
S.E. of body of table R × S	=0.221 ton/ac.
S.E. of body of table R × P or P × S	=0.271 ton/ac.

Crop :- Potato (*Kharif*).

Ref :- U.P. 51(141).

Site :- Potato Sub-Stn., Kausani.

Type :- 'C'.

Object :- To study the effect of seed size and spacing on Potato yield.

1. BASAL CONDITIONS :

(i) (a) No. (b) N.A. (c) N.A. (ii) (a) Hilly tract (6075' height). (b) N.A. (iii) 15.3.1951. (iv) (a) to (c) N.A. (d) As per treatments. (e) N.A. (v) Nil. (vi) Garhwal (late). (vii) Unirrigated. (viii) N.A. (ix) N.A. (x) 30.8.1951 to 3.9.1951.

2. TREATMENTS :

All combinations of (1), (2) and (3)

- (1) Seed size :  $S_1$  = Large ( $1''-1\frac{1}{2}''$ ) and  $S_2$  = Small ( $1''-\frac{3}{4}''$ ).  
 (2) Distance between rows :  $R_1 = 1\frac{1}{2}''$  and  $R_2 = 2''$ .  
 (3) Distance between plants :  $P_1 = 6''$ ,  $P_2 = 9''$  and  $P_3 = 12''$ .

3. DESIGN :

(i)  $3 \times 2 \times 2$  Fact. in R.B.D. (ii) (a) 12. (b) N.A. (iii) 6. (iv) (a) N.A. (b)  $10' \times 8'$  for  $R_2$  and  $10' \times 6'$  for  $R_1$ . (v) Plots 2.5' apart and blocks 3' apart. (vi) Yes.

4. GENERAL :

(i) Good. (ii) No. (iii) Potato yield. (iv) (a) 1950 to 1952. (b) No. (c) N.A. (v) (a) No. (b) N.A. (vi) Nil. (vii) The expt. was conducted by E.B.(R).

5. RESULTS :

- (i) 6.49 ton/ac.  
 (ii) 1.647 ton/ac.  
 (iii) Only R effect is significant.  
 (iv) Av. yield of potato in ton/ac.

	$P_1$	$P_2$	$P_3$	Mean	$R_1$	$R_2$
$S_1$	6.94	7.23	6.17	6.78	7.08	6.48
$S_2$	6.22	6.38	6.00	6.20	6.90	5.50
Mean	6.58	6.81	6.08	6.49	6.99	5.99
$R_1$	6.76	7.33	6.88	6.99		
$R_2$	6.40	6.28	5.29	5.99		

S.E. of marginal mean of P	=0.336 ton/ac.
S.E. of marginal mean of R or S	=0.274 ton/ac.
S.E. of body of table R × S	=0.388 ton/ac.
S.E. of body of table P × R or P × S	=0.475 ton/ac.

Crop :- Potato (*Kharif*).

Ref :- U.P. 52 (32).

Site :- Potato Sub-Stn., Kausani.

Type :- 'C'.

Objct :- To study the effect of seed size and spacing on yield.

**1. BASAL CONDITIONS :**

(i) (a) No. (b) N.A. (c) No. (ii) (a) Hilly tract ; 6075' high. (b) N.A. (iii) 15.4.1952. (iv) (a) and (b) N.A. (c) & (d) As per treatments. (e) N.A. (v) F.Y.M. at 90 md./ac. broadcast at the preparation of field. (vi) Garhwal. (vii) Unirrigated. (viii) 1 earthing up. (ix) N.A. (x) 3 to 5.9.1952.

**2. TREATMENTS :**

All combinations of (1), (2) and (3)

(1) Seed size :  $S_1$ =large ( $1''-1\frac{1}{2}''$ ) and  $S_2$ =small ( $1''-1\frac{1}{2}''$ .)(2) Distance between rows :  $R_1=1\frac{1}{2}'$  and  $R_2=2'$ .(3) Distance between plants :  $P_1=6''$ ,  $P_2=9''$  and  $P_3=12''$ .12 rows/plot for  $R_1$  and 9 rows/plot for  $R_2$  spacings. No. of tubers for  $P_1$ ,  $P_2$  and  $P_3$  spacings are 18, 12 & 9 respectively.**3. DESIGN :**(i)  $3 \times 2 \times 2$  Fact. in R.B.D. (ii) (a) 12. (b) N.A. (iii) 6. (iv) (a) N.A. (b)  $18' \times 9'$ . (v) N.A. (vi) Yes.**4. GENERAL :**

(i) Good. (ii) Few plants were diseased. (iii) Potato yield. (iv) (a) 1950 to 1952. (b) No. (c) N.A. (v) (a) No (b) N.A. (vi) Nil. (vii) The experiment was conducted by E.B. (R).

**5. RESULTS :**

(i) 4.51 ton/ac.

(ii) 1.144 ton/ac.

(iii) S, P and R effects and interaction  $S \times P$  are highly significant. Other interactions are not significant.

(iv) Av. yield of potato in ton/ac.

	$P_1$	$P_2$	$P_3$	Mean	$R_1$	$R_2$
$S_1$	6.41	5.22	4.17	5.27	5.89	4.64
$S_2$	3.76	3.84	3.65	3.75	4.50	2.99
Mean	5.08	4.53	3.91	4.51		
$R_1$	5.74	5.27	4.57	5.19		
$R_2$	4.43	3.78	3.25	3.82		

S.E. of marginal mean of P = 0.234 ton/ac.

S.E. of marginal mean of R or S = 0.191 ton/ac.

S.E. of body of table  $R \times S$  = 0.270 ton/ac.S.E. of body of tables  $P \times R$  or  $P \times S$  = 0.330 ton/ac.Crop :- Potato (*Kharif*).

Ref :- U.P. 53(12).

Site :- Potato Sub-Stn., Kausani.

Type :- 'C'.

Object :- To study the effect of seed size and spacing on Potato yield.

**1. BASAL CONDITIONS :**

(i) (a) No. (b) Fallow. (c) No. (ii) (a) Hill tract; 6075' high (b) N.A. (iii) 21 and 22.3.1953. (iv) (a) & (b) N.A. (c) & (d) As per treatments. (e) N.A. (v) F.Y.M. on 3.3.1953 and castor cake at 20 md./ac. (vi) Garhwal. (vii) Unirrigated. (viii) 1 weeding and 1 earthing. (ix) N.A. (x) 22 and 23.8.1953.

**2. TREATMENTS :**

All combinations of (1), (2) and (3)

(1) 2 seed sizes :  $S_1$ =small and  $S_2$ =large.(2) 2 row spacings :  $R_1=18''$  and  $R_2=21''$ .(3) 2 plant spacings :  $P_1=6''$  and  $P_2=9''$ .14 rows/plot for  $R_1$  and 12 rows/plot for  $R_2$  spacings. No. of tubers/row for  $P_1$  and  $P_2$  spacings are 18 and 12 respectively.

## 3. DESIGN :

(i) 2<sup>3</sup> Fact. in R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a) and (b) 21'×9'. (v) Nil. (vi) No.

## 4. GENERAL :

(i) Good. (ii) No. (iii) Germination and yield. (iv) (a) 1953—continued. (b) and (c) N.A. (v) (a) No. (b) N.A. (vi) Nil. (vii) The experiment was conducted by E.B. (R).

## RESULTS :

- (i) 2.94 ton/ac.  
 (ii) 0.992 ton/ac.  
 (iii) None of the effects is significant.  
 (iv) Av. yield of potato in ton/ac.

	R <sub>1</sub>	R <sub>2</sub>	Mean	P <sub>1</sub>	P <sub>2</sub>
S <sub>1</sub>	2.96	3.52	3.24	3.39	3.10
S <sub>2</sub>	2.62	2.67	2.64	2.62	2.67
Mean	2.79	3.10	2.94		
P <sub>1</sub>	3.07	2.94	3.02		
P <sub>2</sub>	2.51	3.25	2.88		

S.E. of any marginal mean = 0.248 ton/ac.

S.E. of body of table = 0.351 ton/ac.

Crop :- Potato.

Ref :- U.P. 51(86).

Site :- Crop Physiological Res. Stn., Lucknow.

Type :- 'C'.

Object :- To study the effect of cut vs whole tubers on growth and yield of Potato.

## 1. BASAL CONDITIONS :

(i) (a) Mung+maize—wheat. (b) Wheat. (c) N.A. (ii) (a) Loam. (b) N.A. (iii) 11.11.1951. (iv) (a) 1 ploughing by victory plough, 2 by cultivator and 2 by *dest* plough and planking etc. (b) On ridges. (c) N.A. (d) 1½'×¼'. (e) 1. (v) 150 lb./ac. of N as A/S top dressed with first irrigation on 11.12.1951. (vi) Military (late). (vii) Irrigated. (viii) 4 earthings and other cultural operations. (ix) N.A. (x) 19.3.1952.

## 2. TREATMENTS :

5 types of tubers : T<sub>1</sub>=whole tuber, T<sub>2</sub>=tuber cut into halves, T<sub>3</sub>=tuber cut into quarters, T<sub>4</sub>=periderm and T<sub>5</sub>=pith.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 4. (iv) (a) and (b) 4½'×6'. (v) Nil. (vi) Yes.

## 4. GENERAL :

(i) Ordinary. (ii) Nil. (iii) Potato yield. (iv) (a) 1951 to 1953. (b) and (c) No. (v) (a) and (b) No. (vi) Nil. (vii) Experiment conducted by C.P. Data for year 1952—N.A.

## 5. RESULTS :

- (i) 2.96 ton/ac.  
 (ii) 0.456 ton/ac.  
 (iii) Treatments are highly significantly different.

## (iv) Av. yield of potato in ton/ac.

Treatment	Av. yield
T <sub>1</sub>	3.89
T <sub>2</sub>	3.52
T <sub>3</sub>	2.59
T <sub>4</sub>	1.90
T <sub>5</sub>	2.92
S.E./mean	=0.228 ton/ac.

Crop :- Potato.

Ref :- U.P. 53(208).

Site :- Crop Physiological Res. Strn., Lucknow.

Type :- 'C'.

Object :- To study the effect of cut vs whole tubers on growth and yield of Potato.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) *Moong*. (c) N.A. (ii) (a) Sandy loam. (b) N.A. (iii) N.A. (iv) (a) 1 ploughing with cultivator and digging. (b) On ridges. (c) N.A. (d) 1½' × 9". (e) N.A. (v) T.C. applied on 21.10.1953. (vi) Military (late). (vii) Irrigated. (viii) 1 earthing. (ix) N.A. (x) 26.4.1954.

## 2. TREATMENTS :

5 types of tubers : T<sub>1</sub>=whole tuber, T<sub>2</sub>=tuber cut into halves, T<sub>3</sub>=tuber cut into quarters, T<sub>4</sub>=periderm and T<sub>5</sub>=pith.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 4. (iv) (a) and (b) 7½' × 9½'. (v) Nil. (vi) Yes.

## 4. GENERAL :

(i) Normal. (ii) N.A. (iii) Potato yield. (iv) (a) 1951 to 1953. (b) and (c) No. (v) (a) and (b) No. (vi) Nil. (vii) Experiment was conducted by C.P.

## 5. RESULTS :

(i) 3.86 ton/ac.  
 (ii) 0.79 ton/ac.  
 (iii) Treatments are highly significantly different.  
 (iv) Av. yield of potato in ton/ac.

Treatment	Av. yield
T <sub>1</sub>	5.18
T <sub>2</sub>	4.37
T <sub>3</sub>	2.99
T <sub>4</sub>	4.56
T <sub>5</sub>	2.22
S.E./mean	=0.40 ton/ac.

Crop :- Potato.

Ref :- U.P. 51(87).

Site :- Crop Physiological Res. Strn., Lucknow.

Type :- 'C'.

Object :- To study the effect of different sizes of Potato on its growth, performance and its yield.

## 1. BASAL CONDITIONS :

(i) (a) No. (b) *Mung*+Maize. (c) N.A. (ii) (a) Sandy loam. (b) N.A. (iii) 13.11.1951. (iv) (a) One ploughing by victory plough, 2 by cultivators and 2 by *desl* plough and planking etc. (b) On ridges. (c) N.A. (d) 1½' × ½'. (e) N.A. (v) 150 lb./a.c. of N as A/S on 11.12.1951. (vi) Military (late). (vii) Irrigated. (viii) Earth- and intercultural operation. (ix) N.A. (x) 19.3.1952.

## 2. TREATMENTS :

5 sizes of seeds : S<sub>1</sub>=½", S<sub>2</sub>=1", S<sub>3</sub>=1½", S<sub>4</sub>=2" and S<sub>5</sub>=2½" diameter.



## 3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 4. (iv) (a) and (b)  $4\frac{1}{2}' \times 6'$ . (v) Nil. (vi) Yes.

## 4. GENERAL :

(i) Satisfactory. (ii) Nil. (iii) Potato yield. (iv) (a) to (c) No. (v) (a) and (b) No. (vi) Nil. (vii) Expt. conducted by C.P.

## 5. RESULTS :

- (i) 5.01 ton/ac.  
 (ii) 0.854 ton/ac.  
 (iii) Treatments are highly significantly different.  
 (iv) Av. yield of potato in ton/ac.

Treatment	Av. yield
S <sub>1</sub>	3.29
S <sub>2</sub>	3.80
S <sub>3</sub>	5.19
S <sub>4</sub>	6.99
S <sub>5</sub>	5.79
S.E./mean	=0.427 ton/ac.

Crop :- Potato (*Rabi*).

Ref :-U.P. 50(320).

Site :- College Farm, B.H.U., Varanasi.

Type :- 'C'.

Object :—To study the effect of desprouting seed tuber on germination, growth and yield of Potato.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) Sannhemp. (c) Nil. (ii) (a) Medium loam. (b) Refer soil analysis, College Farm, Varanasi. (iii) 23.10.1950. (iv) (a) *Palewa* given. Two ploughings, one tractor ploughing. Field disced, levelled and ridges laid out. (b) Planted on ridges. (c) —. (d)  $18' \times 12'$ . (e) N.A. (v) Sannhemp ploughed in using the country plough for green manuring. F.Y.M. 5 C.L./ac. and A/S at 250 lb/ac. top dressed after  $1\frac{1}{2}$  months of planting. (vi) *Phulwa*. (early). (vii) Irrigated. (viii) 2 weedings and 1 earthing up. (ix) N.A. (x) 7.2.1951.

## 2. TREATMENTS :

- Control—where no desprouting was carried out and seed tubers were retained until planting in the sprouted state.
- Desprouted 3 weeks before planting where all sprouts were detached using the blunt end of writing nib.
- Desprouted 2 weeks before planting using the same method as above.
- Desprouted one week before planting-method as above.

In this manner 3, 2 and 1 week respectively elapsed in between desprouting and time of planting. This may be taken as period of rest for the desprouted seed.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b)  $45' \times 14'$ . (iii) 4. (iv) (a)  $14' \times 12'$  ( $14' \times 10\frac{1}{2}'$  in layout). (b)  $12' \times 7\frac{1}{2}'$ . (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) N.A. (iii) Fresh weight of plants and tubers at successive interval. No. of shoots/hill etc. (iv) (a) No. (b) No. (c) —. (v) (a), (b) Nil. (vi) Nil. (vii) Av. yield in ton/ac. cannot be given due to the remark "65 plant/net-plot out of which samples were taken out at regular interval for studies. On an average 50 plants were left over in each plot" written in the thesis. The experiment was conducted by B.H.U.

## 5. RESULTS :

Av. yield of tubers/plant in ozs.

- (i) 5.95 oz./plant.  
 (ii) 0.1153 oz./plant.  
 (iii) Treatments are not significantly different.

Av. yield of tubers/plot in ozs.

- (i) 297.81 oz./plot.  
 (ii) 5.9028 oz./plot.  
 (iii) Treatments are not significantly different.

(iv) Av. yield of potato in oz./plant.		(iv) Av. yield of potato in oz./plot.	
Treatment	Av. yield	Treatment	Av. yield
1.	6.00	1.	300.25
2.	5.96	2.	298.50
3.	5.88	3.	294.25
4.	5.96	4.	298.25
S.E./mean	=0.0576 oz./plant.	S.E./mean	=2.9514 oz./plot.

Crop :- Potato (*Rabi*).

Ref :- U.P. 50(321).

Site :- College Farm, B.H.U., Varanasi.

Type :- 'C'.

Object :- To study the role of deflowering in potato production.

### 1. BASAL CONDITIONS :

(i) (a) N.A. (b) Sannhemp. (c) Nil. (ii) (a) Medium loam. (b) Refer soil analysis, College Farm, Varanasi. (iii) 23.10.1950. (iv) (a) *Palawa* given. 2 ploughings. One tractor ploughing, field disced, levelled and ridges laid out. (b) Planted on ridges. (c) N.A. (d) 18' x 12'. (e) N.A. (v) Sannhemp ploughed in using the country plough for green manuring. 5 C.L./ac. of F.Y.M. and A/S at 250 lb./ac. was top dressed after 1½ month of planting. (vi) Patna white (*Phulwa*) (early). (vii) Irrigated. (viii) 2 weedings and 1 earthing up. (ix) N.A. (x) 7.2.1951.

### 2. TREATMENTS :

1. Deflowering of plants in the floral stage when the buds have just opened.
2. Defruiting of plants when the berries have just formed.
3. Control (flowers and fruits left as such to develop under natural condition).

### 3. DESIGN :

(i) R.B.D. (ii) (a) 3. (b) 14' x 38'. (iii) 8. (iv) (a) 14' x 12'. (b) 12' x 9'. (v) N.A. (vi) Yes.

### 4. GENERAL :

(i) N.A. (ii) N.A. (iii) Yield of tubers/plant, no. of tubers plant and mean weight/tuber. (iv) (a) to (c) No. (v) (a) No (b) N.A. (vi) Nil. (vii) The experiment was conducted by B.H.U.

### 5. RESULTS

(i) and (iv)

Treatment	Av. weight/tuber in gm.	Av. weight of tuber/plant in gm.	Av. number of tubers/plant
1.	10.95	223.50	21.32
2.	10.71	228.75	21.36
3.	9.28	224.12	24.19
G.M.	10.31	228.79	22.29
S.E./plot	0.3712	7.9448	0.9644
S.E./mean	0.1312	2.8089	0.3410
Significance	Highly Sig.	Not Sig.	Highly Sig.

Crop :- Potato (*Rabi*).

Ref :- U.P. 50(322).

Site :- College Farm, B.H.U., Varanasi.

Type :- 'C'.

Object :- To study the effect of whole, one half and one quarter seed tubers with identical seed rate on growth, performance and yield of Potato.

### 1. BASAL CONDITIONS :

(i) (a) N.A. (b) Sannhemp. (c) Nil. (ii) (a) Medium loam. (b) Refer soil analysis, College Farm, Varanasi. (iii) 19.10.1950. (iv) (a) *Palewa* given, two ploughings, one tractor ploughing subsequently given, disced, levelled and ridges laid out. (b) Planting in ridges. (c) As per treatments. (d) Ridges 18" apart. (e) —. (v) Sannhemp ploughed in using the country plough for green manuring. 5 C.L./ac. of F.Y.M. and A/S at 250 lb./ac. top dressed after 1½ month of planting. (vi) Patna red (*Karwa*)—(late). (vii) Irrigated. (viii) 2 weedings and 1 earthing up. (ix) N.A. (x) 15.2.1951.

## 2. TREATMENTS :

1. Planting of whole tubers (wt. 40 gms. each).
2. Planting of half sized tubers (wt. 20 gms. each).
3. Planting of quarter sized tubers (wt. 10 gms. each).

Tubers cut on the day of planting. To obtain half sized seed-pieces the tubers were cut into 2 equal halves each including a position of the apical end bearing buds. The quarter sized seed pieces were similarly cut out into 4 equal parts taking care that at least one bud was included in each position.

## 3. DESIGN :

- (i) R.B.D. (ii) (a) 3. (b) 21'×39'. (iii) 3. (iv) (a) 12'×21' (length of ridge 12 ft.; no. of rows 14). (b) 10'×18'. (v) N.A. (vi) Yes.

## 4. GENERAL :

- (i) N.A. (ii) N.A. (iii) Yield of tubers/plant and mean weight/tuber. (iv) (a) to (c) No. (v) (a) and (b) No. (vi) Nil. (vii) The experiment was conducted by B.H.U.

## 5. RESULTS :

- (i) 4.12 ton/ac.  
 (ii) 0.209 ton/ac.  
 (iii) Treatments are highly significantly different.  
 (iv) Av. yield of tuber in ton/ac.

Treatment	Av. yield
1.	4.71
2.	4.00
3.	3.65
S.E./mean	=0.085 ton/ac.

Crop :- Potato.

Ref :- U.P. 49(45).

Site :- Govt. Potato Res. Farm, Farrukhabad.

Type :- 'CV'.

Object :- To study the efficacy of sowing sprouted and unsprouted Potato of different varieties.

## 1. BASAL CONDITIONS :

- (i) (a) Nil. (b) Early maize. (c) N.A. (ii) (a) Loam. (b) N.A. (iii) 23.10.1949. (iv) (a) 5 ploughings. (b) to (e) N.A. (v) F.Y.M. at 300 mds./ac. on 18.10.1949, A/S at 6 seers 4 ch./ac. on 27.11.1949 and castor cake at 10 mds./ac. on 19.10.1949. (vi) As per treatments. (vii) Irrigated. (viii) 1 weeding and 3 earthings. (ix) N.A. (x) 20 and 21.2.1950

## 2. TREATMENTS :

All combinations of (1) and (2)

- (1) 2 varieties :  $V_1$ =phulwa (cold storage) and  $V_2$ =sala (cold storage).  
 (2) 2 seed materials :  $M_1$ =sprouted and  $M_2$ =unsprouted.

## 3. DESIGN :

- (i) 2×2 Fact. in R.B.D. (ii) (a) 4. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 36'×14'. (v) N.A. (vi) Yes.

## 4. GENERAL :

- (i) Good. (ii) N.A. (iii) Potato yield. (iv) (a) 1949 to 1952. (b) No. (c) N.A. (v) (a) No. (b) N.A. (vi) Nil. (vii) Experiment conducted by E.B.(R).

## 5. RESULTS :

- (i) 7.80 ton/ac.  
 (ii) 0.950 ton/ac.  
 (iii) None of the effects is significant.

(iv) Av. yield of potato in ton/ac.

	M <sub>1</sub>	M <sub>2</sub>	Mean
V <sub>1</sub>	7.96	7.07	7.52
V <sub>2</sub>	8.71	7.46	8.08
Mean	8.34	7.26	7.80

S.E. of any marginal mean = 0.3357 ton/ac.  
 S.E. of body of table = 0.4748 ton/ac.

Crop :- Potato.

Ref :-U.P. 50(13).

Site :-Govt. Potato Res. Farm, Farrukhabad.

Type :-'CV'.

Object :-To study the efficacy of sowing sprouted and unsprouted Potato of different varieties.

## 1. BASAL CONDITIONS :

(i) (a) Nil (b) *Chart (jowar)*. (c) Nil. (ii) (a) Loam. (b) N.A. (iii) 1.11.1950. (iv) (a) 3 ploughings. (b) N.A. (c) 16 seeds/row with 14 rows/plot. (d) 2'×9". (e) N.A. (v) City refuse at 300 md./ac. on 22 and 23.10.1950 and A/S at 0.5 sr./plot on 2.1.1951. (vi) As per treatments. (vii) Irrigated. (viii) 2 earthings up. (ix) N.A. (x) 6 and 7.4.1951.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 2 varieties : V<sub>1</sub>=*kalami* (cold storage) and V<sub>2</sub>=*sala* (cold storage).(2) 2 seed materials : M<sub>1</sub>=sprouted and M<sub>2</sub>=unsprouted.

## 3. DESIGN :

(i) 2×2 Fact. in R.B.D. (ii) (a) 4. (b) N.A. (iii) 4. (iv) (a) and (b) 28'×12'. (v) Nil. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Traces of mosaic incidence. (iii) Germination and potato yield. (iv) (a) 1949 to 1952. (b) and (c) No. (v) (a) and (b) No. (vi) Nil. (vii) Experiment conducted by E.B.(R).

## 5. RESULTS :

(i) 9.54 ton/ac.

(ii) 0.545 ton/ac.

(iii) None of the effects is significant.

(iv) Av. yield of potato in ton/ac.

	M <sub>1</sub>	M <sub>2</sub>	Mean
V <sub>1</sub>	9.64	9.32	9.48
V <sub>2</sub>	9.64	9.55	9.60
Mean	9.64	9.44	9.54

S.E. of any marginal mean = 0.193 ton/ac.  
 S.E. of body of table = 0.272 ton/ac.

Crop :- Potato.

Ref :- U.P. 51(10).

Site :- Govt. Potato Res. Farm, Farrukhabad.

Type :- 'CV'.

Object :- To study the efficacy of sowing sprouted and unsprouted Potato of different varieties.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Guar*. (c) Nil. (ii) (a) Loam. (b) N.A. (iii) 10 and 11.11.1951. (iv) (a) 2 ploughings by tractor and 1 by *dest* plough (b) N.A. (c) 24 seeds/row with 10 rows/plot. (d) 2'×9". (e) N.A. (v) F.Y.M. at 250 md/ac. on 4.11.1951. A/S at 2 srs./plot on 3.12.1951. (vi) As per treatments. (vii) Irrigated. (viii) 2 earthings. (ix) N.A. (x) 25 and 30.2.1952.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 2 varieties :  $V_1 = \text{Phulwa}$  and  $V_2 = \text{F-728}$ .(2) 2 seed materials :  $M_1 = \text{sprouted}$  and  $M_2 = \text{unsprouted}$ .

## 3. DESIGN :

(i) 2×2 Fact. in R.B.D. (ii) (a) 4. (b) 78'×20'. (iii) 8. (iv) (a) and (b) 20'×18'. (v) Nil. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Nil. (iii) Germination and yield of potato/plot. (iv) (a) 1949 to 1952. (b) and (c) No. (v) (a) and (b) No. (vi) Nil. (vii) The expt. conducted by E.B.(R). Modified in year 1952.

## 5. RESULTS :

- (i) 4.92 ton/ac.  
(ii) 0.632 ton/ac.  
(iii) Only V effect is highly significant.  
(iv) Av. yield of potato in ton/ac.

	$M_1$	$M_2$	Mean
$V_1$	6.40	6.38	6.39
$V_2$	3.44	3.47	3.46
Mean	4.92	4.92	4.92

S.E. of any marginal mean = 0.158 ton/ac.

S.E. of body of table = 0.224 ton/ac.

Crop :- Potato (*Rabi*).

Ref :- U.P. 53(18).

Site :- Govt. Potato Res. Farm, Farrukhabad.

Type :- 'CV'.

Object :- To study the optimum sowing dates with weekly intervals for cut Potato.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Sana*i for green manuring. (c) Nil. (ii) (a) Loam. (b) N.A. (iii) As per treatments. (iv) (a) 6 ploughings. (b) N.A. (c) 12 seeds/row with 6 rows/plot. (d) 2'×9". (e) N.A. (v) Castor cake at 50 md/ac. on 5.11.1953. A/S at 0.514 lb./plot on 14.12.1953. and on 28.12.1953 as top dressing. (vi) As per treatments. (vii) Irrigated. (viii) 2 earthings up and 1 weeding and hoeing. (ix) 2.74". (x) 1.3.1954 for *Hyb. 45* and 9.3.1954 for *Phulwa*.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 2 varieties :  $V_1 = \text{Kalmi phulwa}$  (cut potato) and  $V_2 = \text{Hyb. 45}$  (cut potato).(2) 4 sowing dates :  $D_1 = 7.11.1953$ ,  $D_2 = 14.11.1953$ ,  $D_3 = 21.11.1953$  and  $D_4 = 28.11.1953$ .

## 3. DESIGN :

(i) 2×4 Fact. in R.B.D. (ii) (a) 8. (b) N.A. (iii) 3. (iv) (a) 14'×12'. (b) 12'×9'. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Mosaic incidence below 5%, checked by using larger and cut seed. (iii) Germination and potato yield. (iv) (a) 1953—continued. (b), (c) No. (v) (a), (b) No. (vi) Nil. (vii) The expt. was conducted by E.B.(R).

## 5. RESULTS :

- (i) 5.69 ton/ac.  
 (ii) 0.763 ton/ac.  
 (iii) Only V effect is highly significant.  
 (iv) Av. yield of potato in ton/ac.

	D <sub>1</sub>	D <sub>2</sub>	D <sub>3</sub>	D <sub>4</sub>	Mean
V <sub>1</sub>	4.07	4.07	4.07	3.33	3.89
V <sub>2</sub>	7.28	7.78	7.66	7.28	7.50
Mean	5.68	5.92	5.86	5.30	5.69

S.E. of marginal mean of V = 0.220 ton/ac.  
 S.E. of marginal mean of D = 0.156 ton/ac.  
 S.E. of body of table = 0.440 ton/ac.

Crop :- Potato.

Ref :- U.P. 49(48).

Site :- Govt. Potato Res.Farm, Farrukhabad.

Type :- 'CV'.

Object :- To study the effect of seed size on yield of different varieties of Potato.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Early maize. (c) N.A. (ii) (a) Loam. (b) N.A. (iii) 2 and 3.11.1949. (iv) (a) 5 ploughings. (b) N.A. (c) 25 seeds/row with 10 rows/plot (d) 2'×9". (e) N.A. (v) F.Y.M. at 225 md/ac. on 26.10.1949, castor cake at 15 mds./ac. on 1.11.1949 and A/S at 7 srs. 2 chhs./ac. on 12.12.1949. (vi) As per treatments. (vii) Irrigated. (viii) 1 weeding and 2 earthings. (ix) N.A. (x) 27.2.1950 (military) and 8.3.1950 (others).

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 4 varieties : V<sub>1</sub>=*Kalami* (ordinary store), V<sub>2</sub>=*Sala* (cold store), V<sub>3</sub>=*Phulwa* (ordinary store) and V<sub>4</sub>=*Military* (ordinary store).

(2) 2 seed size : S<sub>1</sub>=large (1½"–2") and S<sub>2</sub>=small (¾"–1").

## 3. DESIGN :

(i) 2×4 Fact. in R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 20'×19'. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) No. (iii) Potato yield. (iv) (a) and (b) No. (c) N.A. (v) (a) No. (b) N.A. (vi) Nil (vii) Experiment conducted by E.B. (R).

## 5. RESULTS :

- (i) 7.46 ton/ac.  
 (ii) 0.534 ton/ac.  
 (iii) V and S effects are highly significant while interaction is not significant.  
 (iv) Av. yield of potato in ton/ac.

	V <sub>1</sub>	V <sub>2</sub>	V <sub>3</sub>	V <sub>4</sub>	Mean
S <sub>1</sub>	8.53	9.82	8.08	5.05	7.87
S <sub>2</sub>	7.95	8.21	7.87	4.16	7.05
Mean	8.24	9.02	7.98	4.61	7.46

S.E. of marginal mean of V	=0.189 ton/ac.
S.E. of marginal mean of S	=0.133 ton/ac.
S.E. of body of table	=0.267 ton/ac.

Crop :- Potato (*Rabi*).

Ref :- U.P. 50(2).

Site :- Govt. Res. Farm, Kanpur.

Type :- 'CV'.

Object :—To study the effect of spacing on Potato varieties.

1. BASAL CONDITIONS :

(i) (a) No. (b) Maize. (c) No. (ii) (a) Loam. (b) N.A. (iii) 26.10.1950. (iv) (a) to (c) N.A. (d) As per treatments. (e) N.A. (v) No. (vi) As per treatments. (vii) Irrigated. (viii) 1 earthing. (ix) N.A. (x) 2 to 6.4.1951.

2. TREATMENTS :

All combinations of (1), (2) and (3)

(i) 2 varieties :  $V_1$ =majestic and  $V_2$ =*Phulwa*.

(2) 3 row spacings :  $R_1$ =18",  $R_2$ =21" and  $R_3$ =24".

(3) 2 plant spacings :  $P_1$ =9" and  $P_2$ =12".

3. DESIGN :

(i)  $3 \times 2 \times 2$  Fact. in R.B.D. (ii) (a) 12. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 24'×18'. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Good. (ii) No. (iii) Potato yield. (iv) (a) 1950 to 1954. (b) Yes. (c) N.A. (v) (a) No. (b) N.A. (vi) Nil. (vii) The experiment was conducted by E.B. (R).

5. RESULTS :

(i) 9.00 ton/ac.

(ii) 1.0296 ton/ac.

(iii) V and P effects are highly significant. Other effects are not significant.

(iv) Av. yield of potato in ton/ac.

	$R_1$	$R_2$	$R_3$	Mean	$P_1$	$P_2$
$V_1$	7.45	7.23	6.49	7.06	7.65	6.47
$V_2$	11.10	10.79	10.93	10.94	11.53	10.35
Mean	9.28	9.01	8.71	9.00	9.59	8.41
$P_1$	9.88	9.66	9.23			
$P_2$	8.68	8.36	8.18			

S.E. of marginal mean of R =0.2574 ton/ac.

S.E. of marginal mean of P or V =0.2101 ton/ac.

S.E. of body of tables  $R \times P$  or  $R \times V$  =0.3640 ton/ac.

S.E. of body of table  $P \times V$  =0.2972 ton/ac.

Crop :- Potato (*Rabi*).

Ref :- U.P. 52(26).

Site :- Govt. Res. Farm, Kanpur.

Type :- 'CV'.

Object :- To study the effect of spacing on Potato varieties.

## 1. BASAL CONDITIONS :

(i) (a) No. (b) Green manuring with *Sanal*. (c) No. (ii) (a) Loam. (b) N.A. (iii) 6.11.1952. (iv) (a) to (c) N.A. (d) As per treatments. (e) N.A. (v) *Sanal* was turned in and Castor cake at 20 md/ac. broadcast at the time of preparation of field. (vi) As per treatments (vii) Irrigated. (viii) 2 earthings. (ix) N.A. (x) 9.3.1953.

## 2. TREATMENTS :

All combinations of (1), (2) and (3)

- (1) 2 varieties :  $V_1$  = up-to-date and  $V_2$  = *phulwa*.  
 (2) 3 row spacings :  $R_1$  = 18",  $R_2$  = 21" and  $R_3$  = 24".  
 (3) 2 plant spacings :  $P_1$  = 9" and  $P_2$  = 12".

## 3. DESIGN :

(i)  $3 \times 2 \times 2$  Fact. in R.B.D. (ii) (a) 12. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 18'  $\times$  12'. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) No. (iii) Potato yield. (iv) (a) 1950—1954. (b) Yes. (c) N.A. (v) (a) No. (b) N.A. (vi) Nil. (vii) The experiment was conducted by E.B.(R).

## 5. RESULTS :

- (i) 10.54 ton/ac.  
 (ii) 0.612 ton/ac.  
 (iii) R and P effects are highly significant. Interaction  $R \times V$  is significant. Other effects are not significant.  
 (iv) Av. yield of potato in ton/ac.

	$R_1$	$R_2$	$R_3$	Mean	$P_1$	$P_2$
$V_1$	11.00	10.37	10.37	10.58	10.83	10.33
$V_2$	11.62	10.28	9.63	10.51	10.99	10.03
Mean	11.31	10.32	10.00	10.54	10.91	10.18
$P_1$	11.58	10.83	10.33			
$P_2$	11.04	9.82	9.68			

S.E. of marginal mean of R = 0.153 ton/ac.  
 S.E. of marginal mean of P or V = 0.125 ton/ac.  
 S.E. of body of  $R \times P$  or  $R \times V$  tables = 0.216 ton/ac.  
 S.E. of body of  $P \times V$  table = 0.177 ton/ac.

Crop :- Potato (*Rabi*).

Ref :- U.P. 53(5).

Site :- Govt. Res. Farm, Kanpur.

Type :- 'CV'.

Object :- To study the effect of spacing on Potato varieties.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Sanal* for green manuring. (c) Nil. (ii) (a) Loam. (b) N.A. (iii) 24, 25.10.1953. (iv) (a) to (c) N.A. (d) As per treatments. (e) N.A. (v) 90 md/ac. of night soil. (vi) Up-to-date and *phulwa*. (vii) Irrigated. (viii) 2 earthings. (ix) N.A. (x) 13.2.1954.



**2. TREATMENTS :**

All combinations of (1), (2) and (3)

- (1) 2 varieties :  $V_1$ =up-to-date and  $V_2$ =*phulwa*.  
 (2) 3 row spacings :  $R_1=18''$ ,  $R_2=21''$  and  $R_3=24''$ ;  
 (3) 2 plant spacings :  $P_1=9''$  and  $P_2=12''$ .

**3. DESIGN :**

(i)  $3 \times 2 \times 2$  Fact. in R.B.D. (ii) (a) 12. (b) N.A. (iii) 4. (iv) (a)  $20.5' \times 17.5'$ . (b)  $18' \times 15'$ . (v) 1.25' all round the net plot. (vi) Yes.

**4. GENERAL :**

(i) Good. (ii) Mosaic incidence below 5%, checked by using bigger seeds and cut seed. (iii) Germination and yield of potato. (iv) (a) 1950—1954. (b) Yes. (c) N.A. (v) (a) No. (b) N.A. (vi) Nil. (vii) The experiment was conducted by E.B.(R).

**5. RESULTS :**

- (i) 12.21 ton/ac.  
 (ii) 0.782 ton/ac.  
 (iii) V and R effects are highly significant. Interaction  $V \times P$  is significant. Other effects are not significant.  
 (iv) Av. yield of potato in ton/ac.

	$R_1$	$R_2$	$R_3$	Mean	$P_1$	$P_2$
$V_1$	14.15	13.35	13.43	13.64	13.61	13.68
$V_2$	11.85	10.28	10.19	10.77	11.26	10.28
Mean	13.00	11.82	11.81	12.21	12.43	11.98
$P_1$	13.09	12.02	12.19			
$P_2$	12.91	11.61	11.43			

S.E. of marginal mean of R = 0.196 ton/ac.  
 S.E. of marginal mean of P or V = 0.160 ton/ac.  
 S.E. of body of  $R \times P$  or  $R \times V$  tables = 0.277 ton/ac.  
 S.E. of body of  $P \times V$  table = 0.226 ton/ac.

Crop :- Potato. (Rabi)

Ref :- U.P. 50(306).

Site :- Castle Grant Orchard, B.R. College, Agra.

Type :- 'CM'.

Object :- To study the effect of different seed sizes, method of sowing and manures applied on Potato yield.

**1. BASAL CONDITIONS :**

(i) (a) Nil. (b) Tomato and then fallow. (c) Nil. (ii) (a) Light sandy loam. (b) Refer soil analysis, Castle Grant Orchard, B.R. College, Agra. (iii) 10.10.1950. (iv) (a) 2 ploughing by soil turning plough and 3 ploughing by *desi* plough followed by *pata*. (b) As per treatments. (c)  $5\frac{1}{2}$  md, 10 md and 21 md/ac, in  $S_1$ ,  $S_2$  and  $S_3$  respectively. (d)  $1\frac{1}{2}' \times 9''$ . (e) 1. (v) Nil. (vi) *Gola* (early). (vii) Irrigated. (viii) Weeding and earthing. (ix) N.A. (x) 3.2.1951.

**2. TREATMENTS :**

Main-plot treatments :

3 seed sizes :  $S_1$ =big ( $1''$  to  $1.5''$ ),  $S_2$ =medium ( $0.5''$  to  $1''$ ) and  $S_3$ =small (below  $0.5''$ ).

Sub-plot treatments :

All combinations of (1) and (2)

(1) 2 methods of sowing :  $M_1$ =sowing on flat followed by earthing and  $M_2$ =sowing on ridges.(2) 2 forms of manure :  $F_1$ =200 lb./ac. of N as compost and  $F_2$ =200 lb./ac. of N as F.Y.M.

Manures applied on 1.10.1950 and mixed by spade and then ridges made.

**3. DESIGN :**

(i) Split-plot. (ii) (a) 3 main-plots/replication and 4 sub-plots/main-plot. (b) 48'×48'. (iii) 4. (iv) (a) 15'×12'. (b) 12'×9'. (v) 1.5'×1.5'. (vi) Yes.

**4. GENERAL :**

(i) Good. (ii) N.A. (iii) Yield of tubers and other characters. (iv) (a) and (b) No. (c) Nil. (v) (a) and (b) Nil. (vi) Nil. (vii) The experiment was conducted by B.R.C. Raw data N.A.

**5. RESULTS:**

- (i) 2.76 tons/ac.  
 (ii) (a) 1.240 ton/ac.  
 (b) 0.351 ton./ac.  
 (iii) S effect is significant. Interactions  $F \times M$ ,  $S \times M$  and  $S \times M \times F$  are highly significant. Other effects are not significant.  
 (iv) Av. yield of potato in ton/ac.

	S <sub>1</sub>	S <sub>2</sub>	S <sub>3</sub>	Mean	F <sub>1</sub>	F <sub>2</sub>
M <sub>1</sub>	2.91	3.60	1.70	2.74	2.38	3.09
M <sub>2</sub>	4.35	2.33	1.70	2.79	2.94	2.64
Mean	3.63	2.96	1.70	2.76	2.66	2.86

**S.E. of difference of two**

- |  |                |
|--|----------------|
| 1. S marginal means                        | =0.438 ton/ac. |
| 2. M or F marginal means                   | =0.101 ton/ac. |
| 3. M means at the same level of S          | =0.176 ton/ac. |
| 4. S means at the same level of M          | =0.456 ton/ac. |
| 5. means in the body of $M \times F$ table | =0.144 ton/ac. |

**Crop :- Potato (Rabi).**

**Ref :- U.P. 51(297).**

**Site :- Agri. College, B.H.U., Varanasi.**

**Type :- 'IM'.**

**Object :-** To study the effect of different manures along with irrigation on growth and yield of Potato.

**1. BASAL CONDITIONS:**

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) (a) Medium loam. (b) Refer soil analysis, B.H.U., Varanasi. (iii) 1.11.1951. (iv) (a) Ploughing by soil investing plough followed by several ploughings with *desi* plough. In all 10 ploughings followed by *pata*. (b) Sown in furrows. (c) 8-10 md./ac. (d) 18"×9". (e) N.A. (v) Nil. (vi) Patna white (*phulwa*). (vii) As per treatments. (viii) Earthing done twice. The first was done one month after sowing and the second 20 days after sowing; 2 hoeings and weedings. (ix) N.A. (x) 105 days after planting.

**2. TREATMENTS:**

All combinations of (1) and (2)

(1) 3 levels of manuring: M<sub>1</sub>=100 md. of F.Y.M.+30 lb./ac. of N+15 lb./ac. of P<sub>2</sub>O<sub>5</sub>+15 lb./ac. of K<sub>2</sub>O, M<sub>2</sub>=200 md. of F.Y.M.+60 lb./ac. of N+30 lb./ac. of P<sub>2</sub>O<sub>5</sub>+30 lb./ac. of K<sub>2</sub>O and M<sub>3</sub>=400 md. of F.Y.M.+90 lb./ac. of N+60 lb./ac. of P<sub>2</sub>O<sub>5</sub>+60 lb./ac. of K<sub>2</sub>O.

(2) 3 levels of irrigations: I<sub>1</sub>=4 irrigations after an interval of 25 to 28 days during grand period of growth of crop, I<sub>2</sub>=6 irrigations after an interval of 20 days during the grand period of growth of crop and I<sub>3</sub>=8 irrigations after an interval of 15 days during the grand period of growth of crop.

**3. DESIGN :**

(i) 3×3 Factorial R.B.D. (ii) (a) 9 (b) 100'×78'. (iii) 4. (iv) (a) 24'×30'. (b) 24'×18'. (v) N.A. (vi) Yes.

## 4. GENERAL :

- (i) N.A. (ii) N.A. (iii) Fresh and dry weight of tops, tubers, no. of tubers/hill and no. of stalks/hill. (iv) (a) and (b) No. (c) Nil. (v) (a) and (b) Nil. (vi) Nil. (vii) The experiment was conducted by B.H.U.

## 5. RESULTS :

- (i) 4.47 ton/ac.  
(ii) 0.401 ton/ac.  
(iii) M and I effects are highly significant while interaction is not significant.  
(iv) Av. yield of potato in ton/ac.

	M <sub>1</sub>	M <sub>2</sub>	M <sub>3</sub>	Mean
I <sub>1</sub>	2.89	3.14	3.99	3.34
I <sub>2</sub>	3.86	4.86	5.64	4.79
I <sub>3</sub>	4.35	5.36	6.09	5.27
Mean	3.70	4.45	5.24	4.47

S.E. of any marginal mean

=0.116 ton/ac.

S.E. of body of table

=0.200 ton/ac.

Crop :-Potato (*Kharif*).

Ref :- U.P. 51(258).

Site :-Potato Sub-Stn., Kausani.

Type :- 'D'.

Object :-To study the effect of pesticides in controlling Potato *Eplachna*.

## 1. BASAL CONDITIONS :

- (i) (a) to (c) N.A. (ii) (a) and (b) N.A. (iii) N.A. (iv) (a) to (e) N.A. (v) N.A. (vi) N.A. (viii) N.A. (ix) N.A. (x) N.A.

## 2. TREATMENTS :

1. Spraying with 0.25% D.D.T. emulsion at 40 gallon/ac.
2. Spraying with 0.25% D.D.T. suspension at 40 gallon/ac.
3. Spraying with 0.15% D.D.T. emulsion at 40 gallon/ac.
4. Spraying with 0.15% D.D.T. suspension at 40 gallon/ac.
5. Dusting with 5% D.D.T. dust at 20 lb./ac.
6. Dusting with G.205P (5% D.D.T.+Pyrethrium) at 20 lb./ac.
7. Control.

## 3. DESIGN :

- (i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 4. (iv) (a) 1/28 ac. (b) N.A. (v) N.A. (vi) Yes.

## 4. GENERAL :

- (i) N.A. (ii) Under study. (iii) %reduction and population of potato *eplachna* beetle and yield of potato. (iv) (a) No. (b) No. (c) No. (v) (a) No. (b) No. (vi) Nil. (vii) The experiment was conducted by Ento (K). As % reduction of population of control plot is negative, % analysis has not been done.

## 5. RESULTS :

- (i) 4.03 ton/ac.  
(ii) 0.229 ton/ac.  
(iii) Treatment differences are highly significant.  
(iv) Av. yield of potato in ton/ac.

Treatment	Av. yield
1.	4.55
2.	4.52
3.	4.43
4.	4.33
5.	3.66
6.	3.57
7.	3.12
S.E./mean	=0.115 ton/ac.

Crop :- Potato.

Ref :- U.P. 53(191).

Site :- Govt. Res. Farm, Kanpur.

Type :- 'D'.

Object :- To find out the effect of phenyl solution on growth and yield of Potato.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) N.A. (c) N.A. (ii) (a) Loam. (b) N.A. (iii) 7.1.1954. (iv) (a) to (c) N.A. (d) 21' x 6'  
(e) N.A. (v) Nil. (vi) *Phulwa*. (vii) Irrigated. (viii) N.A. (ix) N.A. (x) 27.4.1954.

## 2. TREATMENTS :

1. Control—No Phenyl.
2. 5 minutes dip in phenyl solution, dried and left over for 24 hours and then sown as usual.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 2. (b) N.A. (iii) 17. (iv) (a) and (b) 15' x 1½'. (v) No. (vi) No.

## 4. GENERAL :

- (i) Normal. (ii) Nil. (iii) Potato yield. (iv) (a) No. (b) No. (c) N.A. (v) (a) No. (b) N.A. (vi) Nil.
- (vii) The experiment was conducted by E.B. (R).

## 5. RESULTS :

- (i) 5.45 ton/ac.
- (ii) 0.606 ton/ac.
- (iii) Treatment difference is not significant.
- (iv) Av yield of tuber in ton/ac.

Treatment	Av. yield
1.	5.63
2.	5.27
S.E./mean	=0.147 ton/ac.

Crop :- Potato (*Rabi*).

Ref :- U.P. 50(15).

Site :- Govt. Res. Farm, Kanpur.

Type :- 'D'.

Object :- To find out the effect of fungicides on Potato.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Sanai* for green manuring. (c) No. (ii) (a) Loam. (b) N.A. (iii) 1.11.1950. (iv) (a) to (c) N.A. (d) 2' x 9". (e) N.A. (v) *Sanai* turned in for green manuring. (vi) *Kalami sala* (vii) Irrigated. (viii) 2 earthings. (ix) N.A. (x) 22, 23 and 24.4.1951.

## 2. TREATMENTS :

1. Bordeaux applied to soil just after sowing.
  2. Bordeaux spray on foliage.
  3. Perenox applied to soil just after sowing.
  4. Perenox spray on foliage.
  5. Yellow cuprocide applied to soil just after sowing.
  6. Yellow cuprocide spray on foliage.
  7. Perenox applied to soil and spray on foliage.
  8. Control.
- Dates of spraying : 8.12.1950, 8.1.1951 and 9.2.1951.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a) and (b) 20' x 10'. (v) Nil. (vi) Yes.

## 4. GENERAL :

- (i) Good. (ii) Nil. (iii) Tuber yield. (iv) (a) and (b) No. (c) N.A. (v) (a) No. (b) N.A. (vi) Nil.
- (vii) The expt. was conducted by E.B.(R).

## 5. RESULTS :

- (i) 12.30 ton/ac.  
 (ii) 0.614 ton/ac.  
 (iii) Treatment differences are not significant.  
 (iv) Av. yield of potato in ton/ac.

Treatment	Av. yield	Treatment	Av. yield
1.	12.50	5.	12.30
2.	12.25	6.	12.35
3.	12.60	7.	11.85
4.	12.10	8.	12.45
S.E./mean		=0.307 ton/ac.	

Crop :-Potato (*Rabi*).

Ref :-U.P. 48(94).

Site :-Govt. Res. Farm, Kanpur.

Type :-'D'.

Object :-To determine the efficacy of different spraying fluids in controlling blight of Potato.

## 1. BASAL CONDITIONS :

- (i) (a) to (c) N.A. (ii) (a) Loam. (b) N.A. (iii) 4.11.1948. (iv) (a) to (c) N.A. (d) 2'x1'. (e) N.A.  
 (v) N.A. (vi) Majestic. (vii) to (x) N.A.

## 2. TREATMENTS :

- Control (unsprayed),
- Sprayed with Bordeaux mixture 1% (5 : 5 : 50) —3 sprayings at an interval of 10 days starting from 15.12.1948.
- Sprayed with Perenox (3 lb. in 100 gallons of water) 3 sprayings at an interval of 10 days beginning from 15.12.1948.
- Sprayed with Dithane D-14 (1½ lb. per 100 gallons of water) —3 sprayings at an interval of 10 days beginning from 5.12.1948.
- Sprayed with Dithane Z-78 (1½ lb. per 100 gallons of water)—3 sprayings at an interval of 10 days starting on 6.12.1948.
- Yellow cuprocide spray (1½ lb. in 100 gallons of water)—3 sprayings at an interval of 10 days starting from 15.12.1948.

## 3. DESIGN :

- (i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 6. (iv) (a) N.A. (b) 45'x14'. (v) N.A (vi) Yes.

## 4. GENERAL :

- (i) N.A. (ii) Under study. (iii) % infection and potato yield. (iv) (a) 1948 to 1950. (b) No. (c) N.A.  
 (v) (a) No. (b) N.A. (vi) Nil. (vii) The expt. was conducted by P.P.

## 5. RESULTS :

% of infection			Potato yield	
(i) 7.19 angle/plot.			(i) 1.16 ton/ac.	
(ii) 3.476 angle/plot.			(ii) 0.198 ton/ac.	
(iii) Treatments are highly significantly different.			(iii) Treatments are not significantly different.	
(iv)			(iv) Av. yield of potato in ton/ac.	
Treatment	Mean angle	Transformed back %	Treatment	Av. yield
1.	11.35	4.33	1.	1.06
2.	2.40	0.68	2.	1.25
3.	4.49	1.10	3.	1.19
4.	11.64	4.53	4.	1.10
5.	6.94	1.95	5.	1.15
6.	6.30	1.69	6.	1.22
S.E./mean =1.419 angle/plot			S.E./mean =0.081 ton/ac.	

Crop :- Potato (*Rabi*).  
Site :- Govt. Res. Farm, Kanpur.

Ref :- U.P. 49(197).  
Type :- 'D'.

Object :- To study the effect of different fungicidal sprays on the yield of Potato.

### 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Loam. (b) N.A. (iii) 28.10.1949 (gaps filled by transplanting on 2.12.1949).  
(iv) (a) to (c) N.A. (d) 2'x1'. (e) N.A. (v) N.A. (vi) Majestic. (vii) N.A. (viii) N.A. (ix) N.A.  
(x) 17.3.1950.

### 2. TREATMENTS :

1. Control.
  2. Bordeaux mixture 1% (5 : 5 : 50).
  3. Perenox 0.3%.
  4. Dithane D-14 (Dithan D-14-2 quarters, Hydrated lime  $\frac{1}{2}$  lb.  $ZnSO_4$  1 lb. (36% metallic Zn equivalent) water to make 100 gallons).
  5. Dithane Z-78-1  $\frac{1}{2}$  lb. in 100 gallons of water.
  6. Yellow cuprocide 1  $\frac{1}{2}$  lb. in 100 gallons of water.
- Spraying done on the plants 8" and 9" high.  
1st spraying on 21.1.1950 2nd spraying on 7, 8 and 9.2.1950. 3rd spraying on 25.2.1950.

### 3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 2. (iv) (a) N.A. (b) 22'x20'. (v) N.A. (vi) Yes.

### 4. GENERAL :

(i) Rains continuous and heavy on 29 and 30.10.1949 Due to heavy rains the germination was very poor. therefore replications were reduced to 2 from 6 and gaps filled in. (ii) Symptoms of blight appeared on 19.1.1950. (iii) % infection and potato yield. (iv) (a) 1948 to 1949. (b) No. (c) N.A. (v) (a) No. (b) N.A. (vi) Nil. (vii) The experiment was conducted by P.P. Transformation has been applied as suggested by the Chief Statistician to Govt. U.P.

### 5. RESULTS :

<p>(i) 18.45 angle/plot (ii) 3.388 angle/plot. (iii) Treatments are not significantly different. (iv)</p>	<p>Potato yield (i) 2.49 ton/ac. (ii) 0.473 ton/ac. (iii) Treatment are not significantly different. (iv) Av. yield of potato in ton/ac.</p>
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Treatment	Mean angle	Transformed back %	Treatment	Av. yield
1.	25.76	19.20	1.	1.73
2.	12.43	5.08	2.	3.23
3.	21.14	13.38	3.	2.48
4.	18.52	10.49	4.	2.00
5.	17.78	9.73	5.	2.66
6.	15.10	7.21	6.	2.84

S.E./mean = 2.396 angle/plot

S.E./mean = 0.334 ton/ac.

Crop :- Potato (*Rabi*).  
Site :- Govt. Res Farm, Kanpur.

Ref :- U.P. 50(249).  
Type :- 'D'.

Object :- To study the effect of the application of different fungicidal sprays to the soil and foliage on the yield of Potato.

### 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) and (b) N.A. (iii) 1.11.1950. (iv) (a) to (e) N.A. (v) N.A. (vi) *Kalmi sala*.  
(vii) to (ix) N.A. (x) N.A.

## 2. TREATMENTS :

1. Bordeaux Mixture 1% applied to soil immediately after sowing.
2. Bordeaux mixture 1% sprayed on the foliage.
3. Perenox 0.3% applied to soil immediately after sowing.
4. Perenox 0.3% sprayed on the foliage.
5. Yellow cuprocide 0.15% applied to soil immediately after sowing.
6. Yellow cuprocide sprayed on the foliage.
7. Perenox applied to soil immediately after sowing.
8. Control.

Quantity applied to soil at 300 gallons/ac. on 3.11.1950 and to foliage at 100 gallons/ac. on 13.12.1950. for first time at 400 gallons/ac. on 8, 9.1.1951 and 600 gallons/ac. on 9.2.1951.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 20' x 10'. (v) N.A. (vi) Yes. .

## 4. GENERAL :

(i) Good. (ii) Free from fungal disease but virus infection had started. (iii) Number of infected plants per plot. (iv) (a) No. (b) N.A. (c) N.A. (v) (a), (b) N.A. (vi) Nil. (vii) The expt. conducted by P.P. Number of infected plants varies from 0 to 4.

## 5. RESULTS :

- (i)  $1.2145 \sqrt{x + \frac{1}{2}}$ /plot where  $x = \text{No. of infected plants}$ .
- (ii)  $0.5183 \sqrt{x + \frac{1}{2}}$ /plot.
- (iii) Treatment differences are not significant.
- (iv)

Treatment	Mean value of $\sqrt{x + \frac{1}{2}}$ /plot	No. of infected plants/plot (Transformed back)
1.	1.0953	0.7000
2.	1.2792	1.1364
3.	1.1844	0.9028
4.	0.9659	0.4330
5.	1.1844	0.9028
6.	1.4086	1.4842
7.	1.4142	1.5000
8.	1.1844	0.9028
S.E./mean	=0.2592	

Crop :- Potato (*Rabi*).

Site :- Govt. Res. Farm, Kanpur.

Ref :- U.P. 52(291).

Type :- 'D'.

Object :- To study the effect of seed size in relation to virus transmission.

## 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Loam. (b) N.A. (iii) 31.10.1952. (iv) (a) to (e) N.A. (v) to (x) N.A.

## 2. TREATMENTS :

1. Medium size (1" to 2" approx.).
2. Small size (1" approx.).

In both the treatments 1 and 2, the potato tubers have been taken from mosaic affected plants as well as from healthy potato plants for each experiment. Hence there are two separate experiments (1) with mosaic affected potatoes and (2) with healthy potatoes.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 2. (b) N.A. (iii) 6. (iv) (a) N.A. (b) 10' x 18'. (v) Plots and blocks 4' apart. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) N.A. (iii) % of germination and no. of infected plants. (iv) (a) No. (b) N.A. (c) Nil. (v) (a), (b) N.A. (vi) Nil. (vii) The experiment was conducted by P.P.

## 5. RESULTS:

Potato (virus infected)			Potato (healthy)		
(i) 62.26 degrees.			(i) 17.03 degrees.		
(ii) 4.894 degrees.			(ii) 5.796 degrees.		
(iii) Treatments are not significantly different.			(iii) Treatments are not significantly different.		
(iv) Av. value of $\sin^{-1}\sqrt{p}$ , where p is % infection.			(iv) Av. value of $\sin^{-1}\sqrt{p}$ where p is % of infection.		
Treatment	Mean angle	Transformed back %infection	Treatment	Mean angle	Transformed back %infection
1.	61.68	77.22	1.	16.87	8.82
2.	62.84	78.91	2.	17.20	9.16
S.E./mean = 1.998 degrees.			S.E./mean = 2.366 degrees.		

Crop :- Potato.

Ref :- U P. 49(103).

Site :- Kumaon Hills (Almora).

Type :- 'D'.

Object :- To study the effect of Paradichle rebenzene (P.D.B) against grubs in Potato fields.

## 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) to (iv) N.A. (v) (a) to (c) N.A. (d) Rows 2' apart. (e) N.A. (vi) to (ix) N.A.  
(x) Middle of August 1949.

## 2. TREATMENTS :

1. 3 gms. per linear yard applied in between the potato rows 2' apart.
2. 4 gms. per linear yard applied in between the potato rows 2' apart.
3. 5 gms. per linear yard applied in between the potato rows 2' apart.
4. 6 gms. per linear yard applied in between the potato rows 2' apart.
5. Control.

Paradichle rebenzene applied twice on 10.5.1949 and 5.7.1949 in between the potato rows.

## 3. DESIGN :

(i) and (ii) R.B.D. with 5 replications. (iii) (a) and (b) 1/363 ac. (iv) N.A..

## 4. GENERAL :

(i) N.A. (ii) Under study. (iii) The assessment of result was made on the % of damaged tubers and also the crop yield at the time of harvest in middle of 1949. % of damaged leaves in terms of complete defoliations. (iv) (a) to (c) No. (v) N.A. (vi) Nil. (vii) The experiment was conducted by Ento. (C). on cultivator's fields. Raw data N.A.

## 5. RESULTS :

Yield of potato		% of damaged tubers/plot	
(i) 1.04 ton/ac.		(i) 6.52 % damaged tubers/plot.	
(ii) 0.2538 ton/ac.		(ii) 4.07 % damaged tubers/plot.	
(iii) Treatments are significantly different.		(iii) Treatments are significantly different.	
(iv) Av. yield of potato in ton/ac.		(iv) % damaged tubers/plot.	
Treatment	Av. yield	Treatment	% damaged tubers
1.	1.01	1.	3.1
2.	0.97	2.	3.7
3.	1.24	3.	4.8
4.	1.27	4.	5.5
5.	0.73	5.	15.5
S.E./mean = 0.1135 ton/ac.		S.E./mean = 1.82	



Crop :- Potato (*Rabi*).

Ref :- U.P. 49(218).

Site :- Kansani (Almora).

Type :- 'D'.

Object :- To test the efficacy of D.D.T. and Benzene hexachloride against *Epilachna vigrubocts punetata* on Potato crop.

## 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) N.A. (iii) Manured with compost. (iv) N.A. (v) (a) to (c) N.A. (d) Plants 7"-8" apart while rows 18" to 20" apart. (e) N.A. (vi) 1st week of February 1949. (vii) Unirrigated. (viii) N.A. (ix) N.A. (x) 1st week of July, 1949.

## 2. TREATMENTS :

1. Dusting with Benzene hexachloride (gamaxene D.O. 25).
2. Dusting with 5% D.D.T. dust at 50 lb./ac.
3. Dusting with sodium fluosilicate and ash (1 : 8) at 50 lb./ac.
4. Spraying with 0.25% D.D.T. spray emulsion at 200 gallons/ac.
5. No treatment (control).

## 3. DESIGN :

(i) R.B.D. (ii) N.A. (iii) (a) N.A. (b) 1/100 ac. (iv) N.A.

## 4. GENERAL :

(i) N.A. (ii) Nearly all the plants were infested with potato *epilachna* adults, grubs and eggs present, pupae not observed. (iii) Population of grubs before and after application of treatments. Yield of potato crop in seers per plot. (iv) (a) No. (b) N.A. (c) N.A. (v) N.A. (vi) Nil. (vii) The experiment was conducted by Ento. (K).

## 5. RESULTS :

- (i) 4.02 ton/ac.  
 (ii) 0.3439 ton/ac.  
 (iii) Treatment differences are highly significant.  
 (iv) Av. yield of potato in ton/ac.

Treatment	Av. yield
1.	3.09
2.	5.32
3.	3.44
4.	5.54
5.	2.70
S.E./mean	= 0.1720 ton/ac.

Crop :- Onion.

Ref :- U.P. 49(182).

Site :- Govt. Vegetable Res. Stn., Alambagh, Lucknow. Type :- 'M'.

Object :- To study the optimum requirement of N, P and K for Onion.

## 1. BASAL CONDITIONS :

(i) (a) No. (b) N.A. (c) N.A. (ii) (a) Clayey loam. (b) N.A. (iii) 9.11.1949/16, 19.1.1950. (iv) (a) 4 *desi* plough and 7 Punjab plough. (b) Transplanting, flat sowing. (c) N.A. (d) 6" x 6". (e) N.A. (v) N.A. (vi) Patna Red (N.A.). (vii) Irrigated. (viii) 2 hoeings and 1 stripping. (ix) N.A. (x) 2 to 5.5.1950.

## 2. TREATMENTS :

Main-plot treatments :

4 levels of N as A/S :  $N_0=0$ ,  $N_1=50$ ,  $N_2=100$  and  $N_3=150$  lb./ac.

Sub-plot treatments :

All combinations of (1) and (2)

(1) 4 levels of  $P_2O_5$  as single Super :  $P_0=0$ ,  $P_1=16$ ,  $P_2=32$  and  $P_3=48$  lb./ac.

(2) 4 levels of  $K_2O$  as Pot. Sul. :  $K_0=0$ ,  $K_1=24$ ,  $K_2=48$  and  $K_3=72$  lb./ac.

Manures top dressed after one month of transplanting.

## 3. DESIGN :

(i) Split-plot. (ii) (a) 4 main-plots/block and 16 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 10' x 6'. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) N.A. (iii) Mortality counts, vegetable growth based on 100 plants, Bulb growth based on 100 plants, unstripped yield and stripped yield of onion. (iv) (a) 1949—1950. (b) No. (c) No. (v) (a) and (b) No. (vi) Nil. (vii) Experiment conducted by V.R.S.

## 5. RESULTS :

- (i) 10.58 ton/ac.  
 (ii) (a) 1.946 ton/ac.  
 (b) 1.334 ton/ac.  
 (iii) NPK interaction alone is highly significant.  
 (iv) Av. yield of onion in ton/ac.

	K <sub>0</sub>	K <sub>1</sub>	K <sub>2</sub>	K <sub>3</sub>	Mean	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>	P <sub>3</sub>
N <sub>0</sub>	10.66	10.56	10.59	10.12	10.48	10.27	10.49	10.25	10.92
N <sub>1</sub>	11.15	10.62	10.55	10.95	10.82	10.39	10.88	10.33	11.67
N <sub>2</sub>	10.94	10.49	10.00	10.77	10.55	10.77	10.47	10.29	10.68
N <sub>3</sub>	10.11	10.90	10.80	10.00	10.45	10.86	10.02	10.59	10.34
Mean	10.72	10.64	10.49	10.46	10.58	10.57	10.47	10.36	10.90
P <sub>0</sub>	10.82	10.41	10.35	10.72					
P <sub>1</sub>	10.59	10.24	10.50	10.53					
P <sub>2</sub>	10.50	10.32	10.03	10.60					
P <sub>3</sub>	10.95	11.60	11.07	10.00					

## S.E. of difference of two

1. N marginal means = 0.344 ton/ac.
2. P or K marginal means = 0.236 ton/ac.
3. P or K means<sup>a</sup> at the same level of N = 0.472 ton/ac.
4. N means at the same level of P or K = 0.534 ton/ac.
5. means in the body of P×K table = 0.472 ton/ac.

Crop :- Onion (*Rabi*).

Ref :- U.P. 53(394).

Site :- Agri. College, B.H.U., Varanasi.

Type :- 'M'.

Object :- To study the effect of sulphur fertilization on the growth, yield and chemical composition of Onion at different stages.

## 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Medium loam. (b) Refer soil analysis, B.H.U. Varanasi. (iii) 1.11.1953. (iv) (a) Field was thoroughly prepared by ploughing several times. Clods were broken, roots and weeds removed and the ground levelled. (b) Transplanted. (c) —. (d) 9"×9". (e) N.A. (v) C.M. at 100 md/ac spread a fortnight earlier than final field preparations. (vi) *Desi* variety. (vii) The beds watered after transplanting. Afterwards the field was irrigated by flooding, whenever required. (viii) Hoeing and weeding after each fortnight. (ix) N.A. (x) 1st week of April.

## 2. TREATMENTS :

5 levels of sulphur : S<sub>0</sub>=0, S<sub>1</sub>=50, S<sub>2</sub>=100, S<sub>3</sub>=200 and S<sub>4</sub>=400 lb /ac.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) 16'×73'. (iii) 6. (iv) (a) N.A. (b) 12'×9'. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) N.A. (iii) Number of leaves of onion/plant. Av. height of plant in cms. Av. maximum circumference of leaves in cms. Maximum length of root in cms. Fresh weight of onion roots, fresh weight of onion bulbs. Dry weight percentage. (iv) (a) No. (b) Nil. (c) Nil. (v) (a) and (b) Nil. (vi) Nil. (vii) The experiment was conducted by B.H.U.

## 5. RESULTS :

- (i) 6.36 ton/ac.  
 (ii) 0.251 ton/ac.  
 (iii) Treatments are highly significantly different.  
 (iv) Av. yield of onion in ton/ac.

Treatment	Av. yield
S <sub>0</sub>	5.71
S <sub>1</sub>	6.19
S <sub>2</sub>	6.55
S <sub>3</sub>	6.74
S <sub>4</sub>	6.56
S.E./mean	=0.1024 ton/ac.

Crop :- Onion.

Ref :- U.P. 50(110).

Site :- Govt. Vegetable Res. Stn., Lucknow.

Type :- 'C'.

Object :- To study the effect of top pruning of seedlings on Onion yield.

## 1. BASAL CONDITIONS :

- (i) (a) No. (b) *Bhindi*. (c) N.A. (ii) (a) Loam. (b) N.A. (iii) 4.10.1950 and 28.10.1950. (iv) (a) N.A. (b) Transplanting. (c) —. (d) N.A. (e) N.A. (v) N.A. (vi) Patna Red (medium). (vii) Irrigated. (viii) 1 weeding and 1 trampling. (ix) N.A. (x) 24.5.1951.

## 2. TREATMENTS :

1. Light pruning ( $\frac{1}{2}$  vegetative top).
2. Medium pruning ( $\frac{1}{3}$  vegetative top).
3. Heavy pruning (full vegetative top).
4. Control (no pruning).

## 3. DESIGN :

- (i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 9'x8'. (v) N.A. (vi) Yes.

## 4. GENERAL .

- (i) N.A. (ii) No. (iii) Onion yield. (iv) (a) No. (b) and (c) No. (v) (a) and (b) No. (vi) Nil. (vii) The experiment was conducted by V.R.S.

## 5. RESULTS :

- (i) 1.98 ton/ac.  
 (ii) 0.783 ton/ac.  
 (iii) Treatments are not significantly different.  
 (iv) Av. yield of onion in ton/ac.

Treatment	Av. yield.
1.	2.23
2.	1.98
3.	1.73
4.	1.99
S.E./mean	=0.39 ton/ac.

Crop :- Onion.

Ref :- U.P. 50(109).

Site :- Govt. Vegetable Res. Stn., Lucknow.

Type :- 'C'.

Object :- To study the effect of inter cultures on Onion yield.

## 1. BASAL CONDITIONS :

- (i) (a) No. (b) *Bhindi*. (c) A/S at 40 lb./ac. of N. (ii) (a) Loam. (b) N.A. (iii) 4.10.1950/29.11.1950. (iv) (a) 3 ploughings, 1 by watts and 2 by *desi* plough and one cultivator. (b) Transplanting. (c) —. (d) 6'x6'. (e) 1. (v) 40 lb./ac. of N as A/S top dressed. (vi) Patna red (medium). (vii) Irrigated. (viii) 1 trampling on 8.5.1951. Hoeings as per treatments done after 3 days of each irrigation. (ix) N.A. (x) 24.5.1951.

**TREATMENTS :**

1. Shallow hoeing by *khurpi*.
2. Deep hoeing by spade.
3. Control—no hoeing.

**3. DESIGN :**

(i) R.B.D. (ii) (a) 3. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 9'×8'. (v) N.A. (vi) Yes.

**4. GENERAL :**

(i) N.A. (ii) No. (iii) Onion yield. (iv) (a) to (c) No. (v) (a) and (b) No. (vi) Nil. (vii) Experiment conducted by V.R.S.

**5. RESULTS :**

- (i) 2.30 ton/ac.
- (ii) 0.446 ton/ac.
- (iii) Treatments are not significantly different.
- (iv) Av. yield of onion in ton/ac.

Treatment	Av. yield
1.	2.79
2.	2.33
3.	1.78
S.E./mean	=0.223 ton/ac.

Crop :- Onion.

Ref :- U.P. 50(108).

Site :- Govt. Vegetable Res. Stn., Alambagh, Lucknow. Type :- 'C'.

Object :- To study the effect of different methods of sowing on Onion yield.

**1. BASAL CONDITIONS :**

(i) (a) No. (b) *Bhindl.* (c) N.A. (ii) (a) Loam. (b) N.A. (iii) 4.10.1950/29.11.1950. (iv) (a) N.A. (b) As per treatments. (c) and (d) N.A. (e) 1. (v) N.A. (vi) Patna red (medium). (vii) Irrigated. (viii) 1 weeding and 1 trampling. (ix) N.A. (x) 24.5.1951.

**2. TREATMENTS :**

1. Transplanting seedling on flat beds.
2. Transplanting seedlings on ridges.

**3. DESIGN :**

(i) R.B.D. (ii) (a) 2. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 9'×8'. (v) N.A. (vi) Yes:

**4. GENERAL :**

(i) N.A. (ii) No. (iii) Onion yield. (iv) (a) to (c) No. (v) (a) and (b) No. (vi) Nil. (vii) Experiment conducted by V.R.S.

**5. RESULTS :**

- (i) 2.34 tons/ac.
- (ii) 0.455 tons/ac.
- (iii) Treatments are not significantly different.
- (iv) Av. yield of onion in ton/ac.

Treatment	Av. yield
1.	2.31
2-	2.38
S.E./mean	=0.228 ton/ac.

Crop :- Onion.

Ref :- U.P. 50(107).

Site :- Govt. Vegetable Res. Stn., Alambagh, Lucknow. Type :- 'C'.

Object :- To find out the proper depth to which the seed is to be transplanted.

## 1. BASAL CONDITIONS :

(i) (a) No. (b) *Bhindi*. (c) N.A. (ii) (a) Loam. (b) N.A. (iii) 4.10.1950/28.11.1950. (iv) (a) N.A. (b) Transplanting. (c) —, (d) N.A. (e) 1. (v) N.A. (vi) Patna red (medium). (vii) Irrigated. (viii) 1 weeding and 1 trampling. (ix) N.A. (x) 24.5.1951.

## 2. TREATMENTS :

1. 1.5"—transplanting the seedling as to put the bulb at 1.5" depth.
2. 3.0"—transplanting the seedling as to put the bulb at 3.0" depth.
3. 6.0"—transplanting the seedling as to put the bulb at 6.0" depth.
4. Control (above the ground).

## 3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 9'×8'. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) No. (iii) Onion yield. (iv) (a) to (c) No. (v) (a) and (b) No. (vi) Nil. (vii) Experiment conducted by V.R.S.

## 5. RESULTS :

- (i) 2.52 ton/ac.  
 (ii) 0.688 ton/ac.  
 (iii) Treatments are not significantly different.  
 (iv) Av. yield of onion in ton/ac.

Treatment	Av. yield
1.	2.50
2.	2.46
3.	3.12
4.	2.02
S.E./mean	=0.344 ton/ac.

Crop :- Onion.

Ref :- U.P. 50(106).

Site :- Govt. Vegetable Res. Stn. Alambagh, Lucknow. Type :- 'C'.

Object :- To study the effect of age of seedlings on Onion yield.

## 1. BASAL CONDITIONS :

(i) (a) No. (b) *Bhindi*. (c) N.A. (ii) (a) Loam. (b) N.A. (iii) 4.10.1950/as per treatments. (iv) (a) N.A. (b) Transplanting. (c) —. (d) N.A. (e) 1. (v) N.A. (vi) Patna red (medium) (vii) Irrigated. (viii) 1 weeding and 1 trampling. (ix) N.A. (x) 24.5.1951.

## 2. TREATMENTS :

Age of seedlings at transplanting :  $A_1=2$ ,  $A_2=4$ ,  $A_3=6$  and  $A_4=8$  weeks.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 9'×8'. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) No. (iii) Onion yield. (iv) (a) to (c) No. (v) (a) and (b) No. (vi) Nil. (vii) Experiment conducted by V.R.S.

## 5. RESULTS :

- (i) 2.82 ton/ac.  
 (ii) 0.394 ton/ac.  
 (iii) Treatments are highly significantly different.

## (iv) Av. yield of onion in ton/ac.

Treatment	Av. yield
1.	1.88
2.	3.04
3.	4.18
4.	2.18
S.E./mean	=0.197 ton/ac.

Crop :-Onion.

Ref :-U.P. 50(104).

Site :-Govt. Vegetable Res. Stn., Lucknow.

Type :-'C'.

Object :-To study the effect of different methods of sowing on Onion yield.

## 1. BASAL CONDITIONS :

(i) (a) No. (b) *Bhindi*. (c) N.A. (ii) (a) Loam. (b) N.A. (iii) 16.10.1950/30.11.1950. (iv) (a) 4 ploughings, 1 by wats and 2 by *desi* plough and one by cultivator. (b) As per treatments. (c) N.A. (d) 6'x6'. (e) 1. (v) 40 lb./ac. of N as A/S top dressed. (vi) Patna red (medium). (vii) Irrigated. (viii) weeding and trampling (ix) N.A. (x) treatment 2 on 18.4.1951 and 1 on 24.5.1951.

## 2. TREATMENTS :

1. By transplanting-seedling raised by seeds sown in nursery bed.
2. By sett sowing in nursery bed on the same day as in treatment 1.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 2. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 9'x8'. (v) N.A. (vi) Yes

## 4. GENERAL :

(i) Poor—germination of treatment one completely failed. (ii) No. (iii) Onion yield. (iv) (a) to (c) No. (v) (a) and (b) No. (vi) Nil. (vii) The experiment was conducted by V.R.S.

## 5. RESULTS :

- (i) 3.20 ton/ac.
- (ii) 0.5192 ton/ac.
- (iii) Treatments are highly significantly different.
- (iv) Av. yield of onion in ton/ac.

Treatment	Av. yield
1.	1.86
2.	4.55
S.E./mean	=0.2596 ton/ac.

Crop :-Onion.

Ref :-U.P. 53(285).

Site :-Govt. Vegetable Res. Stn., Alambagh, Lucknow. Type :-'C'.

Object :-To find out the efficient and economical methods of growing Onion.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) N.A. (c) N.A. (ii) (a) Clayey loam. (b) N.A. (iii) 26.10.1953. (iv) (a) to (c) N.A. (d) 6'x6'. (e) N.A. (v) 40 lb./ac. of N as F.Y.M. and A/S at 25 lb./ac. of N as top dressed. (vi) Red round (medium). (vii) Irrigated. (viii) N.A. (ix) N.A. (x) 21.5.1954.

## 2. TREATMENTS :

1. Seed sown in nursery.
2. Seed sown in the field on the same day.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 2. (b) N.A. (iii) 6. (iv) (a) and (b) N.A. (v) N.A. (vi) Yes.

## 4. GENERAL :

- (i) N.A. (ii) N.A. (iii) Onion yield. (iv) (a) 1953 to 1954. (b) and (c) No. (v) (a) and (b) No. (vi) Nil. (vii) The expt. was conducted by V.R.S.

## 5. RESULTS :

- (i) 8.73 lb./plot  
 (ii) 2.999 lb./plot.  
 (iii) Treatment differences are not significant.  
 (iv) Av. yield of onion in lb./plot.

Treatment	Av. yield
1.	7.28
2.	10.19
S.E./mean	=1.22 lb /plot.

Crop :- Onion.

Site :- Govt. Vegetable Res. Stn., Lucknow.

Ref :- U.P. 49(63).

Type :- 'C'.

Object :- To study the effect of spacing on bulb growth and Onion.

## 1. BASAL CONDITIONS :

- (i) (a) No. (b) N.A. (c) N.A. (ii) (a) Loam. (b) N.A. (iii) Last week of December/24.1.1950. (iv) (a) 1 punjab ploughing and 1 by *desi*. (b) N.A. (c) —. (d) As per treatments. (e) 1. (v) 100 lb./ac. of N as T.C. applied on 5 and 6.1.1950. (vi) Patna Red (medium). (vii) Irrigated. (viii) 2 hoeings. (ix) 1.75". (x) Top on 15.4.1950 and bulb on 5.5.1950.

## 2. TREATMENTS :

3 spacings :  $S_1=4'' \times 4''$ ,  $S_2=6'' \times 6''$  and  $S_3=9'' \times 9''$ .

## 3. DESIGN :

- (i) R.B.D. (ii) (a) 3. (b) N.A. (iii) 4. (iv) (a) N.A. (b)  $10' \times 6'$ . (v) N.A. (vi) Yes.

## 4. GENERAL :

- (i) Good. (ii) No. (iii) Yield of stripped and unstripped onion. (iv) (a) No. (b) No. (c) No. (v) (a) and (b) No. (vi) Nil. (vii) Experiment conducted by V.R.S.

## 5. RESULTS :

- (i) 6.16 ton/ac.  
 (ii) 0.73 ton/ac.  
 (iii) Treatments are highly significantly different.  
 (iv) Av. yield of onion in ton/ac.

Treatment	Av. yield
$S_1$	8.51
$S_2$	5.59
$S_3$	4.38
S.E./mean	=0.37 ton/ac.

Crop :- Onion.

Site :- Govt. Vegetable Res. Stn., Lucknow.

Ref :- U.P. 50(105).

Type :- 'C'.

Object :- To study the effect of different spacings on Onion yield.

## 1. BASAL CONDITIONS :

- (i) (a) No. (b) *Bhindi*. (c) N.A. (ii) (a) Loam. (b) N.A. (iii) 4.10.1950/ 27.11.1950. (iv) (a) to (e) N.A. (v) N.A. (vi) Patna Red (medium). (vii) Irrigated. (viii) 1 weeding and 1 trampling on 8.5.1951. (ix) N.A. (x) 23.5.1951.

## 2. TREATMENTS :

4 spacings :  $S_1=4'' \times 4''$ ,  $S_2=6'' \times 6''$ ,  $S_3=9'' \times 9''$  and  $S_4=12'' \times 12''$ .

## 3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 9'×8'. (v) N.A. (vi) Yes.

## 4. GENERAL .

(i) N.A. (ii) No. (iii) Onion yield. (iv) (a) No. (b) No. (c) No. (v) (a) and (b) No. (vi) Nil. (vii) Experiment conducted by V.R.S.

## 5. RESULTS :

(i) 3.58 ton/ac.  
 (ii) 0.57 ton/ac.  
 (iii) Treatments are highly significantly different.  
 (iv) Av. yield of onion in ton/ac.

Treatment	Av. yield
S <sub>1</sub>	3.67
S <sub>2</sub>	5.45
S <sub>3</sub>	2.61
S <sub>4</sub>	2.58
S.E./mean	=0.29 ton/ac.

Crop :-Onion.

Ref :-U.P. 53(283).

Site :-Govt. vegetable Res. Stn., Lucknow.

Type :-'C'.

Object :-To study the effect of different spacing on Onion yield.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) N.A. (c) N.A. (ii) (a) Clayey loam. (b) N.A. (iii) 26.10.1953/9.12.1953. (iv) (a) to (e) N.A. (v) 40 lb./ac. of N as F.Y.M. A/S at 25 lb/ac. as top dressing. (vi) Red Round (medium) (vii) Irrigated. (viii) N.A. (ix) N.A. (x) 21.5.1954.

## 2. TREATMENTS :

3 spacings : S<sub>1</sub>=4'×4', S<sub>2</sub>=6'×6' and S<sub>3</sub>=9'×9'.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 3. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 9'×6'. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) N.A. (iii) No. of bulbs/ac. weight of onion. (iv) (a) No. (b) and (c) No. (v) (a) and (b) No. (vi) Nil. (vii) The experiment was conducted by V.R.S.

## 5. RESULTS :

(i) 10.90 ton/ac.  
 (ii) 0.8460 ton/ac.  
 (iii) Treatments are highly significantly different.  
 (iv) Av. yield of onion in ton/ac.

Treatment	Av. yield
S <sub>1</sub>	12.63
S <sub>2</sub>	11.34
S <sub>3</sub>	8.72
S.E./mean	=0.42 ton/ac.

Crop :-Onion.

Ref :-U.P. 49(62).

Site :-Govt. vegetable Res. Stn. Lucknow.

Type :-'I'.

Object :-To study the effect of irrigation at different intervals on Onion yield.

## 1. BASAL CONDITIONS :

(i) (a) No. (b) N.A. (c) N.A. (ii) (a) Loam. (b) N.A. (iii) 9.11.1949/20.1.1950. (iv) (a) 1 ploughing by punjab and 2 by *desi*. (b) transplanting, flat sowing. (c) —. (d) 6'×6'. (e) —. (v) T.C. at 100 lb./ac. on 5.6.1.1950. (vi) Patna large red. (medium). (viii) Irrigated. (viii) 2 hoeings and 2 weedings. (ix) 1.75' (x) Top on 15.4.1950. and bulbs on 5.5.1950.



## 2. TREATMENTS :

4 intervals of irrigation :  $I_0=0$ ,  $I_1=10$ ,  $I_2=20$  and  $I_3=30$  days.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 4. (iv) (a) N.A. (b)  $10' \times 6'$ . (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) No. (iii) Onion yield. (iv) (a) 1949 to 1950. (b) and (c) No. (v) (a) and (b) No. (vi) Nil. (vii) The experiment was conducted by V.R.S.

## 5. RESULTS :

- (i) 3.92 ton/ac.  
 (ii) 0.48 ton/ac.  
 (iii) Treatments are highly significantly different.  
 (iv) Av. yield of onion in ton/ac.

Treatment	Av. yield
$I_0$	2.51
$I_1$	5.06
$I_2$	4.78
$I_3$	3.32
S.E./mean	=0.24 ton/ac.

Crop :- Onion.

Ref :- U.P. 50(111).

Site :- Govt. Vegetable Res. Stn., Lucknow.

Type :- 'P'.

Object :- To study the effect of irrigation at different intervals on Onion yield.

## 1. BASAL CONDITIONS :

(i) (a) No. (b) *Bhindi*. (c) N.A. (ii) (a) Loam. (b) N.A. (iii) 4.10.1950/27.11.1950. (iv) (a) to (e) N.A. (v) N.A. (vi) Patna red (medium). (vii) Irrigated. (viii) 1 weeding and 1 trampling. (ix) N.A. (x) 21.5.1951.

## 2. TREATMENTS :

4 intervals of irrigation :  $I_0=0$ ,  $I_1=10$ ,  $I_2=20$  and  $I_3=30$  days.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 4. (iv) (a) N.A. (b)  $9' \times 8'$ . (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) No. (iii) Onion yield. (iv) (a) 1949 to 1950. (b) and (c) No. (v) (a) and (b) No. (vi) Nil. (vii) Experiment conducted by V.R.S.

## 5. RESULTS :

- (i) 3.22 ton/ac.  
 (ii) 0.3937 ton/ac.  
 (iii) Treatments are highly significantly different.  
 (iv) Av. yield of onion in ton/ac.

Treatment	Av. yield
$I_0$	1.97
$I_1$	5.09
$I_2$	3.17
$I_3$	2.64
S.E./mean	=0.1968 ton/ac.

Crop :- Onion.

Ref :- U.P. 49(119).

Site :- Govt. Botanical Gardens Agri. College, Kanpur. Type :- 'IM'.

Object :- To study the effect of different fertilizers and irrigations on growth, yield and quality of Onion.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) Fallow. (c) Nil. (ii) (a) Sandy loam. (b) N.A. (iii) 3.12.1949. (iv) (a) 1 ploughing with soil turning plough and the field was levelled. (b) Transplanting. (c) —. (d) 12"×6". (e) N.A. (v) N.A. (vi) Onion (red Patna). (vii) Irrigated. (viii) N.A. (ix) N.A. (x) N.A.

## 2. TREATMENTS :

Main-plot treatments :

3 irrigations :  $I_1=8$  irrigations after an interval of 11 days only,  $I_2=6$  irrigations after an interval of 16 days only and  $I_3=4$  irrigations after an interval of 21 days only.

Sub-plot treatments :

4 manures :  $M_0=0$ ,  $M_1=200$  lb./ac. of A/S,  $M_2=400$  lb./ac. of Super and  $M_3=4900$  lb./ac. of wood ash.

## 3. DESIGN :

(i) Split-plot. (iv) (a) 3 main-plots/block and 4 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 6'×9'. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) N.A. (iii) Onion yield. (iv) (a) to (c) N.A. (v) (a) and (b) N.A. (vi) Nil. (vii) The experiment was conducted by P.A.C.

## 5. RESULTS :

- (i) 153.93 lb./ac.  
 (ii) (a) 59.86 lb./ac.  
 (b) 55.23 lb./ac.  
 (iii) Only M effect is highly significant.  
 (iv) Av. yield of onion in lb./ac.

	$I_0$	$I_1$	$I_2$	Mean
$M_0$	143.18	128.56	119.49	130.41
$M_1$	248.05	193.60	184.02	208.56
$M_2$	152.26	142.17	122.51	138.98
$M_3$	157.80	134.11	121.27	137.80
Mean	175.32	149.61	136.88	153.93

S.E. of difference of two

1. marginal means of I = 21.15 lb./ac.  
 2. marginal means of M = 22.54 lb./ac.  
 3. M means at the same level of I = 39.05 lb./ac.  
 4. I means at the same level of M = 45.04 lb./ac.

Crop :- Bhindi.

Ref :- U.P. 52(37).

Site :- Govt. Vegetable Res. Stn., Lucknow.

Type :- 'D'.

Object :- To study different control measures against the spotted boll worm of *Bhindi*.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) and (c) N.A. (ii) (a) Clay loam. (b) N.A. (iii) 23.8.1952. (iv) (a) 2 ploughings with soil turning plough and then pulverising the top soil by cultivator. (b) Dibbling. (c) N.A. (d) Distance between rows 3.5' and between plants 2.5'. (e) N.A. (v) 40 lb. of N through F.Y.M. (vi) Green long. (vii) Irrigated. (viii) Weeding and hoeing 3 times. (ix) N.A. (x) N.A.

## 2. TREATMENTS :

1. Picking and destruction of infested shoots.
2. Picking and destruction of infested shoots and fruits and spraying the crop with 0.25% D.D.T. emulsion.
3. Picking and destruction of infested shoots and fruits and the crop dusted with 5% B.H.C. dust.
4. Control.

## 3. DESIGN :

- (i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 4. (iv) (a) 12'×30'. (b) 11.5'×29.5'. (v) Guard rows between plots 1' and between blocks 4'. (vi) Yes.

## 4. GENERAL :

- (i) Normal. (ii) Attack of spotted boll worm of *bhindi*, cotton jassids, and banded bluster beetle and incidence of virus disease. (iii) No. of healthy and bored fruits/plot. (iv) (a) 1952—N.A. (b) and (c) No. (v) (a) and (b) No. (vi) Nil. (vii) The data has been converted into  $\sin^{-1}\sqrt{p}$  and then analysed. Experiment conducted by V.R. (H.)

## 5. RESULTS :

(i) to (iv).

Treatments	Mean angle in $\sin^{-1}\sqrt{p}$	% of bored fruits (transformed back)
1.	34.69	32.6
2.	30.60	26.2
3.	29.71	24.8
4.	35.80	34.4
G.M.	32.70	29.4
S.E./mean	0.87	
Significance	Highly significant.	

Crop :- *Bhindi (Kharif)*.

Ref :- U.P. 53(31).

Site :- Govt. Vegetable Res. Stn., Lucknow.

Type :- 'D'.

Object :- To study different control measures against the spotted boll worm of *Bhindi*.

## 1. BASAL CONDITIONS :

- (i) (a) Nil. (b) N.A. (c) N.A. (ii) (a) Clay loam. (b) N.A. (iii) 25.7.1953. (iv) (a) 2 ploughings with light soil turning plough followed by *pata*. (b) Sowing directly in field. (c) 2 sr/ac. (d) Sowing in lines 2½'×2' (e) N.A. (v) 60 lb of N as F.Y.M. and A/S. (vi) Medium. (vii) Irrigated. (viii) 2 hand weeding and 2 hoeings by bullocks. (ix) N.A. (x) 7.10.1953 to 14.11.1953.

## 2. TREATMENTS :

1. Picking and destruction of infested shoots and fruits and spraying with 0.25% D.D.T. emulsion.
2. Picking of infested fruits and shoots and dusting with 5 % B.H.C. dust.
3. Control (two plots).

## 3. DESIGN :

- (i) R.B.D. (ii) (a) 4. (b) N.A. (iii) N.A. (iv) 27'×12'. (v) N.A. (vi) Yes.

## 4. GENERAL :

- (i) Normal, no lodging. (ii) Spotted boll worm as per treatment. (iii) Count of bored fruits and healthy fruits. (iv) (a) 1952—N.A. (b) and (c) No. (v) (a) and (b) No. (vi) Nil. (vii) The data has been converted into  $\sin^{-1}\sqrt{p}$  and then analysed. The experiment was conducted by V.R. (H.)

## 5. RESULTS :

(i) to (iv).

Treatment	Mean	Transformed back—mean %
1.	16.75	7.42
2.	15.34	8.73
3.	17.66	11.28
G.M.	17.66	9.41
S.E./mean	0.78	
Significance	Highly significant.	

Crop :-Bhindi.

Ref :-U.P. 50(229).

Site :-Govt. Vegetable Res. Stn., Lucknow.

Type :-'D'.

Object :-To study different control measures against *Bhindi* borer.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) and (c) N.A. (ii) (a) Loam. (b) N.A. (iii) N.A. (iv) (a) Ploughing with *dest* plough followed by *para*. (b) to (e) N.A. (v) F.Y.M. at 60 lb./ac. of N. (vi) Green long (medium). (vii) Irrigated. (viii) to (x) N.A.

## 2. TREATMENTS :

1. Spraying *bhindi* plants with 0.2% D.D.T. suspension at 60 gallons/ac.
2. Spraying *bhindi* plants with 0.1% D.D.T. suspension at 60 gallons/ac.
3. Dusting *bhindi* plants with gammaxene D<sub>9</sub> 25 as such at 25 lb./ac.
4. Dusting *bhindi* plants with hexyclane 5% at 25 lb./ac.
5. Control.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 42'×150'. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) Borer attack—as per treatments. (iii) Percentage of damaged fruits. (iv) (a) 1950—N.A. (but treatments changed from year to year). (b) No. (c) N.A. (v) (a) and (b) N.A. (vi) Nil. (vii) The data has been converted into  $\sin^{-1}\sqrt{P}$  and then analysed where P=percentages of attacked fruits. Transformed back mean percentages are given after applying bias correction. Experiment conducted by V.R.(K).

## 5. RESULTS :

Treatment	Mean angle	Transformed back mean %
1.	17.95	9.91
2.	17.28	9.23
3.	19.22	11.22
4.	20.96	13.17
5.	34.61	32.62
G.M.	22.00	14.49
S.E./mean	=0.937	

Crop :-Brinjal.

Ref :-U.P. 49(180).

Site :-Govt. Vegetable Res. Stn., Lucknow.

Type :-'M'.

Object :-To find out the comparative effects of N and P manures on Brinjal.

## 1. BASAL CONDITIONS :

(i) (a) No. (b) and (c) N.A. (ii) (a) Clay loam. (b) N.A. (iii) 14.6.1949/27.7.1949. (iv) (a) N.A. (b) Transplanting. (c) —. (d) 4'×3'. (e) N.A. (v) N.A. (vi) Purple round. (vii) N.A. (viii) N.A. (ix) N.A. (x) N.A.

## 2. TREATMENTS :

- |   |   |
|---|---|
| 1. Control.   | 11. 140 lb./ac. of N in equal doses as F.Y.M and A/S.                                   |
| 2. 140 lb./ac. of N as F.Y.M.                             | 12. 70 lb./ac. of N in equal doses as F.Y.M and A/S.                                    |
| 3. 70 lb./ac. of N as F.Y.M.                              | 13. 35 lb./ac. of N in equal doses as F.Y.M. and A/S.                                   |
| 4. 35 lb./ac. of N as F.Y.M.                              | 14. 70 lb./ac. of N as F.Y.M.+70 lb./ac. of P <sub>2</sub> O <sub>5</sub> as Super.     |
| 5. 140 lb./ac. of N as A/S.                               | 15. 35 lb./ac. of N as F.Y.M.+35 lb./ac. of P <sub>2</sub> O <sub>5</sub> as Super.     |
| 6. 70 lb./ac. of N as A/S.                                | 16. 17.5 lb./ac. of N as F.Y.M.+17.5 lb./ac. of P <sub>2</sub> O <sub>5</sub> as Super. |
| 7. 35 lb./ac. of N as A/S.                                | 17. 70 lb./ac. of N as A/S+70 lb./ac. of P <sub>2</sub> O <sub>5</sub> as Super.        |
| 8. 140 lb./ac. of P <sub>2</sub> O <sub>5</sub> as Super. | 18. 35 lb./ac. of N as A/S+70 lb./ac. of P <sub>2</sub> O <sub>5</sub> as Super.        |
| 9. 70 lb./ac. of P <sub>2</sub> O <sub>5</sub> as Super.  | 19. 17.5 lb./ac. of N as A/S+17.5 lb./ac. of P <sub>2</sub> O <sub>5</sub> as Super.    |
| 10. 35 lb./ac. of P <sub>2</sub> O <sub>5</sub> as Super. |   |
- F.Y.M. applied on 29.7.1949, A/S on 20.8.1949 and Super on 20.9.1949.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 19. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 48'×20'. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) N.A. (iii) Brinjal yield. (iv) (a) to (c) No. (v) (a) and (b) No. (vi) Nil. (vii) Experiment conducted by V.R.S.

## 5. RESULTS :

(i) 6.32 ton/ac.

(ii) 1.28 ton/ac.

(iii) Treatments are not significant.

(iv) Av. yield of brinjal in lb./ac.

Treatment	Av. yield	Treatment	Av. yield
1.	6.29	11.	6.45
2.	6.35	12.	6.70
3.	6.60	13.	6.66
4.	6.39	14.	6.60
5.	6.51	15.	6.31
6.	6.52	16.	5.64
7.	6.23	17.	6.64
8.	5.92	18.	6.26
9.	6.52	19.	6.03
10.	5.54		
	S.E./mean	=0.64 ton/ac.	

Crop :- Brinjal.

Ref :- U.P. 51(2I9).

Site :- Govt. Vegetable Res. Stn., Lucknow.

Type :- 'D'.

Object :- To compare different control measure of Brinjal lace wing bug.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) N.A. (c) N.A. (ii) (a) Clay loam. (b) N.A. (iii) N.A. (iv) (a) 2-3 ploughings with soil turning plough. (b) Transplanted. (c) —. (d) Distance between plants 2'. (e) N.A. (v) 60 lb./ac. of N as F.Y.M. 2 days before transplanting and A/S 40 lb./ac. of N after one month of transplanting. (vi) Round black. (vii) Irrigated. (viii) Weeding and hoeing. (ix) N.A. (x) N.A.

## 2. TREATMENTS :

- Lime Sulphur wash spray (1 : 2 : 10) at 15 days interval.
- Tobacco soap decoction (1 : 1 : 10) at 15 days interval.
- Fish oil soap spray (1 : 50).
- Pyrocolloid (1 : 400) at 15 days interval.
- Control.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 4. (iv) (a) 42.5' × 25.25'. (b) 41.5' × 24.25'. (v)  $\frac{1}{2}$ ' around the net plot. (vi) Yes.

## 4. GENERAL :

(i) Normal. (ii) Attack for fruit and shoot borer and cotton jassids. (iii) Number of insects were continued in 10% of plants. (iv) (a) No. (b) No. (c) N.A. (v) (a) and (b) No. (vi) Transformed back mean percentage are given after applying bias correction. The data has been converted into  $\sin^{-1}\sqrt{p}$  and then analysed. (vii) The experiment was conducted by V.R.S.

## 5. RESULTS :

(i) to (iv)

Treatment	Mean angle	Transformed back mean percentage of reduction of brinjal lace wing bug
1.	59.68	74.26
2.	59.16	73.48
3.	61.30	75.18
4.	60.70	75.79
5.	6.08	1.61
G.M.	49.38	57.54
S.E./mean	=1.736 degrees	

Treatment differences are highly significant.

Crop :- Brinjal.

Ref :- U.P. 52(36).

Site :- Govt. Vegetable Res. Stn., Lucknow.

Type :- 'D'.

Object :- To compare different control measures against fruit and shoot borers of Brinjal.

## 1. BASAL CONDITIONS :

(i) Nil. (b) N.A. (c) N.A. (ii) (a) Clay loam. (b) N.A. (iii) 5.7.1952/8.8.1952. (iv) (a) 2-3 ploughings with soil turning plough and pulverisation of top soil by cultivator. (b), (c), (d) and (e) N.A. (v) 60 lb./ac. of N as F.Y.M. A/S top dressed at 8 lb./ac. of N. (vi) Round blue. (vii) Irrigated. (viii) Weeding and hoeing 3 times. (ix) N.A. (x) N.A.

## 2. TREATMENTS :

1. Spraying 0.3% D.D.T. emulsion at 40-60 gallons/ac. after destruction of infested shoots.
2. Dusting with 5% B.H.C. at 8-12 lb./ac. after destruction of infested shoots.
3. Control (two plots).

## 3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 4. (iv) (a) 10' x 25'. (b) 9.5' x 24.5'. (v)  $\frac{1}{4}$  all round the net plot. (vi) Yes.

## 4. GENERAL :

(i) Normal. (ii) Attack of brinjal fruit and shoot borer, cotton jassids and brinjal epilachna. (iii) Number of bored and healthy fruits. (iv) (a) 1952-1953. (b), (c) No. (v) (a) and (b) No. (vi) The data has been converted into  $\sin^{-1}\sqrt{p}$  and then analysed where  $p$  = percent of bored fruits. (vii) The experiment was conducted by V.R.(H).

## 5. RESULTS :

(i) to (iv)

Treatment	Mean value of $\sin^{-1}\sqrt{p}$	Mean % of bored fruits transformed back
2.	13.30	5.7
1.	22.58	15.1
3.	24.50	17.5
G.M.	21.22	13.5
S.E./mean	=1.53	

Treatment are highly significant.

Crop :- Brinjal.

Ref :- U.P. 53(30).

Site :- Govt. Vegetable Res. Stn., Lucknow.

Type :- 'D'.

Object :- To compare different control measures against fruit and shoot borer of Brinjal.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) N.A. (c) N.A. (ii) (a) Clay loam. (b) N.A. (iii) 8.7.1953/8.8.1953. (iv) (a) 2 ploughings with light soil turning plough followed by *pata* and cultivator, one by *desi* plough, followed by *pata*. (b) Transplanted. (c) N.A. (d) Between plants 2 $\frac{1}{4}$ ', between rows 3'. (e) N.A. (v) 60 lb. of N in the forms of F.Y.M. and A/S. F.Y.M. 20 days before transplanting and A/S after one month of transplanting. (vi) Round purple (medium). (vii) Irrigated. (viii) 2 hand weeding and 2 hoeing by bullocks. (ix) N.A. (x) 21.10.1953 to 21.11.1953.

## 2. TREATMENTS :

1. Picking of infested fruits and shoots and spraying the crop with 0.25% emulsion.
2. Picking of infested fruits and shoots and dusting with 5% B.H.C. dust.
3. Control (two plots).

## 3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 4. (iv) (a) and (b) 15' x 25'. (v) Nil. (vi) Yes.

## 4. GENERAL :

(i) Normal. No lodging. (ii) Incidence of brinjal fruit and shoot borer. (iii) No. of healthy and bored fruits. (iv) (a) 1951-1955. (b) No. (c) No. (v) (a) and (b) No. (vi) The data has been converted into  $\sin^{-1}\sqrt{p}$  and then analysed where  $p$  = percent bored fruits. (vii) Experiment conducted by V.R.(H).

## 5. RESULTS :

(i) to (iv)

Treatment	Mean value of $\text{Sin}^{-1}\sqrt{p}$	Mean% of bored fruits transformed back
1.	21.14	13.38
2.	17.07	9.04
3.	25.84	19.32
G.M.	22.48	14.97
S.E./mean	1.47	

Treatment differences are highly significant.

Crop :- Cabbage (*Rabi*).

Ref :- U.P. 49(245).

Site :- Castle Grant Orchard, B.R. College, Agra.

Type :- 'D'.

Object :- To study the effect of pre-sowing low temperature treatment of seeds on the size and yield of Cabbage.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fallow. (c) N.A. (ii) (a) and (b) Refer soil analysis, Castle Grant Orchard, Agra. (iii) 14.10.1949/44 days after nursing. (iv) (a) Two ploughings by soil turning plough and 4 by *dest* plough. Every ploughing followed by *pata*. (b) Transplanting. (c) —. (d) 2' x 1½'. (e) One seedling/hole. (v) N.A. (vi) Sutton's Eclipse Drumhead (medium). (vii) Irrigated. (viii) 3 hoeings. (ix) N.A. (x) 5 harvestings on 28.2.1949, 7, 14, 21 and 26.3.1949.

## 2. TREATMENTS :

1. Control.

2. Vernalisation of seeds.

Technique of Vernalisation :- Seeds soaked in water at room temperature (26°C to 28°C) for 8 hours and changing water several times. After soaking, seeds taken out and moisture removed by blotting paper and clean dry towel. The seeds kept in wet cloth bags. These bags then wrapped in moist pieces of thick cloth and placed in the refrigerator, the temperature varying 3°C—5°C. Every third day, the seeds taken out, mixed up, placed in the bag, further moistened if necessary and replaced in refrigerator. All the precautions taken to see that seeds do not dry up and life activity remains uninterrupted. After three weeks, seeds taken out and sown in nursery.

Before sowing, the seed of control treatment were soaked and brought to the same level of germination as chilled ones. Chilled seeds were kept for 12 hours after taking out of refrigerator.

## 3. DESIGN :

(i) Paired-plot. (ii) (a) 2. (b) N.A. (iii) 4. (iv) (a) and (b) 28' x 22'. (v) Nil. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) N.A. (iii) Weight of Cabbage heads. (iv) (a) No. (b) and (c) Nil. (v) (a) and (b) No. (vi) Nil. (vii) The experiment was conducted by B.R.C.

## 5. RESULTS :

(i) 15.01 lb./row

(ii) 1.133 lb./row

(iii) Treatment difference is highly significant.

(iv) Av. yield of cabbage heads in lb./row.

Treatment	Av. weight
1.	16.64
2.	13.38
S.E./mean	=0.566 lb./row

Crop :-Cabbage (*Rabi*).

Ref :-U.P. 49(244).

Site :-Castle Grant Orchard, B.R. College, Agra.

Type :-'D'.

Object :-To study the effect of pre-sowing low temperate treatment of seeds on the size and yield of Cabbage.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fallow. (c) N.A. (ii) (a) and (b) Refer soil analysis, Castle Grant orchard, Agra. (iii) 14.10.1949/44 days after nursery. (iv) (a) 2 ploughings by soil turning plough and 4 by *desi* plough. Every ploughing followed by *pata*. (b) Transplanting. (c) —. (d) 2'×1½'. (e) One seedling/hole (v) N.A. (vi) Pride of garden (early). (vii) Irrigated. (viii) 3 hoeings. (ix) N.A. (x) 5 harvests on 28.2.1949, 7, 14, 21, and 26.3.1949.

## 2. TREATMENT :

1. Control.

2. Vernalisation of seeds.

Technique of Vernalisation :-Seeds soaked in water at room temperature (26°C to 28°C) for 8 hours and changing water several times. After soaking seeds taken out and moisture removed by blotting paper and clean dry towel. The seeds kept in wet cloth bags. These bags then wrapped in moist pieces of thick cloth and placed in the refrigerator, the temperature varying between 3°C—5°C. Every third day, the seeds taken out, mixed up, placed in the bag, further moistened if necessary and replaced in refrigerator. All the precautions taken to see that seeds do not dry up and life activity remains uninterrupted. After three weeks, seeds taken out and sown in nursery.

Before sowing, the seeds of control treatment were soaked and brought to the same level of germination as chilled ones. Chilled seeds were kept for 12 hours after taking out of refrigerator.

## 3. DESIGN :

(i) Paired-plot. (ii) (a) 2. (b) N.A. (iii) 4. (iv) (a) and (b) 28'×22'. (v) Nil. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) N.A. (iii) Weight of cabbage heads. (iv) (a) No. (b) No. (c) Nil. (v) (a) and (b) No. (vi) Nil. (vii) The experiment was conducted by B.R.C.

## 5. RESULTS :

(i) 24.98 lb/row.

(ii) 1.329 lb/row.

(iii) Treatment difference is significant.

(iv) Av. yield of cabbage heads in lb./row.

Treatment	Av. yield
1.	26.36
2.	23.65
S.E./mean	=0.6646 lb/row.

Crop :-Carrot (*Rabi*).

Ref :-U.P.52(332).

Site :-B.R. College Farm, Bichpuri, Agra.

Type :-'M'.

Object :-To study the effect of different sources and levels of N on Carrot.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) (a) Sandy loam. (b) Refer soil analysis, B.R. College Farm, Bichpuri, Agra. (iii) 3.10.1952. (iv) (a) Field prepared by discing, ploughing ; levelling by *pata*. (b) Broadcast. (c) —. (d) N.A. (e) N.A. (v) N.A. (vi) No. (vii) Irrigated. (viii) 2 weedings. (ix) N.A. (x) 26.1.1953.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 2 sources of N : S<sub>1</sub>=compost and S<sub>2</sub>=A/S.(2) 4 levels of N : N<sub>0</sub>=0, N<sub>1</sub>=40, N<sub>2</sub>=80 and N<sub>3</sub>=120 lb./ac.

N applied before sowing.

## 3. DESIGN :

(i) 2×4 Fact. in R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 18'×12'. (v) N.A. (vi) Yes.



## 4. GENERAL :

- (i) Good. (ii) N.A. (iii) Carrot yield. (iv) (a) No. (b) Nil. (c) No. (v) (a) and (b) No. (vi) Nil.  
 (vii) The experiment was conducted by B.R.C. No plot-wise yield data was available.

## 5. RESULTS :

- (i) 6.14 ton/ac.  
 (ii) 1.429 ton/ac.  
 (iii) S effect is highly significant, N effect is significant. Interaction is not significant.  
 (iv) Av. yield of carrot in ton/ac.

Treatment	Av. yield
N <sub>0</sub>	4.58
N <sub>1</sub>	7.16
N <sub>2</sub>	6.37
N <sub>3</sub>	6.46
S <sub>1</sub>	4.44
S <sub>2</sub>	8.88

S.E. of N means = 0.505 ton/ac.

S.E. of S means = 0.412 ton/ac.

Crop :- Cauliflower.

Ref :- U.P. 53(284).

Site :- Govt. Vegetable Res. Stn., Lucknow.

Type :- 'M'.

Object :- To study the effect of manuring on the subsequent yield of Cauliflower.

## 1. BASAL CONDITIONS :

- (1) (a) Nil. (b) and (c) N.A. (ii) (a) Loam. (b) N.A. (iii) N.A. (iv) (a) to (e) N.A. (v) F.Y.M.  
 (vi) N.A. (vii) Irrigated. (viii) to (x) N.A.

## 2. TREATMENTS :

Raising of seedlings on :

1. Manured seed bed.
2. Unmanured seed bed.

Dose of manure—N.A.

## 3. DESIGN :

- (i) R.B.D. (ii) (a) 2. (b) N.A. (iii) 4. (iv) (a) and (b) N.A. (v) N.A. (vi) Yes.

## 4. GENERAL :

- (i) Due to water logging and continuous rains, transplanting was delayed by nearly 52 days. (ii) N.A.  
 (iii) Diameter of each flower. (iv) (a) to (c) No. (v) (a) and (b) Nil. (vi) Only observation of diameter and number of heads were available. It is not even known whether the yield data was taken or not.  
 (vii) Experiment conducted by V.R.S.

## 5. RESULTS :

- (i) 12.06 cm.  
 (ii) 0.645 cm.  
 (iii) N.A.  
 (iv) Av. diameter of flower in cm.

Treatment	Av. diameter
1.	12.82
2.	11.31

S.E./mean = 0.322 cm.

Crop :- Cauliflower.

Ref :- U.P. 53(286).

Site :- Govt. Vegetable Res. Stn., Lucknow.

Type :- 'M'.

Object :—To make preliminary studies on the causes of buttoning in Cauliflower with reference to manurial doses of NPK.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) and (c) N.A. (ii) (a) Loam. (b) N.A. (iii) 13.8.1953/14.11.1953. (iv) (a) N.A. (b) Transplanted. (c) —. (d) and (e) N.A. (v) F.Y.M. at 40 lb./ac. of N. (vi) Medium Patna (late). (vii) Irrigated. (viii) N.A. (ix) N.A. (x) 15.12.1953 to 19.1.1954.

## 2. TREATMENTS :

All combinations of (1), (2) and (3)

(1) 3 levels of N :  $N_0=0$ ,  $N_1=50$  and  $N_2=75$  lb./ac. of N.

(2) 3 levels of  $P_2O_5$  :  $P_0=0$ ,  $P_1=100$  and  $P_2=200$  lb./ac. of  $P_2O_5$ .

(3) 3 levels of  $K_2O$  :  $K_0=0$ ,  $K_1=50$  and  $K_2=100$  lb./ac. of  $K_2O$ .

N applied as A/S,  $P_2O_5$  as Super and  $K_2O$  as Pot. Sulphate.

## 3. DESIGN :

(i)  $3^3$  confounded experiment. W and X components of NPK interaction partially confounded. (ii) (a) 9 Plots/block ; 3 Hocks/replication. (b) N.A. (iii) 2. (iv) (a) N.A. (b)  $10' \times 6'$ . (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) N.A. (iii) Diameter of cauliflower in cm. (iv) (a) and (b) No. (c) N.A. (v) (a) and (b) No. (vi) Nil. (vii) Experiment conducted by V.R.S. Only observation of diameter and number of heads were available. No yield data was available.

## 5. RESULTS :

(i) 7.83 cms.

(ii) 0.795 cms.

(iii) Main effect N and X component of NPK interaction are highly significant. Interaction PK is significant. Other effects are not significant.

(iv) Av. diameter of cauliflower in cm.

	$P_0$	$P_1$	$P_2$	Mean	$K_0$	$K_1$	$K_2$
$N_0$	5.24	5.56 <sup>1</sup>	5.08	5.29	4.99	5.06	5.82
$N_1$	8.56	8.15	7.92	8.21	8.31	8.44	7.88
$N_2$	10.10	10.33	9.57	10.00	9.74	10.14	10.12
Mean	7.97	8.01	7.52	7.83	7.68	7.88	7.94
$K_0$	7.34	8.13	7.57				
$K_1$	8.04	7.61	7.99				
$K_2$	8.52	8.30	7.01				

S.E. of any marginal mean = 0.187 cm.  
S.E. of body of table = 0.324 cm.

Crop :- Cauliflower.

Ref :- U.P. 53(287).

Site :- Govt. Vegetable Res. Stn., Lucknow.

Type :- 'C'.

Object :—To make preliminary studies on causes of buttoning in Cauliflower with reference to time of sowing.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) N.A. (c) N.A. (ii) (a) Clayey loam, (b) N.A. (iii) As per treatments. (iv) (a) N.A. (b) Transplanted. (c) —. (d) Between plant—2'. (e) N.A. (v) F.Y.M. at 60 lb./ac. of N as B.D. top dressing by A/S at 40 lb./ac. of N. (vi) Early. (vii) Irrigated. (viii) N.A. (ix) N.A. (x) 10.11.1953 to 7.1.1954.

**2. TREATMENTS :**

8 dates of sowing/transplanting :  $D_1=18.6.1953/26.8.1953$ ,  $D_2=2.7.1953/9.9.1953$ ,  $D_3=16.7.1953/23.9.1953$ ,  
 $D_4=30.7.1953/7.10.1953$ ,  $D_5=13.8.1953/21.10.1953$ ,  $D_6=27.8.1953/4.11.1953$   
 $D_7=10.9.1953/18.11.1953$  and  $D_8=24.9.1953/2.12.1953$ .

**3. DESIGN :**

(i) R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a) N.A. (b)  $8' \times 4'$ . (v) N.A. (vi) Yes.

**4. GENERAL :**

(i) Water logging. (ii) N.A. (iii) Diameter and no. of cauliflower. (iv) (a) to (c) No. (v) (a) and (b) No.  
 (vi) The seedlings of Tr. $D_2$  and Tr. $D_3$  were destroyed after transplanting due to heavy rains and water logging. (vii) The expt. was conducted by V.R.S.

**5. RESULTS :**

- (i) 5.593 cm.  
 (ii) 1.054 cm.  
 (iii) Treatment differences are highly significant.  
 (iv) Av. diameter of cauliflower in cm.

Treatment	Av. in cm.
$D_1$	10.642
$D_4$	9.245
$D_5$	3.058
$D_6$	5.350
$D_7$	2.618
$D_8$	2.648
S.E./mean	=0.527 cm.

Note :—Only observations of diameter and number of heads were available. No yield data was available at collection time. It is not even known whether the yield data was taken at all at the time when the experiment was conducted.

Crop :-Colocasia.

Ref :-U.P. 52(35).

Site :-Govt. Vegetable Res. Stn., Lucknow.

Type :-'D'.

Object :—To find out the efficacy of fungicidal spray in controlling the late blight of Colocasia.

**1. BASAL CONDITIONS :**

(i) (a) Nil. (b) N.A. (c) N.A. (ii) (a) Clay loam. (b) N.A. (iii) 10.5.1952. (iv) (a) to (e) N.A. (v) N.A.  
 (vi) Local variety. (vii) Irrigated. (viii) N.A. (ix) N.A. (x) 3.12.1952.

**2. TREATMENTS :**

1. Bordeaux mixture.
  2. Perenox.
  3. Cupravit.
  4. Control (2 plots/replication)
- Method of application is dusting and spraying.

**3. DESIGN :**

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 5. (iv) (a)  $35' \times 15.5'$ . (b)  $33.5' \times 14'$ . (v)  $9^\circ$  all round the plot  
 (vi) Yes.

**4. GENERAL :**

(i) Normal. (ii) Attack of light blight disease—As per treatments. (iii) No. of healthy and attacked plant after each spraying and yield. (iv) (a) 1952—1954. (b), (c) No. (v) (a), (b) No. (vi) Nil. (vii) The data has been converted into  $\sin^{-1}\sqrt{p}$ , where  $p$  = % of infection, and then analysed.

## 5. RESULTS :

(i) to (iv) Treatment	Mean value of $\sin^{-1}\sqrt{p}/\text{plot}$	% infection transformed
1.	25.62	19.01
2.	19.18	11.18
3.	30.46	25.94
4.	83.62	98.28
G.M.	48.50	

S.E./mean except control mean = 2.282

S.E. of control mean = 1.614

Treatment differences are highly significant.

Crop :-Garlic.

Ref :-U.P. 50(102).

Site :-Govt. Vegetable Res. Stn., Lucknow.

Type :-'M'.

Object :-To find out the best time of application of N.

## 1. BASAL CONDITIONS :

(i) (a) No. (b) and (c) N.A. (ii) (a) Loam. (b) N.A. (iii) 16.10.1950. (iv) (a) to (c) N.A. (v) Nil. (vi) Local. (vii) Irrigated. (viii) 3 hoeings. (ix) N.A. (x) 14.4.1951.

## 2. TREATMENTS :

100lb./ac. of N as A/S applied at :

1. Before sowing on 10.10.1950.
2. After sowing on 31.10.1950.
3. In five monthly intervals from the date of sowing.
4. Control (no manure).

## 3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 9'x8'. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) No. (iii) Garlic yield. (iv) (a) to (c) No. (v) (a) and (b) No. (vi) Nil. (vii) Experiment conducted by V.R.S.

## 5. RESULTS :

(i) 3692 lb./ac.

(ii) 456.4 lb./ac.

(iii) Treatment differences are not significant.

(iv) Av. yield of garlic in lb./ac.

Treatment	Av. yield
1.	3936
2.	3657
2.	3881
4.	3296

S.E./mean = 228.2 lb./ac.

Crop :-Garlic.

Ref :-U.P. 50(103).

Site :-Govt. Vegetable Res. Stn., Lucknow.

Type :-'M'.

Object :-To compare the effect of different sources of N on Garlic.

## 1. BASAL CONDITIONS :

(i) (a) No. (b) and (c) N.A. (ii) (a) Loam. (b) N.A. (iii) 16.10.1950. (iv) (a) to (c) N.A. (v) Nil. (vi) Local. (vii) Irrigated. (viii) 3 hoeings and weedings. (ix) N.A. (x) 16.4.1951.

**2. TREATMENTS :**

100 lb./ac. of N as :  $S_1=A/S$ ,  $S_2=$ Castor cake,  $S_3=F.Y.M.$  and  $S_4=$ Control. (No manure)

**3. DESIGN :**

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 4. (iv) (a) N.A. (b)  $9' \times 8'$ . (v) N.A. (vi) Yes.

**4. GENERAL :**

(i) N.A. (ii) No. (iii) Garlic yield. (iv) (a) to (c) No. (v) (a) and (b) No. (vi) Nil. (vii) Experiment. conducted by V.R.S.

**5. RESULTS :**

- (i) 3554 lb./ac.  
 (ii) 245.2 lb./ac.  
 (iii) Treatment differences are highly significant.  
 (iv) Av. yield of garlic in lb./ac.

Treatment	Av. yield
$S_1$	3588
$S_2$	4028
$S_3$	3530
$S_4$	3069
S.E./mean	=122.6 lb./ac.

Crop :- Garlic.

Site :- Govt. Vegetable Res. Stn., Lucknow.

Ref :-U.P. 50(100).

Type :- 'C'.

Object :-To find out the best spacing for Garlic.

**1. BASAL CONDITIONS :**

(i) (a) No. (b) *Bhindi*. (c) N.A. (ii) (a) Loam. (b) N.A. (iii) 16.10.1950. (iv) (a) to (c) N.A. (d) As per treatments. (e) 1 seed/hole. (v) N.A. (vi) Local. (vii) Irrigated. (viii) 3 hoeings and weedings. (ix) N.A. (x) 16.4.1951.

**2. TREATMENTS :**

4 spacings between seeds :  $S_1=4'' \times 4''$ ,  $S_2=6'' \times 6''$ ,  $S_3=9'' \times 9''$  and  $S_4=12'' \times 12''$ .

**3. DESIGN :**

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 4. (iv) (a) N.A. (b)  $9' \times 8'$ . (v) N.A. (vi) Yes.

**4. GENERAL :**

(i) Good. (ii) No. (iii) Garlic yield. (iv) (a) to (c) No. (v) (a) and (b) No. (vi) Nil. (vii) Experiment conducted by V.R.S.

**5. RESULTS :**

- (i) 3366 lb./ac.  
 (ii) 900.2 lb./ac.  
 (iii) Treatment differences are significant.  
 (iv) Av. yield of garlic in lb./ac.

Treatment	Av. yield
$S_1$	4046
$S_2$	4557
$S_3$	2381
$S_4$	2479
S.E./mean	= 450.1 lb./ac.

Crop :- Garlic (*Rabi*).

Ref :- U.P. 50(301).

Site :- Castle Grant Orchard, B.R. College, Agra.

Type :- 'C'.

Object :- To study the effect of date of sowing, spacings and method of sowing on the yield of Garlic.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) (a) Light loam. (b) Refer soil analysis, Castle Grant Orchard, Agra. (iii) 1, 21.10.1950 and 10.11.1950. (iv) (a) 2 soil turning, 3 ploughings by *desi* plough and *pata*. (b) N.A. (c) N.A. (d) Row to row—9" and in rows as per treatments. (e) N.A. (v) 200 lb./ac. of N as sieved municipal compost, mixed in soil with the help of *kudali*. (vi) Local. (vii) Irrigated. (viii) 6 hoeings, 7 weedings and earthing up. (ix) N.A. (x) 29.3.1951, 4, 9.4.1951 according to sowing dates.

## 2. TREATMENTS :

Main-plot treatments :

3 dates of sowing :  $D_1=1.10.1950$ ,  $D_2=21.10.1950$  and  $D_3=10.11.1950$ .

Sub-plot treatments :

All combinations of (1) and (2)

(1) 3 spacings :  $S_1=2''$ ,  $S_2=4''$  and  $S_3=6''$  between plants.(2) 2 methods of sowing :  $M_1$ =in flat beds and  $M_2$ =in ridges.

## 3. DESIGN :

(i) Split-plot (ii) (a) 3 main-plots/block and 6 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 10'×8'. (b) 9'×7'. (v) 1' on either side. (vi) Yes.

## 4. GENERAL :

(i) Satisfactory. (ii) N.A. (iii) Germination, no. of roots, ht. of plants, no. of leaves, diameter of bulb, dry weight of leaves, dry weight of bulbs, length of stem, diameter of disc of the bulb. No. of clove circles. no. of cloves, no. of sprouted cloves, yield per plot and no. of bulbs per plot. (iv) (a) to (c) No. (v) (a) and (b) Nil. (vi) Nil. (vii) The experiment was conducted by B.R.C. Raw data N.A.

## 5. RESULTS :

(i) 2878 lb./ac.

(ii) (a) 1788 lb./ac.

(b) 922 lb./ac.

(iii) Only D effect is significant.

(iv) Av. yield of garlic in lb./ac.

Treatment	Av. yield
$D_1$	3693
$D_2$	3090
$D_3$	1851

S.E./mean = 365 lb./ac.

Crop :- Garlic.

Ref :- U.P. 50(101).

Site :- Govt. Vegetable Res. Stn. Lucknow.

Type :- 'I'.

Object :- To find out the best interval of irrigation.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Bhindi*. (c) N.A. (ii) (a) Loam. (b) N.A. (iii) 16.10.1950. (iv) (a) to (e) N.A. (v) Nil. (vi) Local (vii) As per treatments. (viii) 3 weedings. (ix) N.A. (x) 16.4.1951.

## 2. TREATMENTS :

4 intervals of irrigations :  $I_1=10$ ,  $I_2=20$ ,  $I_3=30$  days and  $I_4$ =control (no irrigation).

## 3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 9'×8'. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) No. (iii) Garlic yield. (iv) (a) No. (b) No. (c) No. (v) (a) and (b) No. (vi) Nil. (vii) Experiment conducted by V.R.S.

## 5. RESULTS :

- (i) 2072 lb./ac.  
 (ii) 452.0 lb./ac.  
 (iii) Treatment differences are highly significant.  
 (iv) Av. yield of garlic in lb./ac.

Treatment	Av. yield
I <sub>1</sub>	3323
I <sub>2</sub>	2062
I <sub>3</sub>	1892
I <sub>4</sub>	1010
S.E./mean	= 226.0 lb./ac.

Crop :- Pumpkin

Ref :- U.P. 49(181).

Site :- Govt. Vegetable Res. Stn., Lucknow.

Type :- 'C'.

Object :- To study the effect of different combinations of methods of sowing, spacings and dates of sowing on Pumpkin yield.

## 1. BASAL CONDITIONS :

- (i) (a) No. (b) N.A. (c) N.A. (ii) (a) Clay loam. (b) N.A. (iii) 23.7.1949, 7.8.1949 and 28.8.1949.  
 (iv) N.A. (v) N.A. (vi) N.A. (vii) N.A. (viii) N.A. (ix) N.A. (x) N.A.

## 2. TREATMENTS :

## Main-plot treatments :

2 methods of sowing : M<sub>1</sub>=in pits and M<sub>2</sub>=in flat rows.

## Sub-plot treatments :

3 dates of sowing : D<sub>1</sub>=2 weeks before normal time, D<sub>2</sub>=7.8.1949 (normal time) and D<sub>3</sub>=2 weeks after normal time.

## Sub-sub-plot treatments :

3 spacings between rows and plants : S<sub>1</sub>=5'×5', S<sub>2</sub>=8'×6' and S<sub>3</sub>=10'×8'.

## 3. DESIGN :

- (i) Split-plot. (ii) (a) 2 main-plots/block ; 3 sub-plots/main-plot ; 3 sub-sub-plots/sub-plot. (b) N.A. (iii)  
 4. (iv) (a) N.A. (b) 22'×44'. (v) N.A. (vi) Yes.

## 4. GENERAL :

- (i) N.A. (ii) N.A. (iii) Length of plants, no. of branches. No. of plants flowered and yield. (iv) (a) No.  
 (b) No. (c) No. (v) (a) and (b) No. (vi) Nil. (vii) Experiment conducted by V.R.S.

## 5. RESULTS :

- (i) 3250 lb./ac.  
 (ii) (a) 2384 lb./ac.  
 (b) 2368 lb./ac.  
 (c) 1521 lb./ac.  
 (iii) Only main effects of D and S are highly significant.  
 (iv) Av. yield of pumpkin in lb./ac.

	M <sub>1</sub>	M <sub>2</sub>	Mean	S <sub>1</sub>	S <sub>2</sub>	S <sub>3</sub>
D <sub>1</sub>	5089	6968	6028	8026	4657	5401
D <sub>2</sub>	1697	2246	1972	2345	1337	2233
D <sub>3</sub>	1300	2198	1749	2528	1402	1317
Mean	2695	3804	3250	4300	2465	2948
S <sub>1</sub>	3289	5310				
S <sub>2</sub>	2337	2593				
S <sub>3</sub>	2459	3509				

S.E. of difference of two	
1. M marginal means	= 561.9 lb./ac.
2. D marginal means	= 683.6 lb./ac.
3. S marginal means	= 439.1 lb./ac.
4. S means at a level of M	= 620.9 lb./ac.
5. M means at a level of S	= 756.8 lb./ac.
6. D means at a level of M	= 966.7 lb./ac.
7. M means at a level of D	= 968.8 lb./ac.
8. S means at a level of D	= 760.5 lb./ac.
9. D means at a level of S	= 923.3 lb./ac.

Crop :-Pumpkin.

Ref :-U.P. 50(112).

Site :-Govt. Vegetable Res. Stn., Lucknow.

Type :-'C'.

Object ---To find out the best time of sowing for Pumpkin.

1. BASAL CONDITIONS :

(i) (a) No. (b) Brinjal. (c) N.A. (ii) (a) Loam. (b) N.A. (iii) As per treatments. (iv) (a) to (d) N.A. (e) One seedling/hole. (v) N.A. (vi) Local. (vii) Unirrigated. (viii) 4 weedings. Gap filling on 24.7.1950. (ix) N.A. (x) Pickings : 27.9.1950, 5. 12 and 29.10.1950, 6 and 8.11.1950.

2. TREATMENTS :

4 dates of sowing :  $D_1=3.7.1950$ ,  $D_2=18.7.1950$ ,  $D_3=3.8.1950$  and  $D_4=18.8.1950$ .

3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 4. (iv) (a) N.A. (b)  $30' \times 29'$ . (v) N.A. (vi) Yes.

4. GENERAL :

(i) N.A. (ii) N.A. (iii) Pumpkin yield. (iv) (a) to (c) No. (v) (a) and (b) No. (vi) Nil. (vii) Experiment conducted by V.R.S.

5. RESULTS :

- (i) 2672 lb./ac.
- (ii) 1766 lb./ac.
- (iii) Treatment differences are significant.
- (iv) Av. yield of pumpkin in lb./ac.

Treatment	Av. yield
$D_1$	5260
$D_2$	2941
$D_3$	1646
$D_4$	839
S.E./mean	=883 lb./ac

Crop :-Pumpkin.

Ref :-U.P. 50(113).

Site :-Govt. Vegetable Res. Stn., Lucknow.

Type :-'C'.

Object :-To find out the best spacing for Pumpkin.

1. BASAL CONDITIONS :

(i) (a) No. (b) Brinjal. (c) F.Y.M. at 40 lb./ac. of N. (ii) (a) Loam. (b) N.A. (iii) 4.7.1950. (iv) (a) to (c) N.A. (d) As per treatments. (e) One seedling/hole. (v) Nil. (vi) Local. (vii) N.A. (viii) 4 hoeings. Gap filling on 24.7.1950. (ix) N.A. (x) 27.9.19:0, 5, 12 and 29.10.1950, 6 and 11.11.1950.

2. TREATMENTS :

4 spacings :  $S_1=3' \times 3'$ ,  $S_2=5' \times 5'$ ,  $S_3=7' \times 7'$  and  $S_4=10' \times 10'$ .

3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 4. (iv) (a) N.A. (b)  $30' \times 29'$ . (v) N.A. (vi) Yes.



## 4. GENERAL:

(i) N.A. (ii) No. (iii) Pumpkin yield. (iv) (a) to (c) No. (v) (a) and (b) No. (vi) Nil. (vii) Experiment conducted by V.R.S.

## 5. RESULTS :

- (i) 4350 lb./ac.  
 (ii) 1694 lb./ac.  
 (iii) Treatment differences are not significant.  
 (iv) Av. yield of pumpkin in lb./ac.

Treatment	Av. yield
S <sub>1</sub>	4406
S <sub>2</sub>	4193
S <sub>3</sub>	5395
S <sub>4</sub>	3405
S.E./mean	=846.8 lb./ac.

Crop :-Radish.

Ref :- U.P. 51(156).

Site :-Govt. Botanical Gardens, Kanpur.

Type :-'C'.

Object :-To study the effect of different spacings and methods of sowing on the growth and yield of Radish.

## 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) and (b) N.A. (iii) 24.10.1951. (iv) (a) N.A. (b) As per treatments. (c) N.A. (d) As per treatments. (e) N.A. (v) N.A. (vi) *Contai*—long of Bombay. (vii) N.A. (viii) Thinning. (ix) N.A. (x) N.A.

## 2. TREATMENTS :

Main-plot treatments :

2 methods of sowing : M<sub>1</sub>=Dibbling and M<sub>2</sub>=Transplanting.

Sub-plot treatments :

3 spacings : S<sub>1</sub>=8"×8", S<sub>2</sub>=8"×16" and S<sub>3</sub>=8"×24".

## 3. DESIGN :

(i) Split-plot. (ii) (a) 2 main-plots/block ; 3 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 15'×7'. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) N.A. (iii) Root and leaf yield. (iv) (a) to (c) N.A. (v) (a) and (b) N.A. (vi) Nil. (vii) The expt. was conducted by P.A.C.

## 5. RESULTS :

- (i) 4.37 ton/ac.  
 (ii) (a) 0.119 ton/ac.  
 (b) 0.195 ton/ac.  
 (iii) Only main effect of M and S are highly significant.  
 (iv) Av. yield of radish in ton/ac.

	S <sub>1</sub>	S <sub>2</sub>	S <sub>3</sub>	Mean
M <sub>1</sub>	2.57	2.52	2.16	2.42
M <sub>2</sub>	6.48	6.64	5.88	6.33
Mean	4.52	4.58	4.02	4.37

S.E. of difference of two

1. marginal means of M =0.048 ton/ac.  
 2. marginal means of S =0.098 ton/ac.  
 3. S means at a level of M =0.138 ton/ac.  
 4. M means at a level of S =0.123 ton/ac.

Crop :- Spinach.

Ref :- U.P. 53(388).

Site :- College Farm, B.H.U., Varanasi.

Type :- 'M'.

Object :- To study the effect of organic and inorganic fertilizers on growth yield and chemical composition of Spinach.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Sann hemp. (c) Nil. (ii) (a) Medium loam. (b) Refer soil analysis, B.H.U., Varanasi. (iii) 25.10.1953. (iv) (a) Ploughed once with Meston plough, once with tractor—cultivator and once with *desi* plough, then clods were broken by discing with tractor. (b) Broadcast. (c) 2 sr./ac. (d) and (e) N.A. (v) Green manured with Sann hemp. (vi) Local. (vii) Irrigated. (viii) Weeding as and when required. (ix) N.A. (x) 11.12.1953 and 14.4.1954.

## 2. TREATMENTS :

- |                                |  |
|--------------------------------|--|
| 1. No manuring.                | 8. 30 lb./ac. of N as A/S.   |
| 2. 30 lb./ac. of N as F.Y.M.   | 9. 40 lb./ac. of N as A/S.   |
| 3. 40 lb./ac. of N as F.Y.M.   | 10. 50 lb./ac. of N as A/S.  |
| 4. 50 lb./ac. of N as F.Y.M.   | 11. 30 lb./ac. of N as A/S+60 lb./ac. of P <sub>2</sub> O <sub>5</sub> as Super+30 lb./ac. of K <sub>2</sub> O as Pot. Sul.  |
| 5. 30 lb./ac. of N as compost. | 12. 40 lb./ac. of N as A/S+80 lb./ac. of P <sub>2</sub> O <sub>5</sub> as Super+40 lb./ac. of K <sub>2</sub> O as Pot. Sul.  |
| 6. 40 lb./ac. of N as compost. | 13. 50 lb./ac. of N as A/S+100 lb./ac. of P <sub>2</sub> O <sub>5</sub> as Super+50 lb./ac. of K <sub>2</sub> O as Pot. Sul. |
| 7. 50 lb./ac. of N as compost. |  |

## 3. DESIGN :

(i) R.B.D. (ii) (a) 13. (b) 28.32'×171.2'. (iii) 5. (iv) (a) N.A. (b) 26.32'×10.4'. (v) N.A. (vi) Yes.

## 4. GENERAL .

(i) N.A. (ii) N.A. (iii) Vegetative yield, average area of leaf, leaf number per plant, air dry weight of the material, seed yield, and N, P and K contents of leaf. (iv) (a) 1953—1954. (b) No. (c) Nil. (v) (a) and (b) No. (vi) Nil. (vii) The experiment was conducted by B.H.U.

## 5. RESULTS :

(i) 1333 lb./ac.	(i) 542.7 lb./ac.
(ii) 90.26 lb./ac.	(ii) 86.49 lb./ac.
(iii) Treatment differences are highly significant.	(iii) Treatment differences are highly significant.
(iv) Av. yield of spinach leaves in lb./ac.	(iv) Av. yield of spinach seed in lb./ac.

Treatment	Av. yield
1.	507
2.	655
3.	786
4.	982
5.	687
6.	818
7.	982
8.	1571
9.	1964
10.	2226
11.	1670
12.	2095
13.	2390
S.E./mean	=40.37 lb./ac.

Treatment	Av. yield
1.	261.9
2.	327.4
3.	441.9
4.	556.5
5.	311.0
6.	425.6
7.	491.1
8.	572.9
9.	671.1
10.	687.5
11.	703.9
12.	753.0
13.	851.2
S.E./mean	=38.63 lb./ac.

Crop :- Tomato (*Rabi*).

Ref :- U.P. 49(242).

Site :- Castle Grant Orchard, B.R. College, Agra.

Type :- 'M'.

Object :- To study the effect of different fertilizers on Tomato crop.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) (a) Light loam. (b) Refer soil analysis, Castle Grant Orchard, Agra. (iii) 20.9.1949/25.10.1949. (iv) (a) 2 ploughings by victory plough and 11 ploughings by *desi* plough followed by planking. (b) Transplanting. (c) —. (d) 3'×3'. (e) 1 seedling/hole. (v) N.A. (vi) Suttons, Abundance. (vii) Irrigated. (viii) 11 hoeings and weedings, gap filling on 6.11.1949. (ix) N.A. (x) 120 days to 190 days after transplanting.

## 2. TREATMENTS:

All combinations of (1), (2) and (3)

(1) 3 levels of N as A/S :  $N_0=0$ ,  $N_1=80$  and  $N_2=160$  lb./ac.

(2) 3 levels of  $P_2O_5$  as Super :  $P_0=0$ ,  $P_1=240$  and  $P_2=480$  lb./ac.

(3) 3 levels of  $K_2O$  as Pot. Sul. :  $K_0=0$ ,  $K_1=100$  and  $K_2=200$  lb./ac.

Date of application : 25 and 26.11.1949. Fertilizer mixed thoroughly then distributed evenly between the rows of plants and mixed into the soil by giving a light cultivation with *kudall*.

## 3. DESIGN :

- (i)  $3^3$  confounded experiment with Z component of 2nd order interaction totally confounded with blocks.  
 (ii) (a) 9 Plots/block ; 3 blocks/replication. (b)  $140' \times 24'$ : (iii) 2. (iv) (a)  $24' \times 15'$ . (b)  $18' \times 9'$ . (v) 3' around the plot. (vi) Yes.

## 4. GENERAL :

- (i) Damage by light frost. (ii) Out break of tomato mosaic disease. (iii) Tomato yield. (iv) (a) to (c) No. (v) (a) and (b) No. (vi) No plotwise yield data were available. It may kindly be observed that the yields given in  $N \times K$  are not correct as the marginal means of this table corresponding to K and N do not tally with the marginal means of N in  $N \times P$  table and of K in  $P \times K$  table. (vii) The experiment was conducted by B.R.C. Transplanting was done when plants were of 6" hight.

## 5. RESULTS :

- (i) 6.83 ton/ac.  
 (ii) 0.365 ton/ac.  
 (iii) Only P effect is highly significant.  
 (iv) Av. yield of tomato in ton/ac.

	$P_0$	$P_1$	$P_2$	Mean	$K_0$	$K_1$	$K_2$	Mean
$N_0$	5.74	6.28	7.83	6.62	6.37	6.20	6.98	6.52
$N_1$	6.10	6.67	7.95	6.91	6.37	7.43	7.23	7.01
$N_2$	6.28	6.16	8.43	6.96	6.95	6.22	8.59	7.25
Mean	6.04	6.37	8.07	6.83	6.56	6.62	7.60	6.93
$K_0$	6.16	6.33	7.15	6.55				
$K_1$	5.48	6.43	8.23	6.71				
$K_2$	6.49	6.37	8.84	7.23				

S.E. of marginal mean of N, P or K = 0.086 lb./ac.

S.E. of body of any table = 0.149 lb./ac.

Crop :- Tomato (*Rabi*).

Ref :- U.P. 49(243).

Site :- Castle Grant Orchard, B.R. College, Agra.

Type :- 'C'.

Object :- To study the effect of different cultural practices on yield and growth of Tomato.

## 1. BASAL CONDITIONS :

- (i) (a) Nil. (b) Fallow. (c) Nil. (ii) (a) Alluvial and light loam in texture. (b) Refer soil analysis, Castle Grant Orchard, Agra. (iii) 27.10.1949. (iv) (a) 4 ploughings by *desi* plough and *pata* levelling. (b) Transplanting. (c) —. (d) As per treatments. (e) 1 plant/hole. (v) 160 sr./plot of well sieved municipal compost mixed in soil by digging with *kudall*. (vi) Sutton's best. (vii) Irrigated. (viii) 2 weedings and hoeings. (ix) N.A. (x) N.A.

## 2. TREATMENTS :

All combinations of (1), (2) and (3)

- (1) 3 prunnings :  $P_0$ =no pruning,  $P_1$ =pinching of side branches and  $P_2$ =pinching of the top.  
 (2) 3 spacing from plant to plant and row to row :  $D_1=2'$ ,  $D_2=3'$  and  $D_3=4'$ .  
 (3) 2 stakings :  $S_1$ = no staking and  $S_2$ =staking.

Pruning : In side pruning, all side branches removed as soon as they appear. Branches either rubbed off in bud conditions or chipped by a knife. In top pruning, terminal growing points were removed.

Staking : As soon as the plants were established the stems were tied to bamboo poles of 6 to 7 ft. height. On growth of plants these stakes were replaced by fresh ones.

## 3. DESIGN :

- (i)  $3 \times 3 \times 2$  Fact. in R.B.D. (ii) (a) 18. (b)  $44' \times 82'$ . (iii) 4. (iv) (a) and (b) N.A. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) N.A. (iii) Height/plant, no. of branches/plant, no. of green leaves, no. of fruit clusters/plant, yield/plant and no. of fruit/plant. (iv) (a) to (c) No. (v) (a) and (b) No. (vi) Nil. (vii) The experiment was conducted by B.R.C.

## 5. RESULTS :

- (i) 3.56 ton/ac.  
 (ii) 0.989 ton/ac.  
 (iii) D and S effects are highly significant. Interaction  $P \times S$  is significant. Others are not significant.  
 (iv) Av. yield of tomato in ton/ac.

	$P_0$	$P_1$	$P_2$	Mean
$S_1$	3.26	2.91	3.17	3.11
$S_2$	3.63	4.83	3.56	4.01
Mean	3.45	3.87	3.37	3.56

S.E. of S marginal mean = 0.165 ton/ac.

S.E. of P marginal mean = 0.202 ton/ac.

S.E. of body of table = 0.285 ton/ac.

Treatment	Av. yield
$D_1$	4.13
$D_2$	3.83
$D_3$	2.73
S.E./mean	= 0.202 ton/ac.

Crop :- Tomato.

Ref:- U.P. 49(123).

Site :- Govt. Botanical Gardens, Kanpur.

Type :- 'C'.

Object :- To study the effect of spacing on growth and yield of Tomato.

## 1. BASAL CONDITIONS :

- (i) (a) N.A. (b) N.A. (c) N.A. (ii) (a) Sandy loam. (b) N.A. (iii) 15.10.1949. (iv) (a) to (c) N.A.  
 (d) As per treatments. (e) N.A. (v) N.A. (vi) N.A. (vii) N.A. (viii) N.A. (ix) N.A. (x) N.A.

## 2. TREATMENTS :

3 spacing in a row :  $S_1=18''$ ,  $S_2=30''$  and  $S_3=36''$ ; Spacing between rows is  $36''$ .

## 3. DESIGN :

- (i) R.B.D. (ii) (a) 3. (b) N.A. (iii) 3. (iv) (a) N.A. (b)  $14' \times 28'$ . (v) N.A. (vi) Yes.

## 4. GENERAL :

- (i) N.A. (ii) N.A. (iii) Tomato yield. (iv) (a) No. (b) No. (c) No. (v) (a) No. (b) No. (vi) Nil.  
 (vii) The experiment was conducted by P.A.C.

## 5. RESULTS :

- (i) 10.40 ton/ac.  
 (ii) 0.736 ton/ac.  
 (iii) Treatment differences are not significant.  
 (iv) Av. yield of tomato in ton/ac.

Treatment	Av. yield
S <sub>1</sub>	11.65
S <sub>2</sub>	9.58
S <sub>3</sub>	9.97
S.E./mean	=0.425 ton/ac.

Crop :- Tomato.

Ref :-U.P.51(218).

Site :-Govt. Vegetable Res. Stn., Lucknow.

Type :-'C'.

Object :-To study the effect of time of sowing and transplanting on Tomato.

## 1. BASAL CONDITIONS :

- (i) (a) No. (b) N.A. (c) N.A. (ii) (a) Clay loam. (b) N.A. (iii) As per treatments. (iv) (a) to (e) N.A. (v) N.A. (vi) N.A. (vii) N.A. (viii) N.A. (ix) N.A. (x) N.A.

## 2. TREATMENTS :

	Dates of sowing	Dates of transplanting		Dates of sowing	Dates of transplanting
1.	3.7.1951.	17.8.1951.	5.	25.9.1951.	9.11.1951.
2.	24.7.1951.	7.9.1951.	6.	16.10.1951.	30.11.1951.
3.	14.8.1951.	25.9.1951.	7.	6.11.1951.	21.12.1951.
4.	4.9.1951.	19.10.1951.	8.	27.11.1951.	11.1.1952.

## 3. DESIGN :

- (i) R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 14½'×9'. (v) N.A. (vi) Yes.

## 4. GENERAL :

- (i) N.A. (ii) N.A. (iii) Tomato yield. (iv) (a) 1951—1953 (not conducted in 1952.) (b) and (c) No. (v) (a) and (b) No. (vi) Nil. (vii) The experiment was conducted by V.R.S.

## 5. RESULTS :

- (i) 12.14 ton/ac.  
 (ii) 6.222 ton/ac.  
 (iii) Treatment differences are highly significant.  
 (iv) Av. yield of tomato in ton/ac.

Treatment	Av. yield	Treatment	Av. yield
1.	27.70	5.	8.85
2.	20.97	6.	4.54
3.	15.67	7.	0.85
4.	17.51	8.	1.02
S.E./mean		=3.111 ton/ac.	

Crop :- Tomato.

Ref :-U.P. 53(206).

Site :-Govt. Vegetable Res. Stn., Lucknow.

Type :-'C'.

Object :-To study the effect of time of sowing and transplanting on Tomato.

## 1. BASAL CONDITIONS :

- (i) (a) No. (b) N.A. (c) N.A. (ii) (a) Loam. (b) N.A. (iii) As per treatments. (iv) (a) N.A. (b) Sown in rows. (c) N.A. (d) Distance between rows 2', distance between plants 1½'. (e) 1. (v) N.A. (vi) Desi To-50 52 (medium). (vii) N.A. (viii) N.A. (ix) N.A. (x) 5.5.1954 to 12.6.1954.

## 2. TREATMENTS :

8 dates of sowing/transplanting :  $D_1=3.7.1953/17.8.1953$ ,  $D_2=24.7.1953/7.9.1953$ ,  $D_3=14.8.1953/28.9.1953$ ,  $D_4=4.9.1953/19.10.1953$ ,  $D_5=25.9.1953/9.11.1953$ ,  $D_6=16.10.1953/30.11.1953$ ,  $D_7=6.11.1953/21.12.1953$  and  $D_8=27.11.1953/11.1.1953$ .

## 3. DESIGN:

(i) R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a) N.A. (b)  $14\frac{1}{2}' \times 9'$ . (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) N.A. (iii) Tomato yield. (iv) (a) 1951—1953. (Not conducted in 1952). (b) No. (c) No. (v) (a) and (b) No. (vi) Nil. (vii) Experiment conducted by V.R.S.

## 5. RESULTS :

(i) 6.95 ton/ac.  
 (ii) 2.850 ton/ac.  
 (iii) Treatment differences are highly significant.  
 (iv) Av. yield of tomato in ton/ac.

Treatment	Av. yield	Treatment	Av. yield
1.	20.04	5.	6.64
2.	8.93	6.	3.26
3.	6.44	7.	1.37
4.	7.77	8.	1.17

S.E./mean = 1.425 ton/ac.

Crop :- Torai.

Ref :- U.P. 52(34).

Site :- Govt. Vegetable Res. Stn., Lucknow.

Type :- 'D'.

Object :- To study different control measures against fruit fly of *Torai*.

## 1. BASAL CONDITIONS:

(i) (a) Nil. (b) N.A. (c) N.A. (ii) (a) Clay loam. (b) N.A. (iii) 14.3.1952. (iv) (a) Two ploughings with soil turning plough and pulverisations with cultivator. (b) N.A. (c) N.A. (d) Distance between rows 3.5' and between plants 2.5'. (e) N.A. (v) 40 lb./ac. of N as F.Y.M. (vi) Smooth variety. (vii) Irrigated. (viii) Weeding and hoeing 3-4 times. (ix) N.A. (x) N.A.

## 2. TREATMENTS :

- Lead arsenate and molasses bait spray in water dilution (1 : 16 : 200 by weight).
- Sodium fluosilicate and molasses bait spray in water (1 : 16 : 200 by weight).
- Use of vinegar bait traps, vinegar 1 part and water 3 parts by weight.
- Control.

## 3. DESIGN:

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 4. (iv) (a)  $37.5' \times 9'$ . (b)  $36.5' \times 8'$ . (v) a plot ( $37.5' \times 9'$ ) of *bhindi* to act as buffer between *torai* plots. (vi) Yes.

## 4. GENERAL :

(i) Normal. (ii) Attack of Pumpkin beetle, fruit fly and banded blister beetle—As per treatments. (iii) % of fruits infested by fruit fly. (iv) (a) No. (b) No. (c) No. (v) (a) and (b) No. (vi) Nil. (vii) The data has been converted into  $\text{Sin}^{-1}\sqrt{P}$ , where P is % of *torai* fruit infested by fruit fly, and then analysed. Experiment conducted by V.R.(H).

## 5. RESULTS :

(i) to (iv),

Treatment	Mean value of $\text{Sin}^{-1}\sqrt{P}$ /plot	% of <i>torai</i> fruits infested by fruit fly (transformed back)
1.	32.37	28.88
2.	37.86	37.79
3.	40.90	42.94
4.	36.75	35.94
G.M.	36.97	
S.E./mean.	2.996	
Significance	Not significant.	

Crop :- Turnip (*Rabi*).

Ref :- U.P. 52(329).

Site :- Institutional Research Farm, Bichpuri, Agra. Type :- 'M'.

Object :- To study the effect of different levels and forms of nitrogen on growth and yield of Turnip.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) and (c) N.A. (ii) (a) Light loam containing little organic matter. (b) Refer soil analysis, Bichpuri Farm, Agra. (iii) 2.10.1952. (iv) (a) Prepared by ploughing followed by *pata*. (b) Sowing on ridges ( $\frac{1}{2}$ " to  $\frac{3}{4}$ " depth). (c) N.A. (d)  $1\frac{1}{2}$ '  $\times$  6". (e) N.A. (v) Nil. (vi) Early snow-ball. (vii) Irrigated. (viii) Thinning, weeding and hoeing. (ix) N.A. (x) 75 days after sowing.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 3 sources of N :  $F_1$ =A/S,  $F_2$ =compost and  $F_3$ =castor cake.(2) 3 levels of N :  $N_0$ =0,  $N_1$ =75 and  $N_2$ =150 lb./ac.

Fine powder of fertilizer mixed thoroughly.

## 3. DESIGN :

(i) 3  $\times$  3 Fact. in R.B.D. (ii) (a) 9. (b) 75'  $\times$  48'. (iii) 4. (iv) (a) N.A. (b) 18'  $\times$  12'. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) Satisfactory. (ii) N.A. (iii) No. of green leaves, fresh weight of tops, roots and whole plant. Dry wt. of roots, dry wt. of whole plant and tops. Volume of roots, yield of whole plant, yield of roots and tops/plot. (iv) (a) 1952-1953. (b) No. (c) Nil. (v) (a) and (b) Nil. (vi) Nil. (vii) No plot wise yield data is available. The expt. was conducted by B.R.C.

## 5. RESULTS :

(i) 17182 lb./ac.

(ii) 2265.5 lb./ac.

(iii) Only main effects of F and N are highly significant.

(iv) Av. yield of roots in lb./ac.

Treatment	Av. yield	Treatment	Av. yield
$N_0$	7784	$F_1$	30472
$N_1$	19521	$F_2$	10305
$N_2$	24240	$F_3$	24906
S.E./mean	=654 lb./ac.	S.E./mean	=801 lb./ac.

Crop :- Turnip (*Rabi*).

Ref :- U.P. 50(302).

Site :- Castle Grant Orchard, B.R. College, Agra.

Type :- 'CM'.

Object :- To study the effect of different doses and time of application of N and method of planking on growth and yield of Turnip.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) (a) Light soil. (b) Refer soil analysis, Castle Grant Orchard, Agra. (iii) 17.9.1950. (iv) (a) One ploughing by soil turning plough followed by *pata*. 4 ploughings by *desi* plough and followed by *pata*. (b) As per treatments. (c) —. (d) 1'-6"  $\times$  6". (e) One plant/hole. (v) Nil. (vi) Early snow-ball. (vii) Irrigated. (viii) Thinning, earthing and remodelling of ridges and light cultivation. (ix) N.A. (x) 17.12.1950.

## 2. TREATMENTS :

Main-plot treatments :

2 methods of planting :  $P_1$ =planting in flat beds in rows and  $P_2$ =planting in 9" high ridges.

Sub-plot treatments :

All combinations of (1) and (2)

(1) 2 times of application of N :  $T_1$ =at sowing and  $T_2$ =at the start of swelling of roots.(2) 5 levels of N as A/S :  $N_0$ =0,  $N_1$ =25,  $N_2$ =50,  $N_3$ =75 and  $N_4$ =100 lb./ac.

N applied on 17.9.1950 and 17.10.1950.

Method of planting : Seeds dropped by hand at a depth of  $\frac{1}{2}$ " to  $\frac{3}{4}$ ".Method of application : Evenly distributed in between the rows at the 2nd time of application mixed by light cultivation by *khurpi*.

## 3. DESIGN :

(i) Split-plot. (ii) (a) 2 main-plots/block and 10 sub-plots/main-plot. (b) 56'×57'. (iii) 3. (iv) (a) 12'×10'-6". (b) 10'×7'-6". (v) 1'×1'-6". (vi) Yes.

## 4. GENERAL :

(i) Satisfactory. (ii) N.A. (iii) No. of leaves, length of biggest leaf, breadth of biggest leaf, area of leaf, diameter of roots, length of thickened portion, shape of root, volume of roots, fresh wt. of tops, fresh weight of roots, fresh wt. of whole plant, dry wt. of tops and roots and whole plant and yield of roots. (iv) (a) and (b) No. (c) Nil. (v) (a) and (b) Nil. (vi) Nil. (vii) The expt. was conducted by B.R.C. No plotwise yield data was available.

## 5. RESULTS :

(i) 59987 lb./ac.  
 (ii) (a) 60691 lb./ac.  
 (b) 15570 lb./ac.  
 (iii) N effect is highly significant. Interaction T×P is significant. Others are not significant.  
 (iv) Av. yield of roots in lb./ac.

$N_0$  at  $P_1$  = 9135 lb./ac.

$N_0$  at  $P_2$  = 14614 lb./ac.

	$N_1$	$N_2$	$N_3$	$N_4$	Mean	$T_1$	$T_2$
$P_1$	48070	65139	79050	87539	69950	72710	67190
$P_2$	72800	73539	74077	75914	74082	66394	81770
Mean	60435	69339	76563	81726	72016	69552	74480
$T_1$	57971	66304	79162	74771			
$T_2$	62899	72374	73964	88682			

## S.E. of difference of two

1. P marginal means	=17520 lb./ac.
2. N marginal means	= 6356 lb./ac.
3. T marginal means	= 4495 lb./ac.
4. N means at a level of P	= 8989 lb./ac.
5. T means at a level of P	= 6356 lb./ac.
6. P means at a level of N	=17613 lb./ac.
7. P means at a level of T	=18087 lb./ac.
S.E. of body of N×T table	= 6356 lb./ac.
S.E. of $N_0$ means at $P_1$ or $P_2$	= 6356 lb./ac.

Crop :- Turnip (*Rabi*).

Ref :- U.P. 51(286).

Site :- Castle Grant Orchard, B.R. College, Agra. Type :- 'CM'.

Object :- To study the effect of different doses along with spacing on growth, development and yield of Turnip.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Bhindi*. (c) N.A. (ii) (a) Light Sandy loam. (b) Refer soil analysis, Castle Grant Orchard, Agra. (iii) 27.9.1951. (iv) (a) N.A. (b) On 9" ridges by hand at a depth of  $\frac{1}{2}$ " to  $\frac{1}{4}$ ". (c) —. (d) As per treatments. (e) One seedling/hole. (v) Nil. (vi) Snow ball (early). (vii) Irrigated. (viii) Thinning, weeding, light earthing up and light cultivators. (ix) N.A. (x) 27.12.1951.



## 2. TREATMENTS :

All combinations of (1) and (2)

- (1) 5 levels of N as A/S :  $N_0=0$ ,  $N_1=25$ ,  $N_2=50$ ,  $N_3=75$  and  $N_4=100$  lb./ac.  
 (2) 3 plant to plant spacings :  $S_1=3'$ ,  $S_2=6'$  and  $S_3=9'$ .

The fertilizer was applied at the time of sowing before making the ridges. Fertilizer mixed by rake in the soil. Row to row spacing was  $1\frac{1}{2}'$ .

## 3. DESIGN :

- (i) R.B.D. (ii) (a) 15. (b) N.A. (iii) 3. (iv) (a)  $12' \times 10'$ . (b)  $10.5' \times 7'$ . (v) Plot border =  $6'$ . (vi) Yes.

## 4. GENERAL :

- (i) Satisfactory. (ii) N.A. (iii) No. of leaves, length and breadth of biggest leaf, length of thickened portion of the root, fresh weight of tops, roots and whole plant ; volume of roots and yield. (iv) (a) and (b) No. (c) Nil. (v) (a) and (b) Nil. (vi) Nil. (vii) No plot wise yield data are available. The experiment was conducted by B.R.C.

## 5. RESULTS :

- (i) 13.04 ton/ac.  
 (ii) 8.1817 ton/ac.  
 (iii) Only main effects of N and S are highly significant.  
 (iv) Av. yield of roots in ton/ac.

Treatment	Av. yield	Treatment	Av. yield
$N_0$	5.94	$S_1$	20.45
$N_1$	7.92	$S_2$	11.01
$N_2$	13.34	$S_3$	7.66
$N_3$	16.76		
$N_4$	21.23	S.E./mean	=2.112
S.E./mean	=2.727		

Crop :- Sugarcane.

Ref :- U.P. 53(367).

Site :- Agri. Institute, Allahabad.

Type :- 'M'.

Object :- To study the effect of different forms of N on Sugarcane.

## 1. BASAL CONDITIONS :

- (i) (a) to (c) N.A. (ii) (a) and (b) Refer soil analysis, Allahabad. (iii) 16.2.1953, (iv) (a) to (e) N.A. (v) N.A. (vi) N.A. (vii) Irrigated. (viii) 5 hoeings, one with cultivator, 4 weedings, 2 interculturalures, 2 earthings and 1 tying. (ix) N.A. (x) 6.1.1954.

## 2. TREATMENTS :

4 forms of Nitrogen :

1. C/N.
2. A/S.
3. Castor cake.
4. Control.

Half dose applied immediately after irrigation on 26 to 28.3.1953. Other half immediately after irrigation on 29 and 30.4.1953.

## 3. DESIGN :

- (i) R.B.D. (ii) (a) 4. (b)  $72' \times 66'$ . (iii) 6. (iv) (a) N.A. (b)  $18' \times 66'$ . (v) N.A. (vi) Yes.

## 4. GENERAL :

- (i) N.A. (ii) N.A. (iii) Germination and cane yield. (iv) (a) and (b) No. (c) Nil. (v) (a) and (b) Nil. (vi) il. (vii) Field record register was consulted. Experiment conducted by the Head of Agronomy Department, Allahabad Agricultural Institute, Allahabad. (A.A.I.)

## 5. RESULTS :

- (i) 11.48 ton/ac.  
 (ii) 1.903 ton/ac.  
 (iii) Treatment differences are not significant.

(iv) Av. yield of cane in ton/ac.	Treatment	Av. yield
	1.	11.07
	2.	12.51
	3.	11.33
	4.	11.03
	S.E./mean	=0.777 ton/ac.

Crop :- Sugarcane.  
Site :- Govt. Agri. Farm, Bahraich.

Ref :- U.P. 49(143).  
Type :- 'M'.

Object :- To study the response of cane to Super.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) *Sanal*. (c) No. (ii) (a) Sandy loam. (b) Refer soil analysis, Bahraich. (iii) 24.2.1949.  
(iv) (a) to (e) N.A. (v) Castor cake at 20 lb./ac. of N. (vi) Co. 453 (medium). (vii) Irrigated. (viii) 3 hoeings.  
(ix) N.A. (x) Feb. and March 1950.

2. TREATMENTS :

$P_0$  = Control (no manure).  
 $P_1$  = 60 lb./ac. of  $P_2O_5$  broadcast before planting.  
 $P_2$  = 60 lb/ac of  $P_2O_5$  drilled 3" x 4" deep in furrows before planting.  
 $P_2O_5$  applied as Super on 24.2.1949.

3. DESIGN :

(i) R.B.D. (ii) (a) 3. (b) N.A. (iii) 6. (iv) (a) N.A. (b) 81' x 27'. (v) N.A. (vi) Yes.

4. GENERAL :

(i) N.A. (ii) N.A. (iii) Germination, no. of tillers, no. of millable canes and yield. (iv) (a) No. (b) and (c) No. (v) (a) Zones : Pharenda, Baitalpur, Tamkahi, Ghughli, Chhitanni, Balrampur, Faizabad, Barhri and Sardarnagar. (b) N.A. (vi) Nil. (vii) The experiment was conducted by D.S.R. (G).

5. RESULTS :

(i) 18.97 ton/ac.  
(ii) 2.608 ton/ac.  
(iii) Treatment differences are not significant.  
(iv) Av. yield of cane in ton/ac.

Treatment	Av. yield.
$P_0$	17.76
$P_1$	20.09
$P_2$	19.07
S.E./mean	=1.065 ton/ac.

Crop :- Sugarcane.  
Site :- Govt. Agri. Farm, Bahraich.

Ref :- U.P. 50(175).  
Type :- 'M'.

Object :- To study the response of cane to Super.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Dhanicha* for seed. (c) Nil. (ii) (a) Sandy loam. (b) Refer soil analysis, Bahraich. (iii) N.A. (iv) (a) to (e) N.A. (v) Compost at 15 md/ac on 2.1.1950. and castor cake at 7 md/ac. on 15.5.1950. (vi) Co. 453 (medium). (vii) Irrigated. (viii) 5 hoeings. (ix) N.A. (x) 20.3.1951.

2. TREATMENTS :

$P_0$  = Control (no manure).  
 $P_1$  = 150 lb./ac. of  $P_2O_5$  broadcast before planting.  
 $P_2$  = 150 lb./ac. of  $P_2O_5$  drilled 3" x 4" deep in furrows before planting.  
 $P_2O_5$  applied as Super on 12.3.1950.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 3. (b) N.A. (iii) 6. (iv) (a) N.A. (b) 87'×18'. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) N.A. (iii) Germination, no. of tillers, no. of millable canes and yield. (iv) (a) 1950 and 1951. (b) and (c) No. (v) (a) Zones: Faizabad, Balrampur, Ghugli, Sardarnagar, Lakshmiganj, Tamkohi, Gauribazar, Nawabganj and Anandnagar. (b) N.A. (vi) Nil. (vii) The experiment was conducted by D.S.R.(G).

## 5. RESULTS :

- (i) 28.83 ton/ac  
 (ii) 3.10 ton/ac.  
 (iii) Treatment differences are not significant.  
 (iv) Av. yield of cane in ton/ac.

Treatment	Av. yield
P <sub>0</sub>	27.10
P <sub>1</sub>	30.28
P <sub>2</sub>	29.10
S.E./mean	=1.266 ton/ac.

Crop :- Sugarcane.

Ref :- U.P. 51(171)/50(175).

Site :- Govt. Agri. Farm, Bahraich.

Type :- 'M',

Object :- To study the effect of Super on Sugarcane.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Pea. (c) No. (ii) (a) Sandy loam. (b) Refer soil analysis, Bahraich. (iii) 17.3.1951. (iv) (a) 4 ploughings with *reston*-5 cultivator and 4 plankings with ploughings. (b) flat sowing in lines. (c) 1566 buds/plot. (d) 3' between rows. (e) —. (v) Compost at 50 mds/ac. on 20.2.1951 Top dressing of G.N.C. at 7 mds 10 seers/ac. and A/S at 1 md. 9 seers/ac. (25 lb./ac. of N) on 17.3.1951. (vi) Co-453 (mid-late). (vii) Irrigated. (viii) 2 hoeings by *kassi* and 3 hoeings by cultivator. (ix) 40°. (x) 3.3.1952.

## 2. TREATMENTS :

P<sub>0</sub>=Control (no manure).  
 P<sub>1</sub>=150 lb./ac. of P<sub>2</sub>O<sub>5</sub> broadcast at planting.  
 P<sub>2</sub>=150 lb./ac. of P<sub>2</sub>O<sub>5</sub> drilled 3" deep at planting.  
 P<sub>2</sub>O<sub>5</sub> applied as Super on 17.3.1951.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 3. (b) N.A. (iii) 6. (iv) (a) 87'×18'. (b) 87'×18'. (v) Nil. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) N.A. (iii) Germination, no. of tillers, no. of millable cane and yield. (iv) (a) 1950—1951. (b) No. (c) No. (v) (a) Zones; Captainganj, Faizabad, Nawabganj, Bahrapur, Ghughli, Tamkohi, Sardarnagar, Anandnagar, Gauribazar [and Bahraich. (b) N.A. (vi) Nil. (vii) Experiment conducted by D.S.R. (G).

## 5. RESULTS :

- (i) 22.87 ton/ac.  
 (ii) 2.825 ton/ac.  
 (iii) Treatment differences are not significant.  
 (iv) Av. yield of cane in ton/ac.

Treatment	Av. yield
P <sub>0</sub>	22.57
P <sub>1</sub>	23.61
P <sub>2</sub>	22.44
S.E./mean	=1.153 ton/ac.

Crop :- Sugarcane.  
Site :- Govt. Agri. Farm, Bahraich.

Ref :- U.P. 53(246).  
Type :- 'M'.

Object :- To study the response of Sugarcane to Super in combination with green manure.

### 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Wheat and then G.M. or fallow as per treatments. (c) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis, Bahraich. (iii) 30, 31.1.1953. (iv) (a) 4 ploughings with *desi* plough levelling with the help of *karaha* and 2 harrowings. (b) flat sowing in lines. (c) 22178 buds/plot. (d) 3' between rows. (e) —. (v) Compost at 25 lb./ac. of N on 17 and 18.12.1952. Manuring of A/S at 60 lb./ac. of N on 4, 5.4.1953 where no green manuring was done. Top dressing with mixture (Source—N.A.) at 35 lb./ac. of N on 15.7.1953. (vi) Co-453 (medium). (vii) Irrigated. (viii) 2 hoeings and 1 earthing. (ix) N.A. (x) February 1954 (Date—N.A.).

### 2. TREATMENTS :

1. Fallow—Sugarcane (no manure).
2. Fallow—Sugarcane manured with 150 lb./ac. of  $P_2O_5$  applied 3" deep at planting.
3. *Sanai* as G.M.—Sugarcane.
4. *Sanai* as G.M.—Sugarcane. *Sanai* manured with 150 lb./ac. of  $P_2O_5$  at sowing.
5. *Sanai* as G.M.—Sugarcane. Plot manured with 150 lb./ac. of  $P_2O_5$  at the time of turning in *Sanai*. *Sanai* at 60 lb./ac. of N, turned in on 28.8.1952. Method of application of  $P_2O_5$  as Super N.A.

### 3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 4. (iv) (a) 66' × 33'. (b) 66' × 33'. (v) Nil. (vi) Yes.

### 4. GENERAL :

(i) N.A. (ii) N.A. (iii) Germinatin, no. of tillers, no. of millable canes and yield. (iv) (a) No. (b) No. (c) No. (v) (a) Zones :- Captainganj, Faizabad (3 trials), Gorakhpur (2 trials). (b) N.A. (vi) Nil. (vii) Experiment was conducted by D.S.R.(G).

### 5. RESULTS :

- (i) 28.71 ton/ac.  
(ii) 4.555 ton/ac.  
(iii) Treatment differences are not significant.  
(iv) Av. yield of cane in ton/ac.

Treatment	Av. yield
1.	28.29
2.	26.88
3.	28.86
4.	29.63
5.	29.89
S.E./mean	=2.278 ton/ac.

Crop :- Sugarcane.  
Site :- Govt. Agri. Farm, Bahraich.

Ref :- U.P. 49(161).  
Type :- 'M'.

Object :- To study the comparative efficacy of different green manures on Sugarcane.

### 1. BASAL CONDITIONS :

(i) (a) N.A. (b) G.M. as per treatments. (c) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis, Bahraich. (iii) 15 and 16.2.1949. (iv) (a) to (e) N.A. (v) Castor cake at 45 lb./ac. of N. (vi) Co.453 (mid-late). (vii) Irrigated. (viii) 3 hoeings. (ix) N.A. (x) Feb. and March 1950.

### 2. TREATMENTS :

8 kinds of G.M. sown before Sugarcane.

- |                               |                           |
|-------------------------------|---------------------------|
| 1. <i>Urd</i> seed (control). | 5. <i>Guar</i> .          |
| 2. <i>Sanai</i> .             | 6. <i>Dhaincha</i> .      |
| 3. <i>Metha</i> .             | 7. <i>Chattri-Matri</i> . |
| 4. Pea.                       | 8. Fallow.                |

### 3. DESIGN :

(i) R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 87' × 21'. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) N.A. (iii) Sugarcane yield. (iv) (a) to (c) No. (v) (a) Zone : Balrampur, Baitalpur, Sardar-nagar and Anandnagar. (b) N.A. (vi) Nil. (vii) Experiment was conducted by D.S.R. (G).

## 5. RESULTS :

- (i) 24.68 ton/ac.  
 (ii) 2.384 ton/ac.  
 (iii) Treatment differences are not significant.  
 (iv) Av. yield of sugarcane in ton/ac.

Treatment	Av. yield	Treatment	Av. yield
1.	24.43	5.	24.08
2.	24.89	6.	24.00
3.	27.67	7.	23.53
4.	25.62	8.	23.19
S.E./mean		= 1.192 ton/ac.	

Crop :- Sugarcane.

Site :-Govt. Agri. Farm, Faizabad,

Ref :-U.P. 49(44).

Type :-'M'.

Object :-To study the response of Sugarcane to super.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) *Sanai* for G.M. (c) No. (ii) (a) Loam. (b) N.A. (iii) 24.2.1949: (iv) (a) to (e) N.A. (v) Nil. (vi) Cos-109 (medium). (vii) Irrigated. (viii) 2 hoeings. (ix) N.A. (x) N.A.

## 2. TREATMENTS :

$P_0$  = Control (no manure).  
 $P_1$  = 60 lb./ac. of  $P_2O_5$  broadcast before planting.  
 $P_2$  = 60 lb./ac. of  $P_2O_5$  drilled 3"–4" deep in furrows before planting.  
 $P_2O_5$  applied as Super.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 3. (b) N.A. (iii) 6. (iv) (a) N.A. (b) 60' x 30'. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) N.A. (iii) Germination, no. of tillers, no. of millable sugarcane and yield. (iv) (a) to (c) No. (v) (a) Zones : Phasonda, Baitalpur, Tamkahi, Ghughli, Chhitanni, Balrampur, Bahraich, Bahni and Sardar-nagar. (b) N.A. (vi) Nil. (vii) Experiment was conducted by D.S.R. (G).

## 5. RESULTS :

- (i) 15.03 ton/ac.  
 (ii) 1.30 ton/ac.  
 (iii) Treatment differences are not significant.  
 (iv) Av. yield of sugarcane in ton/ac.

Treatment	Av. yield
$P_0$	14.43
$P_1$	15.20
$P_2$	15.45
S.E./mean	= 0.531 ton/ac.

Crop :-Sugarcane.

Site :-Govt. Agri. Farm, Faizabad.

Ref :- U.P. 50(176).

Type :- 'M'.

Object :-To study the response of Sugarcane to super.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Sanai* for G.M. (c) Nil. (ii) (a) Loam. (b) N.A. (iii) 25.2.1950. (iv) (a) to (e) N.A. (v) *Sanai* for G.M. (vi) Cos 109 (medium). (vii) Irrigated. (viii) 2 hoeings. (ix) N.A. (x) 25,26.2.1951.

## 2. TREATMENTS :

$P_0$  = Control (no manure).

$P_1$  = 150 lb./ac. of  $P_2O_5$  broadcast before planting.

$P_2$  = 150 lb./ac. of  $P_2O_5$  drilled 3"–4" deep in furrows before planting.

$P_2O_5$  applied as Super.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 3. (b) N.A. (iii) 6. (iv) (a) N.A. (b) 54' × 24'. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) N.A. (iii) Germination, no. of millable cane and cane yield. (iv) (a) 1950 and 1951. (b) and (c) N.A. (v) (a) Bahraich, Balrampur, Ghugli, Sardarnagar, Lakshmiganj, Tamkahi, Gauribazar, Nawabganj and Anandnagar. (vi) Nil. (vii) The experiment was conducted by D.S.R. (G).

## 5. RESULTS :

(i) 13.18 ton/ac.

(ii) 1.513 ton/ac.

(iii) Treatment differences are not significant.

(iv) Av. yield of cane in ton/ac.

Treatment	Av. yield
$P_0$	12.93
$P_1$	13.54
$P_2$	13.06
S.E./mean	=0.618 ton/ac.

Crop :- Sugarcane.

Ref:-U.P. 51(172)/50(176).

Site :- Govt. Agri. Farm, Faizabad.

Type :- 'M'.

Object :- To study the response of cane to Super.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Sanai* for G.M. (c) Nil. (ii) (a) Loam. (b) N.A. (iii) 29.1.1951. (iv) (a) Ploughing by M.C. cultivator on 3.1.1951, 27.1.1951, harrowing by Shahjahanpur *kanta* 31.12.1950, lever harrow on 2.1.1951, and ploughing by *prajha* plough on 25.12.1950. (b) N.A. (c) 1728 buds/plot. (d) 3' distance with in lines by winged *deshi* plough. (e) —. (v) *Sanai* at 50 lb./ac of N, A/S at 48 lb/ac of N on 27.1.1951. A/S at 12 lb/ac of N as top dressing. (vi) Co 453 (mid-late). (vii) Irrigated. (viii) Hoeing by *kassi* on 27.2.1951, by *cultivator* on 22.3.1951, 8.4.1951 and 14.5.1951. Earthing up by spade on 20.8.1951. (ix) N.A. (x) 1,2,3.1952.

## 2. TREATMENTS :

$P_0$  = Control (no manure).

$P_1$  = 150 lb/ac of  $P_2O_5$  broadcast before planting.

$P_2$  = 150 lb/ac of  $P_2O_5$  applied in furrows before planting.

$P_2O_5$  applied as Super.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 3. (b) N.A. (iii) 6. (iv) (a) 64' × 27'. (b) 58' × 21'. (v) 3' ring round net plot. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) N.A. (iii) Germination, no. of tillers, no. of millable cane and yield of cane at harvest including canes harvested for juice analysis. (iv) (a) 1950-1951. (b) and (c) No. (v) Zone : Captainganj, Faizabad, Nawabganj, Balrampur, Ghugli, Tamkahi, Sardarnagar, Anandnagar, Gauribazar and Balrampur. (vi) Nil. (vii) The experiment was conducted by D.S.R. (G).

## 5. RESULTS :

(i) 19.18 ton/ac.

(ii) 3.041 ton/ac.

(iii) Treatment differences are not significant.

(iv) Av. yield of cane in ton/ac.

Treatment	Av. yield
P <sub>0</sub>	19.51
P <sub>1</sub>	19.07
P <sub>2</sub>	18.97
S.E./mean	=1.241 ton/ac.

Crop :- Sugarcane.

Ref :- U.P. 53(247).

Site :- Govt. Agri. Farm, Faizabad.

Type :- 'M'.

Object :- To study the response of Sugarcane to P<sub>2</sub>O<sub>5</sub> in combination with G.M. applied at different times.

### 1. BASAL CONDITIONS :

(i) (a) Nil. (b) G.M. or fallow as per treatments. (c) N.A. (ii) (a) Loam. (b) N.A. (iii) 12.2.1953. (iv) (a) 2 ploughings by *praja* plough and 6 ploughings by *desi* plough on 2.2.1953, 6.2.1953 (twice) 9.2.1953 (four times). Harrowing by Shahjahanpur *kanta* on 2.2.1953, 7.2.1953. (b) Flat planting. (c) 1728 buds/plot. (d) 3' distance in lines; furrows opened by *desi* plough. (e) —. (v) A/S at 55 lb./ac. of N on 12.2.1953. Top dressing A/S at 35 lb./ac. of N on 5.8.1953. (vi) CO. 416 (medium). (vii) Irrigated. (viii) 6 hoeings by *kudali* and once earthing up by spade. (ix) N.A. (x) 13, 14 and 25.2.1954.

### 2. TREATMENTS :

- Fallow followed by sugarcane.
  - Fallow—Super at 150 lb./ac. of P<sub>2</sub>O<sub>5</sub> applied 3" deep at planting of sugarcane.
  - Sanai* green manuring followed by sugarcane.
  - Sanai* green manuring+Super at 150 lb./ac. of P<sub>2</sub>O<sub>5</sub> applied at the time of sowing *sanai* followed by sugarcane.
  - Sanai* green manuring+Super at 150 lb./ac. of P<sub>2</sub>O<sub>5</sub> applied at the time of turning of *sanai* followed by cane.
- Method of application of P<sub>2</sub>O<sub>5</sub> N.A.

### 3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 4. (iv) (a) 64'×27'. (b) 58'×21'. (v) 3' all round net plot. (vi) Yes.

### 4. GENERAL :

(i) N.A. (ii) N.A. (iii) Germination, no. of tillers, no. of millable cane and yield. (iv) (a) 1953—1955 (Expt. not conducted in 1954—1955). (b), (c) No. (v) (a) Zone : Faizabad Padrauna, Gorakhpur and Baharaich. (b) N.A. (vi) Nil. (vii) Experiment was conducted by D.S.R.(G).

### 5. RESULTS :

- 11.90 ton/ac.
- 1.145 ton/ac.
- Treatment differences are highly significant.
- Av. yield of cane in ton/ac.

Treatment	Av. yield
1.	9.97
2.	10.55
3.	11.22
4.	13.76
5.	14.02
S.E./mean	=0.573 ton/ac.

Crop :- Sugarcane.

Ref :- U.P. 50(27).

Site :- Sugarcane Res. Sub-Stn., Kunraghat.

Type :- 'M'.

Object :- To study the effect of application of P<sub>2</sub>O<sub>5</sub> and CaO to Sugarcane.

### 1. BASAL CONDITIONS :

(i) (a) G.M.—wheat. (b) *Dhaincha* (for seed). (c) N.A. (ii) (a) Sandy loam. (b) N.A. (iii) 18, 19.2.1950. (iv) (a) 7 preparatory ploughings with watts and *desi* ploughs. (b) Sown in trenches. (c) to (e) N.A. (v) 100 lb./ac. of N as F.Y.M. and 20 lb./ac. as A/S top dressing before sowing. (vi) CO.S. 109. (vii) Irrigated. (viii) Earthing from 2 to 5.8.1950 and 7 hoeings. (ix) 44.96". (x) 12.2.1951.

**2. TREATMENTS :**

All combinations of (1) and (2)

- (1) 3 levels of  $P_2O_5$  as Super :  $P_0=0$ ,  $P_1=100$  and  $P_2=200$  lb./ac.  
 (2) 2 levels of CaO as lime :  $L_0=0$  and  $L_1=2$  ton/ac.

**3. DESIGN :**

(i)  $2 \times 3$  Fact. in R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a)  $56' \times 21'$ . (b)  $50' \times 15'$ . (v) 3' around. (vi) Yes.

**4. GENERAL :**

(i) Normal and no lodging. (ii) Borer attacked the crop and were killed. (iii) Germination, no. of tillers, no. of millable canes and yield. (iv) (a) 1950—1952. (b), (c) No. (v) (a) and (b) No. (vi) Nil. (vii) The experiment was conducted by D.S.R.(G).

**5. RESULTS :**

- (i) 25.44 ton/ac.  
 (ii) 5.932 ton/ac.  
 (iii) None of the effects is significant.  
 (iv) Av. yield of cane in ton/ac.

	$L_0$	$L_1$	Mean
$P_0$	24.59	26.40	25.50
$P_1$	25.31	24.05	24.68
$P_2$	25.10	27.20	26.15
Mean	25.00	25.88	25.44

S.E. of P marginal means = 2.097 ton/ac.  
 S.E. of L marginal means = 1.712 ton/ac.  
 S.E. of body of table = 2.966 ton/ac.

Crop :- Sugarcane.

Site :- Sugarcane Res. Sub-Stn., Kunraghat.

Ref :- U.P. 51(19).

Type :- 'M'.

Object :- To study the effect of application of  $P_2O_5$  and CaO on Sugarcane.

**1. BASAL CONDITIONS :**

(i) (a) G.M.—Wheat. (b) *Sanai* (G.M.) at 40 lb./ac. of N. (c) G.M. (ii) (a) Sandy loam. (b) N.A. (iii) 31.1.1951. (iv) (a) 5 preparatory ploughings and harrowing with *desi* and watts ploughs. Making trenches and dismantling them. (b) Sown in trenches. (c) 60—3 budded setts/row. (d) and (e) N.A. (v) *Neem* cake applied in furrows at planting at 30 lb./ac. of N. *Neem* cake and A/S applied at tillering at 25 lb./ac. of N each. Single Super (18%  $P_2O_5$ ) and lime applied in furrows at planting as per treatments. (vi) CO.S. 109. (vii) Irrigated. (viii) 2 earthings and 9 hoeings. (ix) 27.19". (x) 29.12.1951 to 20.1.1952.

**2. TREATMENTS :**

All combinations of (1) and (2)

- (1) 3 levels of  $P_2O_5$  as Super :  $P_0=0$ ,  $P_1=100$  and  $P_2=200$  lb./ac.  
 (2) 2 levels of CaO as lime :  $C_0=0$  and  $C_1=2$  ton/ac.

**3. DESIGN :**

(i)  $2 \times 3$  Fact. in R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a)  $56' \times 21'$ . (b)  $50' \times 15'$  (v) 3' around. (vi) Yes.

**4. GENERAL :**

(i) Normal. No lodging. (ii) Attack of borers. (iii) Germination, no. of tillers, no. of millable sugarcane and sugarcane yield. (iv) (a) 1950—1952. (b) and (c) No. (v) (a) and (b) No. (vi) Nil. (vii) Experiment was conducted by D.S.R.(G).



## 5. RESULTS :

- (i) 18.64 ton/ac.  
 (ii) 2.319 ton/ac.  
 (iii) None of the effects is significant.  
 (iv) Av. yield of sugarcane in ton/ac.

	L <sub>0</sub>	L <sub>1</sub>	Mean
P <sub>0</sub>	17.07	20.06	18.57
P <sub>1</sub>	17.66	20.67	19.17
P <sub>2</sub>	18.58	17.78	18.18
Mean	17.77	19.50	18.64

S.E. of P marginal means = 0.820 ton/ac.  
 S.E. of L marginal means = 0.670 ton/ac.  
 S.E. of any mean of body of table = 1.160 ton/ac.

Crop :- Sugarcane.

Ref :- U.P. 52(56).

Site :- Sugarcane Res. Sub-Stn., Kunraghat.

Type :- 'M'.

Object :- To study the response of Sugarcane to Super in presence and absence of Gypsum.

## 1. BASAL CONDITIONS :

- (i) (a) G.M.—Wheat. (b) *Sanal* for G.M. (c) G.M. (ii) (a) Sandy loam. (b) N.A. (iii) 10.2.1952.  
 (iv) (a) 5 ploughings with victory and *desi* ploughs and 2 harrowings with cultivator. (b) Sown in trenches. (c) 60—3 budded setts/row. (d) and (e) N.A. (v) A/S as top-dressing at 70 lb./ac. of N (4 mds. 15 seers). (vi) CO.S. 511. (vii) Irrigated. (viii) 2 earthings and 4 hoeings. (ix) 34.40°. (x) 7.2.1953 to 2.3.1953.

## 2. TREATMENTS :

All combinations of (1) and (2)

- (1) 3 levels of P<sub>2</sub>O<sub>5</sub> as Super : P<sub>0</sub>=0, P<sub>1</sub>=100 and P<sub>2</sub>=200 lb./ac.  
 (2) 2 levels of Gypsum : G<sub>0</sub>=0 and G<sub>1</sub>=1½ ton/ac.

## 3. DESIGN :

- (i) 2×3 Fact. in R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) 56'×24'. (b) 50'×18'. (v) 3' around. (vi) Yes.

## 4. GENERAL :

- (i) Normal. No lodging. (ii) Attack of borer. (iii) Germination, no. of tillers, no. of millable sugarcane and yield. (iv) (a) 1950—1952. (b) and (c) No. (v) (a) and (b) No. (vi) Nil. (vii) Experiment was conducted by D.S.R.(G).

## 5. RESULTS :

- (i) 26.62 ton/ac.  
 (ii) 5.013 ton/ac.  
 (iii) None of the effects is significant.  
 (iv) Av. yield of sugarcane in ton/ac.

	G <sub>0</sub>	G <sub>1</sub>	Mean
P <sub>0</sub>	27.35	24.32	25.84
P <sub>1</sub>	29.07	26.50	27.78
P <sub>2</sub>	24.86	27.60	26.23
Mean	27.09	26.14	26.62

S.E. of P marginal means = 1.773 ton/ac.  
 S.E. of G marginal means = 1.447 ton/ac.  
 S.E. of body of table = 2.507 ton/ac.

Crop :- Sugarcane.

Ref :- U.P. 51(22).

Site :- Sugarcane Res. Sub-Stn., Kunraghat.

Type :- 'M'.

Object :- To compare the effect of application of A/S and C/N on Sugarcane.

## 1. BASAL CONDITIONS :

(i) (a) G.M.—Barley and Gram. (b) *Chari* for grain. (c) G.M. (ii) (a) Sandy loam. (b) N.A. (iii) 3.3.1951. (iv) (a) 4 preparatory ploughings with *desi* and victory ploughs. (b) Sown in trenches. (c) 45-3 budded setts/row (d) and (e) N.A. (v) Nil. (vi) CO.453 (late). (vii) Irrigated. (viii) 7 hoeings, 1 after each irrigation and 2 earthings. (ix) 27.15". (x) 22.12.1951 to 2.2.1952.

## 2. TREATMENTS :

All combinations of (1) and (2) + a control (no manure)

(1) 2 sources of N :  $S_1=A/S$  and  $S_2=C/N$ .(2) 3 levels of N :  $N_1=50$ ,  $N_2=100$  and  $N_3=150$  lb./ac.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 4. (iv) (a) 41'×30'. (b) 35'×24'. (v) 3' alround. (vi) Yes.

## 4. GENERAL :

(i) Normal. No lodging. (ii) No. (iii) Germination, no. of tillers, no. of millable canes and sugarcane yield. (iv) (a) 1951 to 1953. (b) and (c) No. (v) (a) and (b) No. (vi) Nil. (vii) Experiment was conducted by D.S.R. (G).

## 5. RESULTS :

(i) 12.90 ton/ac.

(ii) 3.628 ton/ac.

(iii) Only control vs others is significant.

(iv) Av. yield of sugarcane in ton/ac.

Control=8.960 ton/ac.

	$S_1$	$S_2$	Mean
$N_1$	12.34	13.55	12.94
$N_2$	14.54	13.64	14.09
$N_3$	14.15	13.09	13.62
Mean	13.68	13.43	13.55

S.E. of S marginal means

=1.047 ton/ac.

S.E. of N marginal means

=1.283 ton/ac.

S.E. of body of table

=1.814 ton/ac.

S.E. of control vs any mean in body of table

=2.566 ton/ac.

Crop :- Sugarcane.

Ref :- U.P. 52(58)/51(22).

Site :- Sugarcane Res. Sub-Stn., Kunraghat.

Type :- 'M'.

Object : To compare the effect of application of A/S and C/N on Sugarcane.

## 1. BASAL CONDITIONS :

(i) (a) G.M. Barley. (b) *Jowar* for fodder. (c) G.M. (ii) (a) Sandy loam. (b) N.A. (iii) 22.2.1952. (iv) (a) 4 preparatory ploughings with victory plough and *desi* plough. (b) Sown flat. (c) 45-3 budded setts/row. (d) and (e) N.A. (v) Nil. (vi) CO. 453. (vii) Irrigated. (viii) 5 hoeings and earthings. (ix) 34.40". (x) 16.2.1953 to 2.3.1953.

## 2. TREATMENTS :

All combinations of (1) and (2) + a control (no manure)

(1) 2 sources of N :  $S_1=A/S$  and  $S_2=C/N$ .(2) 3 levels of N :  $N_1=50$ ,  $N_2=100$  and  $N_3=150$  lb./ac.

**3. DESIGN :**

(i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 4. (iv) (a) 40'×30'. (b) 34'×24'. (v) 3' around. (vi) Yes.

**4. GENERAL :**

(i) Normal. No lodging. (ii) Attack of borer. (iii) Germination, no. of tillers, no. of millable sugarcane and yield. (iv) (a) 1951 to 1953. (b) and (c) No. (v) (a) and (b) No. (vi) Nil. (vii) Experiment was conducted by D.S.R. (G).

**5. RESULTS :**

- (i) 17.19 ton/ac.  
 (ii) 2.488 ton/ac.  
 (iii) Only control vs others is highly significant.  
 (iv) Av. yield of sugarcane in ton/ac.

Control=11.74 ton/ac.

	S <sub>1</sub>	S <sub>2</sub>	Mean
N <sub>1</sub>	17.20	18.06	17.63
N <sub>2</sub>	19.71	15.85	17.78
N <sub>3</sub>	19.86	17.94	18.90
Mean	18.92	17.28	18.10

S.E. of S marginal means = 0.718 ton/ac.  
 S.E. of N marginal means = 0.880 ton/ac.  
 S.E. of body of table = 1.244 ton/ac.  
 S.E. of control vs any mean in body of table = 1.760 ton/ac.

Crop :- Sugarcane.

Ref :- U.P. 53(171)/52(58)/51(22)

Site :- Sugarcane Res. Sub-Stn., Kunraghat. Type :- 'M'.

Object. — To compare the effect of application of A/S and C/N on Sugarcane.

**1. BASAL CONDITIONS :**

(i) (a) Fallow-Sugarcane. (b) Fallow. (c) Nil. (ii) (a) Sandy loam. (b) N.A. (iii) 17.2.1953. (iv) (a) 8 ploughings with *victory* and *desi* ploughs. (b) Sown in trenches. (c) 45 three budded setts/row. (d) and (e) N.A. (v) Nil. (vi) CO.453 (late). (vii) Irrigated. (viii) 2 earthings on 25.7.1953 and 29.7.1953. (ix) 48.28" (x) 26.12.1953 to 17.2.1954.

**2. TREATMENTS .**

All combinations of (1) and (2) + a control (no manure)

- (1) 2 sources of N : S<sub>1</sub>=A/S and S<sub>2</sub>=C/N.  
 (2) 3 levels of N : N<sub>1</sub>=50, N<sub>2</sub>=100, N<sub>3</sub>=150 lb/ac.  
 Date of manuring 30.4.1953.

**3. DESIGN :**

(i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 4. (iv) (a) 40'×30'. (b) 34'×24'. (v) 3' around. (vi) Yes.

**4. GENERAL :**

(i) Normal and no lodging. (ii) Attack of borer. (iii) Germination, no. of tillers, no. of millable cane and yield. (iv) 1951—1953. (b) and (c) No. (v) (a) and (b) No. (vi) Nil. (vii) The experiment was conducted by D.S.R. (G).

**5. RESULTS .**

- (i) 21.93 ton/ac.  
 (ii) 2.363 ton/ac.  
 (iii) S and N effects are highly significant. Interaction S×N is not significant. Effect of control vs others is highly significant.

(iv) Av. yield of cane in ton/ac.

Control = 15.61 ton/ac.			
	S <sub>1</sub>	S <sub>2</sub>	Mean
N <sub>1</sub>	22.33	19.85	21.09
N <sub>2</sub>	24.41	20.59	22.50
N <sub>3</sub>	27.51	23.21	25.36
Mean	24.75	21.22	22.98

S.E. of N marginal means	=0.836 ton/ac.
S.E. of S marginal means	=0.682 ton/ac.
S.E. of body of table	=1.182 ton/ac.
S.E. of control vs any other mean in body of table	=1.671 ton/ac.

Crop :- Sugarcane.

Ref :- U.P. 4S(4).

Site :- Sugarcane Res. Sub-Stn., Kunraghat.

Type :- 'M'.

Object :- To study the effect of different trace elements on Sugarcane.

## 1. BASAL CONDITIONS :

(i) (a) G.M.—Wheat—*Dhaincha* for seed—Sugarcane. (b) *Dhaincha* for seed. (c) Nil. (ii) (a) Sandy loam. (b) N.A. (iii) 18.2.1948. (iv) (a) 7 preparatory ploughings with *desi* and watts ploughs. (b) Sown flat. (c) 40-3 budded setts/row. (d) and (e) N.A. (v) Nil. (vi) CO. 453 (late). (vii) Irrigated. (viii) 7 hoeing and 1 earthing up. (ix) 48.99°. (x) 12, 13.3.1949.

## 2. TREATMENTS :

- Control.
  - CuSO<sub>4</sub> at 1.4 lb./ac.
  - MgSO<sub>4</sub> at 28 lb/ac.+CuSO<sub>4</sub> at 1.4 lb/ac.
  - FeSO<sub>4</sub> at 28 lb/ac.+CuSO<sub>4</sub> at 1.4 lb/ac.
- Treatments given on 7.3.1948 as top dressing.

## 3. DESIGN .

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 4. (iv) (a) 40'×21'. (b) 34'×15'. (v) 3' around. (vi) Yes.

## 4. GENERAL .

(i) Normal. No lodging. (ii) No. (iii) Germination, no. of tillers, no. of millable canes and cane yield. (iv) (a) No. (b) and (c) No. (v) (a) and (b) No. (vi) Nil. (vii) The experiment was conducted by D.S.R. (G).

## 5. RESULTS :

- 25.19 ton/ac.
- 1.717 ton/ac.
- Treatment differences are not significant.
- Av. yield of cane in ton/ac.
 

Treatment	Av. yield
1.	26.85
2.	25.36
3.	24.02
4.	24.55

S.E./mean = 0.859 ton/ac.

Crop :- Sugarcane.

Ref : U.P. 48(3).

Site :- Sugarcane Res. Sub-Stn., Kunraghat.

Type :- 'M'.

Object :- To study the effect of different G.M. crops manured and unmanured on the succeeding Sugarcane crop.

## 1. BASAL CONDITIONS :

(i) (a) G.M.—Wheat.—G.M. (*Kharif* and *Rabi*)—Sugarcane. (b) Wheat—*Sanai*. (c) G.M. (ii) (a) Sandy loam. (b) N.A. (iii) 17.2.1948. (iv) (a) 10 preparatory ploughings with *desi* and *watts* plough. (b) Sown flat. (c) 60-3 budded setts/row. (d) and (e) N.A. (v) G.M. with *Sanai* on 23 and 25.9.1948, 13.10.1948. (vi) CO.S. 109. (vii) Irrigated. (viii) 6 hoeings and 2 earthings. (ix) 48.99'. (x) 16.2.1949 to 2.3.1949.

## 2. TREATMENTS :

1. *Sanai* (G.M.).
2. *Sanai*+Berseem.
3. *Sanai*+A/S. at 50 lb./ac. of N.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 3. (b) N.A. (iii) 4. (iv) (a) 60'×24'. (b) 54'×18'. (v) 3' around. (vi) Yes.

## 4. GENERAL :

(i) Normal. No lodging. (ii) No. (iii) Germination, no. of tillers, no. of millable canes and sugarcane yield. (iv) (a) 1948—1949. (b), (c) No. (v) (a) and (b) No. (vi) Nil. (vii) Experiment was conducted by D.S.R.(G)

## 5. RESULTS :

- (i) 25.03 ton/ac.
- (ii) 3.818 ton/ac.
- (iii) Treatment differences are not significant.
- (iv) Av. yield of sugarcane in ton/ac.

Treatment	Av. yield
1.	26.03
2.	23.73
3.	25.32
S.E./mean	=1.909 ton/ac.

Crop :- Sugarcane.

Ref :- U.P. 49(3)/48(3).

Site :- Sugarcane Res. Sub-Stn., Kunraghat.

Type :- 'M'.

Object :- To study the effect of different G.M. crops manured and unmanured on the succeeding Sugarcane crop.

## 1. BASAL CONDITIONS :

(i) (a) G.M.—Wheat—G.M. (*Kharif* and *Rabi*)—Sugarcane. (b) Wheat—*Sanai*. (c) G.M. (ii) (a) Sandy loam. (b) N.A. (iii) 23.2.1949. (iv) (a) 6 preparatory ploughings. (b) Sown flat. (c) 60—3 budded setts/row. (d) and (e) N.A. (v) G.M. with *sanai* sown on 7.7.1948 and buried in on 23.8.1948. (vi) CO.S. 109. (vii) Irrigated. (viii) 9 hoeings and 1 earthing on 11 to 13.7.1949. (ix) 52.86'. (x) 9 to 11.3.1950.

## 2. TREATMENTS :

1. Control—*Sanai* Green manured.
  2. *Sanai*+A/S at 50 lb./ac. of N.
  3. *Sanai*+Berseem (Green manured).
- A/S applied on 29.3.1949. Berseem sown on 6.11.1948. buried in on 27.12.1948.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 3. (b) N.A. (iii) 4. (iv) (a) 60'×24'. (b) 54'×18'. (v) 3' around. (vi) Yes.

## 4. GENERAL :

(i) Normal, no lodging. (ii) No. (iii) Germination, tillers, millable canes and sugarcane yield. (iv) (a) 1948—1949. (b), (c) No. (v) (a) and (b) No. (vi) Nil. (vii) Expt. conducted by D.S.R.(G).

## 5. RESULTS :

- (i) 26.55 ton/ac.  
 (ii) 5.182 ton/ac.  
 (iii) Treatment differences are not significant.  
 (iv) Av. yield of sugarcane in ton/ac.

Treatment	Av. yield
1.	25.40
2.	27.92
3.	26.33
S.E./mean	=2.591 ton/ac.

Crop :- Sugarcane.

Ref :- U.P. 48(2).

Site :- Sugarcane Res. Sub-Stn., Kunraghat.

Type :- 'M'.

Object :- To study the effect of application of N as A/S and A/N at different levels on Sugarcane.

## 1. BASAL CONDITIONS :

- (i) (a) G.M.—Wheat—*Dhaincha* for seed—Sugarcane. (b) *Dhaincha* for seed. (c) Nil. (ii) (a) Sandy loam. (b) N.A. (iii) 6 and 7.2.1948. (iv) (a) 8 preparatory ploughings with *desi* and *watts* ploughs. (b) Sown flat. (c) 85—3 budded setts/row. (d) and (e) N.A. (v) Nil. (vi) CO.S. 109. (viii) Irrigated. (viii) Earthing from 17.7.1948 to 21.8.1948 and hoeings—9. (ix) 48.99°. (x) 9.2.1949 to 1.3.1949.

## 2. TREATMENTS :

All combinations of (1) and (2)+3 selective treatments

(1) 2 sources of N :  $S_1=A/S$  and  $S_2=A/N$ .(2) 3 levels of N :  $N_1=50$ ,  $N_2=100$  and  $N_3=150$  lb./ac.

3 selective treatments—

 $T_1$ =control (no manure). $T_2$ =urine earth at 150 lb./ac. of N. $T_3$ =press mud cake at 150 lb./ac. of N.

## 3. DESIGN :

- (i) R.B.D. (ii) (a) 9. (b) N.A. (iii) 4. (iv) (a) 85'×21'. (b) 79'×15'. (v) 3' border left around the gross plot. (vi) Yes.

## 4. GENERAL :

- (i) Normal. No lodging. (ii) No. (iii) Germination, tiller, millable sugarcane and yield. (iv) (a) to (c) No. (v) (a) and (b) No. (vi) Nil. (vii) Experiment was conducted by D.S.R.(G).

## 5. RESULTS :

- (i) 21.48 ton/ac.  
 (ii) 3.067 ton/ac.  
 (iii) Selective treatments differ significantly. Others are not significant.  
 (iv) Av. yield of sugarcane in ton/ac.

 $T_1 = 18.27$  ton/ac. $T_2 = 22.03$  ton/ac. $T_3 = 24.01$  ton/ac.

	$N_1$	$N_2$	$N_3$	Mean
$S_1$	22.12	21.86	19.65	21.21
$S_2$	20.84	20.68	23.91	21.81
Mean	21.48	21.27	21.78	21.51

S.E. of S marginal means =0.885 ton/ac.

S.E. of N marginal means =1.084 ton/ac.

S.E. of body of table =1.533 ton/ac.

S.E. of selective treatments =1.533 ton/ac.

Crop :- Sugarcane.

Ref :- U.P. 53(172).

Site :- Sugarcane Res. Sub-Stn., Kunraghat.

Type :- 'M'.

Object :- To study the effect of G.M. with time of application of P fertilizers.

**1. BASAL CONDITIONS :**

(i) (a) G.M.—Sugarcane. (b) Wheat—G.M. (c) No. (ii) (a) Sandy loam. (b) N.A. (iii) Sugarcane 21 and 22.2.1953 and date of sowing of green manures 23.6.1952. (iv) (a) 10 ploughings with *dest* and victory plough. (b) N.A. (c) 85—3 budded setts/row were planted. (d) and (e) N.A. (v) [Super at 150 lb.  $P_2O_5$  and 120 lb./ac. of N as 60 lb. of N from G.M. and 60 lb. of N from A/S on 8.5.1953. (vi) CO.S. 443. (vii) Irrigated. (viii) Earthings on 12, 13, 16 and 22.8.1953. Hoings 8, one or two hoings after each irrigation. (ix) 48.64". (x) Sugarcane 11.2.1954 to 24.3.1954.

**2. TREATMENTS :**

Main-plot treatments :

3 kinds of G.M. and fallows :  $G_1$ —*Sanai*,  $G_2$ —*Dhaincha*,  $G_3$ —*Cowpea* and  $G_4$ —*Fallows*.

Sub-plot treatments :

3 times of application of  $P_2O_5$ +a control :  $P_0$ =no manure (control),  $P_1$ =150 lb./ac. of  $P_2O_5$  applied at sowing G.M.,  $P_2$ =150 lb./ac. of  $P_2O_5$  applied at turning in of G.M. and  $P_3$ =150 lb./ac. of  $P_2O_5$  applied at planting sugarcane.**3. DESIGN :**

(i) Split-plot. (ii) 4 main-plots/replication and 4 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) 84'×18'. (b) 18'×12'. (b) 3' border around the gross plot was excluded. (vi) Yes.

**6. GENERAL :**

(i) Normal and no lodging. (ii) Attack of borer. (iii) Germination, tillers, millable canes and yield. (iv) (a) 1953—1955. (b) and (c) No. (v) (a) and (b) No. (vi) Nil. (vii) Experiment conducted by D.S.R.(G).

**5. RESULTS :**

- (i) 28.71 ton/ac.  
 (ii) (a) 4.435 ton/ac.  
 (b) 1.690 ton/ac.  
 (iii) None of the effects is significant.  
 (iv) Av. yield of sugarcane in ton/ac.

	$P_0$	$P_1$	$P_2$	$P_3$	Mean
$G_1$	28.02	28.22	28.61	26.56	27.85
$G_2$	31.74	29.08	30.09	30.25	30.29
$G_3$	29.01	29.26	27.61	28.65	28.63
$G_4$	28.82	25.26	30.53	27.62	28.06
Mean	29.40	27.96	29.21	28.27	28.71

S.E. of difference of two

1. main-plot treatment marginal means =1.810 ton/ac.  
 2. sub-plot treatment marginal means =0.690 ton/ac.  
 3. sub-plot treatment means at the same level of main-plot treatment =1.380 ton/ac.  
 4. main-plot treatment means at the same level of sub-plot treatment =2.169 ton/ac.

Crop :- Sugarcane.

Ref :- U.P. 48(8).

Site :- Sugarcane Res. Sub-Stn., Muzaffarnagar.

Type :- 'M'.

Object :- To study the effect of placement of super on Sugarcane.

**1. BASAL CONDITIONS :**

(i) (a) Fallow—Sugarcane. (b) Cotton (against fallow). (c) Nil. (ii) (a) Light loam. (b) Refer soil analysis, Muzaffarnagar. (iii) 5.3.1948. (iv) (a) 14 preparatory ploughings. (b) Sown flat. (c) 3 buds/ft. of a row. (d) Rows 3' apart. (e) N.A. (v) Nil. (vi) CO.451 (mid season). (vii) Irrigated. (viii) 2 hoings. (ix) 31.95". (x) N.A.

## 2. TREATMENTS :

1. Control.
2. 100 lb./ac. of  $P_2O_5$  as Super broadcast.
3. 100 lb./ac. of  $P_2O_5$  as Super in trenches.
4. 100 lb./ac. of  $P_2O_5$  as Super dibbling 4" deep.
5. 100 lb./ac. of  $P_2O_5$  as Super dibbling 7" deep.

## 3. DESIGN :

- (i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 4. (iv) (a) 53.2' x 30'. (b) 47.2' x 24'. (v) 1 row on either side and 3, at each end. (vi) Yes.

## 4. GENERAL :

- (i) Good. (ii) Nil. (iii) Germination count of tiller and millable cane and sugarcane yield. (iv) (a) 1949 to 1950. (b) and (c) No. (v) (a) and (b) No. (vi) Nil. (vii) Experiment conducted by D.S.R. (M).

## 5. RESULTS :

- (i) 32.39 ton/ac.  
 (ii) 1.820 ton/ac.  
 (iii) Treatment differences are not significant.  
 (iv) Av. yield of sugarcane in ton/ac.

Treatment	Av. yield
1.	33.20
2.	33.43
3.	29.46
4.	33.85
5.	31.94
S.E./mean	=0.910 ton/ac.

Crop :- Sugarcane.

Ref :- U.P. 49(10)/48(8).

Site :- Sugarcane Res. Sub-Stn, Muzaffarnagar. Type :- 'M'.

Object :- To study the effect of placement of super on Sugarcane.

## 1. BASAL CONDITIONS :

- (i) (a) Fallow Sugarcane. (b)  $\frac{7}{8}$  Guar for grain—Fallow. (c) G.N.C. at 100 lb./ac. of N and A/S at 20 lb./ac. of N. (ii) (a) Light loam. (b) Refer soil analysis, Muzaffarnagar. (iii) 7.3.1949. (iv) (a) 8 preparatory ploughings. (b) Sown flat. (c) 3 buds per foot of a row. (d) Rows 3' apart. (e) —. (v) Nil. (vi) CO.421 (mid-season). (vii) Irrigated. (viii) 4 hoeings and 1 [earthing. (ix) 22.50'. (x) 28.12.1949 to 21.1.1950.

## 2. TREATMENTS :

1. Control.
2. 100 lb./ac. of  $P_2O_5$  as Super broadcast.
3. 100 lb./ac. of  $P_2O_5$  as Super in trenches.
4. 100 lb./ac. of  $P_2O_5$  as Super dibbling 4" deep.
5. 100 lb./ac. of  $P_2O_5$  as Super dibbling 7" deep.

## 3. DESIGN :

- (i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 4. (iv) (a) 53.2' x 30'. (b) 47.2' x 24'. (v) 1 row on either side and 3' at each end. (vi) Yes.

## 4. GENERAL :

- (i) Good. (ii) Nil. (iii) Germination, count of tillers, millable cane and sugarcane yield. (iv) (a) 1948 1950. (b) and (c) No. (v) (a) and (b) No. (vi) Nil. (vii) Experiment conducted by D.S.R. (M).

## 5. RESULTS :

- (i) 29.51 ton/ac.  
 (ii) 2.780 ton/ac.  
 (iii) Treatment differences are highly significant.



## (iv) Av. yield of sugarcane in ton/ac.

Treatment	Av. yield
1.	31.88
2.	33.79
3.	18.23
4.	32.13
5.	31.52
S.E./mean	= 1.390 ton/ac.

Crop :- Sugarcane.

Ref :- U.P. 50(33)/49(10)/48(8).

Site :- Sugarcane Res. Sub-Stn., Muzaffarnagar. Type :- 'M'.

Object :- To study the effect of placement of super on Sugarcane.

## 1. BASAL CONDITIONS :

(i) (a) Fallow—Sugarcane. (b) *Guar*—Fallow. (c) G.N.C. at 100 lb./ac. of N. and A/S at 20 lb/ac. of N. (ii) (a) Light loam. (b) Refer soil analysis, Muzaffarnagar. (iii) 21.2 1950. (iv) (a) 8 preparatory ploughings. (b) Sown flat. (c) N.A. (d) Rows 3' apart. (e) N.A. (v) Nil. (vi) CO.421 (mid-season), (vii) Irrigated. (viii) 12 hoeings and earthing up in August. (ix) 38.60°. (x) 29.11.1950 to 17.1.1951.

## 2. TREATMENTS :

1. Control.
2. 100 lb./ac.  $P_2O_5$  as Super applied by broadcast.
3. 100 lb./ac. of  $P_2O_5$  as Super applied in trenches.
4. 100 lb./ac. of  $P_2O_5$  as Super applied by dibbling 4' deep.
5. 100 lb./ac. of  $P_2O_5$  as Super applied by dibbling 7' deep.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 4. (iv) (a) 53.2' x 30'. (b) 47.2' x 24'. (v) One row on each side and 3' at each end. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Nil. (iii) Germination, tiller, millable cane countings and yield. (iv) (a) 1948—1950. (b), (c) No. (v) (a) and (b) No. (vi) Nil. (vii) Experiment was conducted by D.S.R.(M).

## 5. RESULTS :

- (i) 28.06 ton/ac.
- (ii) 3.233 ton/ac.
- (iii) Treatment differences are not significant.
- (iv) Av. yield of sugarcane in ton/ac.

Treatment	Av. yield
1.	28.42
2.	25.87
3.	28.06
4.	27.65
5.	30.31
S.E./mean	= 1.617 ton/ac.

Crop :- Sugarcane (*Ratoon*).

Ref :- U.P. 48(5).

Site :- Sugarcane Res. Sub-Stn., Muzaffarnagar.

Type :- 'M'.

Object :- To find out the optimum dose of manure for first year *Ratoon*.

## 1. BASAL CONDITIONS :

(i) (a) G.M.—Wheat—*Senai* or *Moong*—Sugarcane—*Ratoon*. (b) Sugarcane (plant cane). (c) No. (ii) (a) Light loam. (b) Refer soil analysis, Muzaffarnagar. (iii) *Ratoon*. (iv) (a) One preparatory ploughing (b) Sown flat. (c) 3 buds in 1 ft. of a row. (d) Rows 3' apart. (e) —. (v) Nil. (vi) CO.421 (mid-season). (vii) Irrigated. (viii) Earthing up in August. (ix) 31.95°. (x) 23.12.1948 to 25.12.1948.

## 2. TREATMENTS :

8 doses of N as A/S+G.N.C. in 1 : 1 ratio :  $N_0=0$ ,  $N_1=80$ ,  $N_2=100$ ,  $N_3=120$ ,  $N_4=140$ ,  $N_5=160$ ,  $N_6=180$  and  $N_7=200$  lb./ac.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a)  $75' \times 21'$ . (b)  $69' \times 15'$ . (v) One row on either side and 3' at each end. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Nil. (iii) Germination, tiller and millable cane countings and yield. (iv) (a) 1948—1950. (b) and (c) No. (v) (a) and (b) No. (vi) Nil. (vii) Experiment was conducted by D.S.R.(M).

## 5. RESULTS :

- (i) 23.01 ton/ac.  
 (ii) 2.200 ton/ac.  
 (iii) Treatment differences are highly significant.  
 (iv) Av. yield of sugarcane in ton/ac.

Treatment	Av. yield	Treatment	Av. yield
$N_0$	13.68	$N_4$	25.23
$N_1$	20.83	$N_5$	24.21
$N_2$	24.66	$N_6$	25.23
$N_3$	25.37	$N_7$	24.88
	S.E./mean		=1.100 ton/ac.

Crop :- Sugarcane (*Ratoon*).

Ref :- U.P.49(6)/48(5).

Site :- Sugarcane Res. Sub-Stn., Muzaffarnagar.

Type :- 'M'.

Object :- To find out the optimum dose of manure for first year *Ratoon*.

## 1. BASAL CONDITIONS :

(i) (a) G.M.—Wheat—*Sanai* or *Maong*—Sugarcane—*Ratoon*. (b) Sugarcane (plant cane). (c) No. (ii) (a) Light loam. (b) Refer soil analysis, Muzaffarnagar. (iii) *Ratoon*. (iv) (a) One preparatory ploughing. (b) Sown flat. (c) 3 buds/foot of a row. (d) Rows 3' apart. (e) —. (v) Nil. (vi) CO.421 (mid-season). (vii) Irrigated. (viii) 2 hoeings, earthing up in July. (ix)  $20.73^\circ$ . (x) 12.12.1949 to 20.12.1949.

## 2. TREATMENTS :

8 doses of N as A/S+G.N.C. in 1 : 1 ratio :  $N_0=0$ ,  $N_1=80$ ,  $N_2=100$ ,  $N_3=120$ ,  $N_4=140$ ,  $N_5=160$ ,  $N_6=180$  and  $N_7=200$  lb./ac.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a)  $75' \times 21'$ . (b)  $69' \times 15'$ . (v) One row on either side and 3' at each end ; a distance of 4' and 3' between blocks alternately. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Nil. (iii) Germination, tiller, millable cane counting and yield. (iv) (a) 1948—1950. (b) No. (c) No. (v) (a) and (b) No. (vi) Nil. (vii) Experiment conducted by D.S.R.(M).

## 5. RESULTS :

- (i) 21.53 ton/ac.  
 (ii) 2.040 ton/ac.  
 (iii) Treatment differences are highly significant.  
 (iv) Av. yield of sugarcane in ton/ac.

Treatment	Av. yield	Treatment	Av. yield
$N_0$	14.97	$N_4$	22.69
$N_1$	19.57	$N_5$	24.46
$N_2$	19.27	$N_6$	23.61
$N_3$	21.55	$N_7$	26.12
	S.E./mean		=1.020 ton/ac.

Crop :- Sugarcane (*Ratoon*).

Ref :- U.P. 50(30)/49(6)/48(5).

Site :- Sugarcane Res. Sub-Stn., Muzaffarnagar.

Type :- 'M'.

Object :- To find out the optimum dose of manure for first year *Ratoon*.

1. BASAL CONDITIONS :

(i) (a) G.M.—Wheat-*Sanai* or *Moong-Sugarcane-Ratoon*. (b) Plant cane (Sugarcane). (c) Nil. (ii) (a) Light loam. (b) Refer soil analysis, Muzaffarnagar. (iii) *Ratoon*. (iv) (a) One preparatory ploughing. (b) Sown flat. (c) N.A. (d) Rows 3' apart. (e) —. (v) Nil. (vi) CO.421 (mid-season). (vii) Irrigated. (viii) 4 hoeings and earthing up in July. (ix) 34.70°. (x) N.A.

2. TREATMENTS :

8 doses of N as A/S+G.N.C. in 1 : 1 ratio :  $N_0=0$ ,  $N_1=80$ ,  $N_2=100$ ,  $N_3=120$ ,  $N_4=140$ ,  $N_5=160$ ,  $N_6=180$  and  $N_7=200$  lb./ac.

3. DESIGN :

(i) R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a) 75' × 21'. (b) 69' × 15'. (v) One row on either side and 3' at each end. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Germination, tiller, millable cane counting and yield. (iv) (a) 1948—1950. (b) No. (c) No. (v) (a) and (b) No. (vi) Nil. (vii) Experiment conducted by D.S.R.(M).

5. RESULTS :

(i) 22.95 ton/ac.  
(ii) 2.109 ton/ac.  
(iii) Treatment differences are highly significant.  
(iv) Av. yield of cane in ton/ac.

Treatment	Av. yield	Treatment	Av. yield
$N_0$	14.60	$N_4$	25.91
$N_1$	22.17	$N_5$	25.58
$N_2$	21.96	$N_6$	25.36
$N_3$	22.80	$N_7$	25.19
	S.E./mean		=1.054 ton/ac.

Crop :- Sugarcane (*Ratoon*).

Ref :- U.P. 48(6).

Site :- Sugarcane Res. Sub-Stn., Muzaffarnagar.

Type :- 'M'.

Object :- To find out the optimum time of application of A/S over a basal dressing of F.Y.M.

1. BASAL CONDITIONS :

(i) (a) Fallow—Sugarcane. (b) *Sanai* (against fallow). (c) No. (ii) (a) Light loam. (b) Refer soil analysis, Muzaffarnagar. (iii) 23.2.1948. (iv) (a) 12 preparatory ploughings. (b) Sown flat. (c) 3 buds/ft. of a row (d) Rows 3' apart. (e) —. (v) As per treatments. (vi) CO. 421 (mid-season). (vii) Irrigated. (viii) 2 hoeings and earthing also. (ix) 31.95°. (x) 7.1.1949.

2. TREATMENTS :

5 application of N at 60 lb./ac.

- 5 doses of 12 lb./ac. of N each at planting and 4, 8, 12 and 16 weeks after planting.
- 3 doses of 20 lb./ac. of N each at planting and 8 and 16 weeks after planting.
- 2 doses of 30 lb./ac. of N each at planting and at tillering.
- 60 lb./ac. of N at planting.
- 60 lb./ac. of N at tillering.

N is applied as A/S. A basal dose of 40 lb./ac. of N as F.Y.M. is applied.

3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 4. (iv) (a) 42½' × 33'. (b) 36½' × 27'. (v) A row on each side and 3' at each end. (vi) Yes.

4. GENERAL :

(i) Good. (ii) No. (iii) Germination, tiller, and millable sugarcane counting and yield. (iv) (a) 1946—1948. (b) and (c) No. (v) (a) and (b) No. (vi) Nil. (vii) Experiment conducted by D.S. R. (M).

## 5. RESULTS :

- (i) 30.57 ton/ac.  
 (ii) 1.580 ton/ac.  
 (iii) Treatment differences are significant.  
 (iv) Av. yield of sugarcane in ton/ac.

Treatment	Av. yield
1.	28.88
2.	29.84
3.	31.60
4.	32.09
5.	30.46
S.E./mean	= 0.790 ton/ac.

Crop :- Sugarcane.

Ref :- U.P. 48(9).

Site :- Sugarcane Res. Sub-Stn., Muzaffarnagar.

Type :- 'M'.

Object :—To assess the comparative efficacy of A/S and A/N at different levels of N.

## 1. BASAL CONDITIONS :

(i) (a) Fallow—Sugarcane. (b) Cotton (against fallow). (c) Nil. (ii) (a) Light loam. (b) Refer soil analysis, Muzaffarnagar. (iii) 6.3.1948. (iv) (a) 15 preparatory ploughings. (b) Sown flat. (c) 3 buds/ft. of a row. (d) Rows 3' apart. (e)—. (v) Nil. (vi) CO.S. 245 (mid-season). (vii) Irrigated. (viii) 6 hoeings and earthing up in August. (ix) 34.59". (x) N.A.

## 2. TREATMENTS :

All combinations of (1) and (2)+a control (no manure)

(1) 2 source of N :  $S_1=A/S$  and  $S_2=A/N$ .(2) 3 levels of N :  $N_1=50$ ,  $N_2=100$  and  $N_3=150$  lb./ac.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 5. (iv) (a) 66.5'×24'. (b) 60.5'×18'. (v) One row on each side and 3' at each end. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Nil. (iii) Germination, tiller and millable sugarcane counting and yield. (iv) (a) 1946—1948. (b) and (c) No. (v) (a) and (b) No. (vi) Nil. (vii) Experiment conducted by D.S.R. (M).<sup>1</sup>

## 5. RESULTS :

- (i) 29.50 ton/ac.  
 (ii) 3.372 ton/ac.  
 (iii) Only Control vs treated effect is highly significant. Other effects and interactions are not significant.  
 (iv) Av. yield of sugarcane in ton./ac.

Control = 21.88 ton/ac.				
	$N_1$	$N_2$	$N_3$	Mean
$S_1$	30.99	27.09	33.90	30.66
$S_2$	30.92	31.12	30.59	30.88
Mean	30.96	29.10	32.24	30.77

S.E. of S marginal mean

=0.871 ton/ac.

S.E. of N marginal mean

=1.066 ton/ac.

S.E. of body of table

=1.508 ton/ac.

Crop :- Sugarcane.

Ref :- U.P. 48(7).

Site :- Sugarcane Res. Sub-Stn., Muzaffarnagar.

Type :- 'M'.

Object :- To study the effect of manures on the yield of Sugarcane.

**1. BASAL CONDITIONS :**

(i) (a) Sugarcane—G.M.—Wheat—Guar. (b) Guar. (c) No. (ii) (a) Light loam. (b) Refer soil analysis, Muzaffarnagar. (iii) 28, 29.2.1948. (iv) (a) 19 preparatory ploughings. (b) Sown flat. (c) 3 buds/ft. of a row. (d) Rows 3' apart. (e) —. (v) Nil. (vi) CO. 453. (vii) Irrigated. (viii) 6 hoeings and 1 earthing. (ix) 32.09°. (x) 14.1.1949 to 13.3.1949.

**2. TREATMENTS :**

- |                                     |                                       |
|-------------------------------------|---------------------------------------|
| 1. Control.                         | 8. Press mud at 60 lb./ac. of N.      |
| 2. A/S at 60 lb./ac. of N.          | 9. Press mud at 120 lb./ac. of N.     |
| 3. A/S at 120 lb./ac. of N.         | 10. Castor cake at 120 lb./ac. of N.  |
| 4. A/N at 60 lb./ac. of N.          | 11. Mpl. manure at 120 lb./ac. of N.  |
| 5. A/N at 120 lb./ac. of N.         | 12. Compost at 120 lb./ac. of N.      |
| 6. Urine earth at 60 lb./ac. of N.  | 13. Mpl. compost at 120 lb./ac. of N. |
| 7. Urine earth at 120 lb./ac. of N. | 14. F.Y.M. at 120 lb./ac. of N.       |

**3. DESIGN :**

(i) R.B.D. (ii) (a) 14. (b) N.A. (iii) 4. (iv) (a) 59'—9½"×24'. (b) 53—9½"×18'. (v) One row on each side and 3' at each end. (vi) Yes.

**4. GENERAL :**

(i) Good. (ii) Nil. (iii) Germination, tiller, millable cane counting and yield. (iv) (a) 1944—1948. (b) and (c) No. (v) (a) and (b) No. (vi) Nil. (vii) The experiment was conducted by D.S.R. (M).

**5. RESULTS :**

- (i) 32.49 ton/ac.  
(ii) 2.32 ton/ac.  
(iii) Treatment differences are highly significant.  
(iv) Av. yield of cane in ton/ac.

Treatment	Av. yield	Treatment	Av. yield
1.	28.45	8.	33.94
2.	32.03	9.	36.64
3.	36.42	10.	35.55
4.	32.05	11.	28.92
5.	33.20	12.	31.75
6.	33.10	13.	30.64
7.	32.26	14.	29.96

S.E./mean

= 1.16 ton/ac.

Crop :- Sugarcane.

Ref :- U.P. 48(10).

Site :- Sugarcane Res. Sub-Stn., Muzaffarnagar.

Type :- 'M'.

Object :- To study the effect of the use of catalytic agents in conjunction with manures on Sugarcane.

**1. BASAL CONDITIONS :**

(i) (a) Fallow—Sugarcane. (b) Cotton (against fallow). (c) Nil. (ii) (a) Light loam. (b) Refer soil analysis, Muzaffarnagar. (iii) 8.3.1948. (iv) (a) 12 preparatory ploughings. (b) Sown flat. (c) 3 buds/ft. of a row. (d) Rows 3' apart. (e) —. (v) Nil. (vi) CO. 421 (mid-season). (vii) Irrigated. (viii) 6 hoeings. (ix) 32.22°. (x) 4.1.1949 to 22.1.1949.

**2. TREATMENTS :**

- |   |   |
|---|---|
| 1. Control.   | 7. F.Y.M. by 15th January.                        |
| 2. Castor cake at planting.                           | 8. F.Y.M. by 15th February.                       |
| 3. Castor cake+FeSO <sub>4</sub> .                    | 9. F.Y.M.+FeSO <sub>4</sub> .                     |
| 4. Castor cake+FeSO <sub>4</sub> +CuSO <sub>4</sub> . | 10. F.Y.M.+FeSO <sub>4</sub> +CuSO <sub>4</sub> . |
| 5. Castor cake+MnSO <sub>4</sub> .                    | 11. F.Y.M.+MnSO <sub>4</sub> .                    |
| 6. Castor cake+MnSO <sub>4</sub> +CuSO <sub>4</sub> . | 12. F.Y.M.+MnSO <sub>4</sub> +CuSO <sub>4</sub> . |
- Castor cake and F.Y.M. applied at 120 lb./ac. of N, FeSO<sub>4</sub> and MnSO<sub>4</sub> at 28 lb./ac. and CuSO<sub>4</sub> at 1.4 lb./ac. FeSO<sub>4</sub>, MnSO<sub>4</sub> and CuSO<sub>4</sub> are used as activizers.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 12. (b) N.A. (iii) 4. (iv) (a) 58'×21'. (b) 52'×15'. (v) One row on either side and 3' border at each end of the plot. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) No. (iii) Germination, tiller, millable cane countings and yield. (iv) (a) 1949-1950 (b) and (c) No. (v) (a) and (b) No. (vi) Nil. (vii) The experiment was conducted by D.S.R(M).

## 5. RESULTS :

- (i) 23.43 ton./ac.  
 (ii) 2.122 ton/ac.  
 (iii) Treatment differences are highly significant.  
 (iv) Av. yield of sugarcane in ton/ac.

Treatment	Av. yield	Treatment	Av. yield
1.	16.33	7.	19.11
2.	28.25	8.	19.65
3.	26.92	9.	21.79
4.	27.04	10.	21.28
5.	28.55	11.	23.68
6.	27.22	12.	21.36
	S.E./mean		=1.06 ton/ac.

Crop :- Sugarcane.

Ref :- U.P. 49(9)/48(10).

Site :- Sugarcane Res. Sub-Stn., Muzaffarnagar. Type :- 'M'.

Object :- To find out the effect of the use of catalytic agents in conjunction with manures on Sugarcane.

## 1. BASAL CONDITIONS :

(i) (a) Fallow—Sugarcane. (b) *Sanai* against Fallow. (c) Nil. (ii) (a) Light loam. (b) Refer soil analysis, Muzaffarnagar. (iii) 2.3.1949. (iv) (a) 10 preparatory ploughings. (b) Sown flat. (c) 3 buds/ft. of a row. (d) Rows 3' apart. (e) —. (v) Nil. (vi) CO.421 (mid-season). (vii) Irrigated. (viii) 7 hoeings and earthing up in August. (ix) 21.91". (x) 1 to 16.1.1950.

## 2. TREATMENTS :

- |   |   |
|---|---|
| 1. Control.   | 6. F.Y.M. by 15th January.                        |
| 2. Castor cake at planting.                           | 8. F.Y.M. by 15th February.                       |
| 3. Castor cake+FeSO <sub>4</sub> .                    | 9. F.Y.M. +FeSO <sub>4</sub> .                    |
| 4. Castor cake+FeSO <sub>4</sub> +CuSO <sub>4</sub> . | 10. F.Y.M.+FeSO <sub>4</sub> +CuSO <sub>4</sub> . |
| 5. Castor cake+MnSO <sub>4</sub> .                    | 11. F.Y.M.+MnSO <sub>4</sub> .                    |
| 6. Castor cake+MnSO <sub>4</sub> +CuSO <sub>4</sub> . | 12. F.Y.M.+MnSO <sub>4</sub> +CuSO <sub>4</sub> . |
- Castor cake and F.Y.M. applied at 120 lb./ac. of N, FeSO<sub>4</sub> and MnSO<sub>4</sub> at 28 lb./ac. and CuSO<sub>4</sub> at 1.4 lb./ac.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 12. (b) N.A. (iii) 4. (iv) (a) 58'×21'. (b) 52'×15'. (v) 1 row on either side and 3' at each end. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) No. (iii) Germination, tiller, millable cane countings and sugarcane yield. (iv) (a) 1948 to 1950. (b) and (c) No. (v) (a) and (b) No. (vi) Nil. (vii) Experiment conducted by D.S.R. (M).

## 5. RESULTS :

- (i) 23.51 ton/ac.  
 (ii) 2.193 ton/ac.  
 (iii) Treatment differences are highly significant.  
 (iv) Av. yield of sugarcane in ton/ac.

Treatment	Av. yield	Treatment	Av. yield
1.	17.34	7.	21.52
2.	27.90	8.	19.90
3.	29.19	9.	20.90
4.	27.17	10.	19.81
5.	30.30	11.	19.74
6.	29.45	12.	18.93
	S.E./mean		= 1.096 ton/ac.

Crop :- Sugarcane.

Ref :- U.P. 50(36)/49(9)/48(10).

Site :- Sugarcane Res. Sub-Stn., Muzaffarnagar.

Type :- 'M'.

Object :- To find out the effect of the use of catalytic agents in conjunction with manures on Sugarcane.

## 1. BASAL CONDITIONS :

(i) (a) Fallow—Sugarcane. (b) Cotton against Fallow. (c) Nil. (ii) (a) Light loam. (b) Refer soil analysis, Muzaffarnagar. (iii) 28.2.1950. (iv) 10 prepatory ploughings. (b) to (e) N.A. (v) Nil. (vi) CO.421 (mid-season). (vii) Irrigated. (viii) 7 hoeings and earthing up in September. (ix) 37.57°. (x) 7.12.1950 to 8.2.1951.

## 2. TREATMENTS:

- |   |   |
|---|---|
| 1. Control.   | 7. F.Y.M. by 15th January.                          |
| 2. Castor at planting.                                | 8. F.Y.M. by 15th February.                         |
| 3. Castor cake+FeSO <sub>4</sub> .                    | 9. F.Y.M. + FeSO <sub>4</sub> .                     |
| 4. Castor cake+FeSO <sub>4</sub> +CuSO <sub>4</sub> . | 10. F.Y.M. + FeSO <sub>4</sub> +CuSO <sub>4</sub> . |
| 5. Castor cake+MnSO <sub>4</sub> .                    | 11. F.Y.M. + MnSO <sub>4</sub> .                    |
| 6. Castor cake+MnSO <sub>4</sub> +CuSO <sub>4</sub> . | 12. F.Y.M. + MnSO <sub>4</sub> +CuSO <sub>4</sub> . |

Castor cake at F.Y.M. applied at 120 lb./ac. of N, FeSO<sub>4</sub> and MnSO<sub>4</sub> at 28 lb./ac. and CuSO<sub>4</sub> at 1.4 lb./ac. FeSO<sub>4</sub>, MnSO<sub>4</sub> and CuSO<sub>4</sub> are used as achirizers.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 12. (b) N.A. (iii) 4. (iv) (a) 58'×21' (b) 52'×15'. (v) 1 row on each side and 3' at each end. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Nil. (iii) Germination, tiller, millable cane countings and sugarcane yield. (iv) (a). 1948 to 1950. (b) and (c) No. (v) (a) and (b) No. (vi) Nil. (vii) Experiment conducted by D.S.R. (M).

## 5. RESULTS :

- (i) 19.03 ton/ac.  
 (ii) 1.990 ton/ac.  
 (iii) Treatments differ highly significantly.  
 (iv) Av. yield of sugarcane in ton/ac.

Treatment	Av. yield	Treatment	Av. yield
1.	12.14	7.	14.99
2.	25.80	8.	14.74
3.	25.14	9.	14.79
4.	25.06	10.	15.60
5.	24.17	11.	15.85
6.	24.50	12.	15.63
S.E./mean		= 0.995 ton/ac.	

Crop :- Sugarcane.

Ref :- U.P. 49(12).

Site :- Sugarcane Res. Sub-Stn., Muzaffarnagar.

Type :- 'M'.

Object :- To find out the cumulative effect of continuous application of A/S and other bulky manures.

## 1. BASAL CONDITIONS :

(i) (a) Fallow—Sugarcane. (b) *Guar* against Fallow. (c) Nil. (ii) (a) Light loam. (b) Refer soil analysis, Muzaffarnagar. (iii) 14.3.1949. (iv) (a) 6 ploughings. (b) Planted flat. (c) 80 md. seed sugarcane at 4200 bud/ac. (d) Rows 3' apart. (e) —. (v) Nil. (vi) CO. 453 (late). (vii) Irrigated. (viii) 3 hoeings and earthing up in August. (ix) 23.09°. (x) 12.1.1954 to 26.2.1950.

## 2. TREATMENTS :

7 sources of N : S<sub>0</sub>=no manure, S<sub>1</sub>=F.Y.M., S<sub>2</sub>=G.N.C., S<sub>3</sub>=A/S, S<sub>4</sub>=A/S+F.Y.M., S<sub>5</sub>=A/S+G.N.C. and S<sub>6</sub>=A/S+G.N.C.+F.Y.M.

Dose of N is 120 lb./ac. Application of combined fertilizers is on equal Nitrogen basis.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 4. (iv) (a) 83'×21'. (b) 75'×15'. (v) One row on either side and 4' on each end. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Nil. (iii) Germination, tiller and millable sugarcane counting and yield. (iv) (a) 1949 - contd. (b) Yes. (c) N.A. (v) (a) and (b) Nil. (vi) Nil. (vii) Experiment conducted by D.S.R.(M).

## 5. RESULTS :

(i) 24.26 ton/ac.

(ii) 2.52 ton/ac.

(iii) Treatment differences are highly significant.

(iv) Av. yield of sugarcane in ton/ac.

Treatment	Av. yield
S <sub>0</sub>	17.00
S <sub>1</sub>	19.40
S <sub>2</sub>	29.00
S <sub>3</sub>	29.50
S <sub>4</sub>	22.70
S <sub>5</sub>	28.50
S <sub>6</sub>	23.70
S.E./mean	=1.26 ton/ac.

Crop :- Sugarcane.

Ref :- U.P. 50(34)/49(12).

Site :- Sugarcane Res. Sub-Stn., Muzaffarnagar.

Type :- 'M'.

Object :- To find out the cumulative effect of continuous application of A/S and other bulky manures.

## 1. BASAL CONDITIONS :

(i) (a) Fallow—Sugarcane. (b) Cotton against fallow. (c) Nil. (ii) (a) Light loam. (b) Refer soil analysis, Muzaffarnagar. (iii) 27.2.1950. (iv) (a) 8 preparatory ploughings. (b) Planted flat. (c) 80 md. seed sugarcane at 4200 bud/ac. (d) Rows 3' apart. (e) —. (v) Nil. (vi) CO.453 (late). (vii) Irrigated. (viii) 8 hoeings and earthing up in August. (ix) 39.93'. (x) 4 to 16.3.1951.

## 2. TREATMENTS :

7 sources of N: S<sub>0</sub>=no manure, S<sub>1</sub>=F.Y.M., S<sub>2</sub>=G.N.C., S<sub>3</sub>=A/S, S<sub>4</sub>=A/S+F.Y.M., S<sub>5</sub>=A/S+G.N.C. and S<sub>6</sub>=A/S+G.N.C.+F.Y.M.

Dose of N is 120 lb./ac. Application of combined fertilizers is on equal Nitrogen basis.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 4. (iv) (a) 83'×21'. (b) 75'×15'. (v) One row on each side and 4' on each end. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Nil. (iii) Germination, tiller, millable cane counting and sugarcane yield. (iv) (a) 1949 - contd. (b) Yes. (c) N.A. (v) (a) and (b) Nil. (vi) Nil. (vii) Experiment conducted by D.S.R.(M).

## 5. RESULTS :

(i) 21.94 ton/ac.

(ii) 1.686 ton/ac.

(iii) Treatments are highly significant.

(iv) Av. yield of sugarcane in ton/ac.

Treatment	Av. yield
S <sub>0</sub>	11.85
S <sub>1</sub>	14.29
S <sub>2</sub>	27.27
S <sub>3</sub>	27.04
S <sub>4</sub>	21.51
S <sub>5</sub>	27.94
S <sub>6</sub>	23.70
S.E./mean	=0.843 ton/ac.



Crop :- Sugarcane.

Ref :- U.P. 51(28)/50(34)/49(12).

Site :- Sugarcane Res. Sub-Stn., Muzaffarnagar.

Type :- 'M'.

Object :- To find out the cumulative effect of continuous application of A/S and other bulky manures.

## 1. BASAL CONDITIONS :

(i) (a) Fallow—Sugarcane. (b) *Moong* (for this season). (c) Nil. (ii) (a) Light loam. (b) Refer soil analysis, Muzaffarnagar. (iii) 24.2.1951. (iv) (a) 12 preparatory ploughings. (b) Planted flat. (c) 80 md. seed cane at 4200 bud/ac. (d) Rows 3' apart, (e) —. (v) Nil. (vi) CO. 453 (late). (vii) Irrigated. (viii) 5 hoeings and earthing up in July. (ix) 23.36°. (x) 11.1.1952 to 7.3.1952.

## 2. TREATMENTS :

7 sources of N :  $S_0$  = no manure,  $S_1$  = F.Y.M.,  $S_2$  = G.N.C.,  $S_3$  = A/S,  $S_4$  = A/S+F.Y.M.,  $S_5$  = A/S+G.N.C. and  $S_6$  = A/S+G.N.C.+F.Y.M.

Dose of N is 120 lb./ac. Application of combined fertilizers is on equal Nitrogen basis.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 4. (iv) (a) 83'×2'. (b) 75'×15'. (v) One row on each side and 4' on each end, 5' distance between blocks. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Nil. (iii) Germination, tiller and millable cane counting and yield. (iv) (a) 1949—contd. (b) and (c) N.A. (v) (a) and (b) Nil. (vi) Nil. (vii) The experiment was conducted by D.S.R.(M).

## 5. RESULTS :

- (i) 25.93 ton/ac.  
 (ii) 2.027 ton/ac.  
 (iii) Treatment differences are highly significant.  
 (iv) Av. yield of sugarcane in ton./ac.

Treatment	Av. yield
$S_0$	20.68
$S_1$	25.54
$S_2$	22.89
$S_3$	29.76
$S_4$	28.79
$S_5$	26.53
$S_6$	27.33
S.E./mean	=1.013 ton/ac.

Crop :- Sugarcane.

Ref :- U.P. 52(64)/51(28)/50(34)/49(12).

Site :- Sugarcane Res. Sub-Stn., Muzaffarnagar.

Type :- 'M'.

Object :- To find out the cumulative effect of continuous application of A/S and other bulky manures.

## 1. BASAL CONDITIONS :

(i) (a) Fallow—Sugarcane. (b) Fallow. (c) Nil. (ii) (a) Light loam. (b) Refer soil analysis, Muzaffarnagar. (iii) 7.3.1952. (iv) (a) 7 preparatory ploughings. (b) Planted flat. (c) 80 md. seed cane at 4200 bud/ac. (d) Rows 3' apart. (e) —. (v) Nil. (vi) CO. 453 (early). (vii) Irrigated. (viii) 3 hoeings before irrigations and 5 hoeings after irrigations. Earthing up in last week of July. (ix) 26.79°. (x) 11.1.1953 to 23.3.1953.

## 2. TREATMENTS :

7 sources of N :  $S_0$  = no manure,  $S_1$  = F.Y.M.,  $S_2$  = G.N.C.,  $S_3$  = A/S,  $S_4$  = A/S+F.Y.M.,  $S_5$  = A/S+G.N.C. and  $S_6$  = A/S+G.N.C.+F.Y.M.

Dose of N is 120 lb./ac. Application of combined fertilizers is on equal Nitrogen basis.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 4. (iv) (a) 83'×21'. (b) 75'×15'. (v) One row on either side and 4' at each end. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Nil. (iii) Germination, tillers, millable cane countings and yield. (iv) (a) 1949—continued. (b) Yes. (c) N.A. (v) (a) and (b) Nil. (vi) Nil. (vii) The experiment was conducted by D.S.R.(M).

**5. RESULTS :**

- (i) 25.12 ton/ac.
- (ii) 1.935 ton/ac.
- (iii) Treatment differences are significant.
- (iv) Av. yield of sugarcane in ton/ac.

Treatment	Av. yield
S <sub>0</sub>	22.05
S <sub>1</sub>	23.85
S <sub>2</sub>	25.50
S <sub>3</sub>	25.83
S <sub>4</sub>	25.88
S <sub>5</sub>	25.45
S <sub>6</sub>	27.31
S.E./mean	=0.967 ton/ac.

Crop :- Sugarcane.

Ref :- U.P. 53(180)/52(64)/51(28)/50(34)/49(12).

Site :- Sugarcane Res. Sub-Stn , Muzaffarnagar.

Type :- 'M'.

Object :—To find out the cumulative effect of continuous application of A/S and other bulky manures.

**1. BASAL CONDITIONS :**

- (i) (a) Fallow-Sugarcane. (b) Fallow. (c) Nil. (ii) (a) Light loam. (b) Refer soil analysis, Muzaffarnagar.
- (iii) 13.3.1953. (iv) (a) 7 preparatory ploughings. (b) Planted flat. (c) 80 maunds seed cane at 4200 bud/ac. (d) Rows 3' apart. (e) —. (v) Nil. (vi) CO. 453 (late). (vii) Irrigated. (viii) 6 hoeings and earthing up in July. (ix) 35.71". (x) 1.12.1953 to 21.3.1954.

**2. TREATMENTS :**

7 sources of N: S<sub>0</sub>=no manure, S<sub>1</sub>=F.Y.M., S<sub>2</sub>=G.N.C., S<sub>3</sub>=A/S, S<sub>4</sub>=A/S+F.Y.M., S<sub>5</sub>=A/S+G.N.C. and S<sub>6</sub>=A/S+G.N.C.+F.Y.M.

Dose of N is 120 lb./ac. Application of combined fertilizers on equal Nitrogen basis. F.Y.M. was applied before planting. G.N.C. and A/S were applied after irrigation.

**3. DESIGN :**

- (i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 4. (iv) (a) 83'×21'. (b) 75'×15'. (v) One row on each side and 4' on each end. (vi) Yes.

**4. GENERAL :**

- (i) Good. (ii) Nil. (iii) Germination, tiller, millable sugarcane and yield. (iv) (a) 1949—contd. (b) Yes. (c) N.A. (v) (a) and (b) Nil. (vi) Nil. (vii) Experiment conducted by D.S.R.(M).

**5. RESULTS :**

- (i) 26.81 ton/ac.
- (ii) 2.197 ton/ac.
- (iii) Treatments are significant.
- (iv) Av. yield of sugarcane in ton/ac.

Treatment	Av. yield
S <sub>0</sub>	23.16
S <sub>1</sub>	26.67
S <sub>2</sub>	27.27
S <sub>3</sub>	28.18
S <sub>4</sub>	27.93
S <sub>5</sub>	26.40
S <sub>6</sub>	28.03
S.E./mean	=1.098 ton/ac.

Crop :- Sugarcane.

Ref :- U.P. 51(29).

Site :- Sugarcane Res. Sub-Stn., Muzaffarnagar.

Type :- 'M'.

Object :- To assess the comparative efficacy of A/S and C/N at different levels on Sugarcane.

## 1. BASAL CONDITIONS :

(i) (a) G.M.-Wheat-Cotton-Sugarcane. (b) Cotton. (c) Nil. (ii) (a) Light loam. (b) Refer soil analysis, Muzaffarnagar. (iii) 10.3.1951. (iv) (a) 24 preparatory ploughings. (b) Planted flat. (c) 70 md. seed cane, 4200 bud/ac. (d) Rows 2' apart. (e) —. (v) Nil. (vi) CO.S. 245 (mid-season variety). (vii) Irrigated. (viii) 4 hoeings and earthing up in August. (ix) 23.60°. (x) 6.1.1952 to 8.3.1952.

## 2. TREATMENTS :

All combinations of (1) and (2) + a control (no manure)

(1) 2 sources of N :  $S_1=A/S$  and  $S_2=C/N$ .(2) 3 levels of N :  $N_1=50$ ,  $N_2=100$  and  $N_3=150$  lb./ac.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 5. (iv) (a)  $66\frac{1}{2}' \times 24'$ . (b)  $60\frac{1}{2}' \times 18'$ . (v) One row on either side and 3' on each end. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Nil. (iii) Germination, tiller, millable sugarcane counting and yield. (iv) (a) No. (b) No. (c) No. (v) (a) and (b) Nil. (vi) Nil. (vii) Experiment conducted by D.S.R.(M).

## 5. RESULTS :

(i) 22.83 ton/ac.

(ii) 2.167 ton/ac.

(iii) Effect of N and control vs treated are both highly significant. Others are not significant.

(iv) Ay. yield of sugarcane in ton/ac.

	Control = 16.02 ton/ac.			
	$N_1$	$N_2$	$N_3$	Mean
$S_1$	22.13	23.51	26.05	23.90
$S_2$	22.20	25.09	24.82	24.04
Mean	22.16	24.30	25.44	23.97

S.E. of S marginal mean = 0.559 ton/ac.

S.E. of N marginal mean = 0.685 ton/ac.

S.E. of body of table = 0.969 ton/ac.

Crop :- Sugarcane.

Ref :- U.P. 52(65).

Site :- Sugarcane Res. Sub-Stn., Muzaffarnagar.

Type :- 'M'.

Object :- To assess the comparative efficacy of A/S, C/N and A/S/N at different levels on Sugarcane.

## 1. BASAL CONDITIONS :

(i) (a) G.M.—Wheat—Cotton—Sugarcane. (b) Cotton. (c) Nil. (ii) (a) Light loam. (b) Refer soil analysis, Muzaffarnagar. (iii) 9.3.1952. (iv) (a) 10 preparatory ploughings. (b) Planted flat. (c) 70 md. seed sugarcane, 4200 bud/ac. (d) Rows 3' apart. (e) —. (v) Nil. (vi) CO. S. 245 (mid-season). (vii) Irrigated. (viii) 8 hoeings and earthing up in last week of July. (ix) 26.79°. (x) 9.12.1952 to 20.2.1953.

## 2. TREATMENTS :

All combinations of (1) and (2) + a control (no manure).

(1) 3 source of N :  $S_1=A/S$ ,  $S_2=C/N$  and  $S_3=A/S/N$ .(2) 3 levels of N :  $N_1=50$ ,  $N_2=100$  and  $N_3=150$  lb./ac.

Date of manuring is early May 1952.

**3. DESIGN :**

(i) R.B.D. (ii) (a) 10. (b) N.A. (iii) 3. (iv) (a) 56'×30'. (b) 50'×24'. (v) One row on either side and 3' at each end. (vi) Yes.

**4. GENERAL :**

(i) Good. (ii) Nil. (iii) Germination, tiller, millable sugarcane counting and yield. (iv) (a) 1952—1953. (b) and (c) No. (v) (a) and (b) Nil. (vi) Nil. (vii) Experiment conducted by D.S.R. (M).

**5. RESULTS :**

- (i) 23.21 ton/ac.  
 (ii) 1.606 ton/ac.  
 (iii) None of the effects is significant.  
 (iv) Av. yield of sugarcane in ton/ac.

Control=20.93 ton/ac.

	N <sub>1</sub>	N <sub>2</sub>	N <sub>3</sub>	Mean
S <sub>1</sub>	23.38	23.73	24.55	23.89
S <sub>2</sub>	22.06	23.56	24.29	23.30
S <sub>3</sub>	23.10	23.67	22.80	23.19
Mean	22.85	23.65	23.88	23.46

S.E. of any marginal mean  
 S.E. of body of table

=0.355 ton/ac.  
 =0.927 ton/ac.

Crop :- Sugarcane.

Ref :- U.P. 53(178)/52(65).

Site :- Sugarcane Res. Sub-Stn., Muzaffarnagar.

Type :- 'M'.

Object :- To assess the comparative efficacy of A/S, C/N and A/S/N at different levels on Sugarcane.

**1. BASAL CONDITIONS :**

(i) (a) G.M.—Wheat—Cotton—Sugarcane. (b) Cotton. (c) Nil. (ii) (a) Light loam. (b) Refer soil analysis, Muzaffarnagar. (iii) 16.2.1953. (iv) (a) 10 preparatory ploughings. (b) Planted flat. (c) 70 md. seed sugarcane, 4200 bud/ac. (d) Rows 3' apart. (e) —. (v) Nil. (vi) CO. S. 245 (mid season). (vii) Irrigated. (viii) 8 hoeings and earthing up in July. (ix) 35.71". (x) 27.11.1953 to 29.3.1954.

**2. TREATMENTS :**

All combinations of (1) and (2) + a control (no manure)  
 (1) 3 sources of N : S<sub>1</sub>=A/S, S<sub>2</sub>=C/N and S<sub>3</sub>=A/S/N.  
 (2) 3 levels of N : N<sub>1</sub>=50, N<sub>2</sub>=100 and N<sub>3</sub>=150 lb./ac.  
 Fertilizers applied after 2nd irrigation *i.e.* in middle of May.

**3. DESIGN :**

(i) R.B.D. (ii) (a) 10. (b) N.A. (iii) 3. (iv) (a) 56'×30'. (b) 50'×24'. (v) One row on either side and 3' border on each end of plot. (vi) Yes.

**4. GENERAL :**

(i) Good. (ii) Nil. (iii) Germination, tiller, millable sugarcane and yield. (iv) (a) 1952 - 1953. (b) and (c) No. (v) (a) and (b) Nil. (vi) Nil. (vii) Experiment conducted by D.S.R. (M).

**5. RESULTS :**

- (i) 25.86 ton/ac.  
 (ii) 2.215 ton/ac.  
 (iii) Effect of control vs treated and N is highly significant. Others are not significant.

(iv) Av. yield of sugarcane in lb./ac.

Control=16.93 ton/ac.

	N <sub>1</sub>	N <sub>2</sub>	N <sub>3</sub>	Mean
S <sub>1</sub>	25.94	26.31	30.56	27.60
S <sub>2</sub>	25.83	27.71	27.64	27.06
S <sub>3</sub>	22.70	27.45	27.52	25.89
Mean	24.82	27.16	28.57	26.85

S.E. of any marginal mean

=0.738 ton/ac.

S.E. of body of table

=1.279 ton/ac.

Crop :-Sugarcane.

Ref :-U.P. 53(291).

Site :-Sugarcane Res. Sub-Stn., Muzaffarnagar.

Type :- 'M'.

Object :-To study the effect of application of G.N.C. with and without a catalyst on Sugarcane.

## 1. BASAL CONDITIONS :

(i) (a) G.M.—Wheat—Cotton—Sugarcane. (b) Cotton. (c) No. (ii) (a) Light loam. (b) Refer soil analysis, Muzaffarnagar. (iii) 12.3.1953. (iv) (a) to (e) N.A. (v) N.A. (vi) CO.453 (late). (vii) N.A. (viii) N.A. (ix) N.A. (x) N.A.

## 2. TREATMENTS :

1. G.N.C. at 120 lb./ac. of N.
2. G.N.C. at 120 lb./ac. of N+1 lb catalytic mixture applied on 14.5.1953.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 2. (b) N.A. (iii) 3. (iv) (a) 40'×27'. (b) 34'×21'. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) N.A. (iii) Sugarcane yield. (iv) (a) to (c) No. (v) (a) and (b) No. (vi) Nil. (vii) The experiment was conducted by D.S.R. (M).

## 5. RESULTS :

- (i) 23.68 ton/ac.
- (ii) 0.220 ton/ac.
- (iii) Treatment differences are highly significant.
- (iv) Av. yield of sugarcane in ton/ac.

Treatment	Av. yield
1.	25.00
2.	22.37
S.E./mean	=0.127 ton/ac.

Crop :-Sugarcane.

Ref :-U.P. 49(147).

Site :-Regional Res. Sub-Stn., Nawabganj.

Type :-'M'.

Object :-To find the response of Sugarcane to Super.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) *Sanai* as G.M. (c) No. (ii) (a) Clay loam. (b) N.A. (iii) 15.3.1949. (iv) 9 *desi* ploughings and *pata*. Ploughing by spring harrow once and level harrow once. Turning in of *sanai* by P.P. (29.9.1948). (b) Flat planting. (c) 2088 bud/plot. (d) 3' between rows. (e) —. (v) *Sanai* turned in, compost 164 md. on 15.2.1948. at 40 lb./ac. of N. G.N.C. 6 md. 5 seers on 28.2.1949, at 20 lb./ac. of N. Top dressing by G.N.C. at 300 lb./ac. on 8.6.1949 and 24.7.1949. (vi) N.A. (vii) Irrigated. (viii) Hoeing by cultivator followed by hand *kassi*. (ix) 50°. (x) 18.2.1950.

## 2. TREATMENTS :

P<sub>1</sub>=No P<sub>2</sub>O<sub>5</sub>.

P<sub>2</sub>=60 lb./ac. of P<sub>2</sub>O<sub>5</sub> as broadcast at planting time.

P<sub>3</sub>=60 lb./ac. of P<sub>2</sub>O<sub>5</sub> in furrows 3"-4" deep at planting time.

P<sub>2</sub>O<sub>5</sub> applied as Super.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 3. (b) N.A. (iii) 6. (iv) (a) and (b) 87'×24'. (v) Nil. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) N.A. (iii) Germination and sugarcane yield. (iv) (a) to (c) No. (v) (a) and (b) No. (vi) Nil. (viii) The experiment was conducted by D.S.R. (S).

## 5. RESULTS :

- (i) 16.42 ton/ac.  
 (ii) 1.00 ton/ac.  
 (iii) Treatment differences are not significant.  
 (iv) Av. yield of sugarcane in ton/ac.

Treatment	Av. yield
P <sub>1</sub>	16.66
P <sub>2</sub>	17.03
P <sub>3</sub>	15.57
S.E./mean	=0.408 ton/ac.

Crop :-Sugarcane.

Ref :-U.P. 53(238).

Site :-Regional Res. Stn., Nawabganj.

Type :-'M'.

Object :-To study the response of Sugarcane to Super in combination with G.M.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) *Dhaincha* as G.M. (c) No. (ii) (a) Clay loam. [(b) N.A. (iii) 6.3.1953. (iv) (a) Ploughing by *gurjar* mestion and *dest* plough 5 times. (b) Flat sowing. (c) 2160 bud/plot. (d) 3' between rows. (e) —. (v) Compost at 300 md./ac. (vi) CO. 421. (vii) Irrigated. (viii) 3 hoeings with *kassi* and 2 with cultivator and earthing once. (ix) 44.09". (x) 7 to 14.1.1954.

## 2. TREATMENTS :

- Dhaincha* green manure (control).
  - Super at 60 lb./ac. of P<sub>2</sub>O<sub>5</sub> broadcast at the time of sowing *Dhaincha*.
  - Super at 60 lb./ac. of P<sub>2</sub>O<sub>5</sub> applied at the time of ploughing in of *Dhaincha*.
- Application of Super in treatment 2 on 5.7.1953 and in treatment 3 on 13 and 14.9.1953.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 3. (b) N.A. (iii) 6. (iv) (a) 88'×24'. (b) 82'×18'. (v) 3' all round the net plot. (vi) Yes.

## 4. GENERAL :

(i) The crop remained in water during August. Damaged by rats in December and January 1954. (ii) N.A. (iii) Germination counts, tillers, millable cane and sugarcane yield. (iv) (a) 1953—N.A. (b) and (c) N.A. (v) (a) and (b) N.A. (vi) Nil. (vii) Experiment conducted by D.S.R.(S).

## 5. RESULTS :

- (i) 11.99 ton/ac.  
 (ii) 1.40 ton/ac.  
 (iii) The treatments do not differ significantly.  
 (iv) Av. yield of sugarcane in ton/ac.

Treatment	Av. yield
1.	11.81
2.	12.19
3.	11.97
S.E./mean	=0.57 ton/ac.

Crop :- Sugarcane.  
Site :- Sugarcane Res. Sub-Stn., Neoli.

Ref :- U.P. 52(198).  
Type :- 'M'.

Object :- To study the response of Sugarcane to Super.

### 1. BASAL CONDITIONS :

(i) (a) No. (b) *Sanai* as G.M. (c) No. (ii) (a) Light sandy loam (*khaddar* soil having a patches). (b) Refer soil analysis, Neoli. (iii) 29.2.1952 to 1.3.1952. (iv) (a) Turning in of *sana Neoli* plough. 2 harrowings by tractor, 1 *Neoli* ploughing, followed by planking (no other infor is available). Again 3 harrowings by tractor followed by planking twice. (b) N.A. (c) 1065 buds/plot. (d) and (e) N.A. (v) G.M. by *sanai*, A/S+G.N.C. at 12 srs./plot on 17.7.1952. Manuring with press mud and mahuwa cake on 6 to 10.12.1951 and spreading of press mud and mahuwa cake on 11 to 15.12.1951. (vi) Co.245 (medium). (vii) Irrigated. (viii) Breaking of crusts after rains with harrow, 2 hoeings with *khurpt* and 2 with cultivator. Hoeing with spade after manuring. (ix) N.A. (x) 15 to 18.2.1953.

### 2. TREATMENTS :

P<sub>0</sub> = control (no P<sub>2</sub>O<sub>5</sub>).

P<sub>1</sub> = P<sub>2</sub>O<sub>5</sub> at 60 lb./ac. as broadcast on the field before planting.

P<sub>2</sub> = P<sub>2</sub>O<sub>5</sub> at 60 lb./ac. applied at 3"–4" depth in furrows at planting time.

P<sub>3</sub> = P<sub>2</sub>O<sub>5</sub> at 120 lb./ac. broadcast on the field before planting.

P<sub>4</sub> = P<sub>2</sub>O<sub>5</sub> at 120 lb./ac. applied at 3"–4" depth in furrows at planting time.

Application of Super on 22.4.1952.

### 3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 4. (iv) (a) 69' × 21'. (b) 63' × 15'. (v) Border between plots 1½'. (vi) Yes.

### 4. GENERAL :

(i) N.A. (ii) N.A. (iii) Germination count tillers, millable cane count and sugarcane yield. (iv) (a) 1952–1955. (b) and (c) No. (v) (a) and (b) No. (vi) Nil. (vii) Experiment was conducted by D.S.R.(S). The expt. was not conducted in 1953 for want of super.

### 5. RESULTS :

(i) 17.01 ton/ac.

(ii) 2.436 ton/ac.

(iii) Treatment differences are not significant.

(iv) Av. yield of sugarcane in ton/ac.

Treatment	Av. yield
P <sub>0</sub>	16.69
P <sub>1</sub>	15.02
P <sub>2</sub>	15.59
P <sub>3</sub>	17.35
P <sub>4</sub>	20.40
S.E./mean	=1.218 ton/ac.

Crop :- Sugarcane.  
Site :- Sugarcane Res. Sub-Stn., Neoli.

Ref :- U.P. 53(230).  
Type :- 'M'.

Object :- To study the effect of green manuring Sugarcane with different *Rabi* crops.

### 1. BASAL CONDITIONS :

(a) No. (b) and (c) As per treatments. (ii) (a) Light sandy loam. (*Khaddar* soil having alkaline patches). (i) (b) Refer soil analysis, Neoli. (iii) 12.3.1953. (iv) (a) 2 ploughings and planting with *Neoli* plough and 2 ploughings by tractor plough and planking. (b) N.A. (c) 54 3-budded setts/row. (d) 3' between rows. (e) —. (v) N.A. (vi) CO 245 (medium). (vii) Irrigated. (viii) 2 hoeings by cultivator and 2 by spade. (ix) N.A. (x) 28 to 29.12.1953.

## 2. TREATMENTS :

1. *Metha* roots (crop for fodder).
2. *Metha* green manured.
3. *Metha* green manured +  $P_2O_5$  at 100 lb./ac.
4. *Senji* roots (crop used for fodder) broadcast at the time of sowing.
5. *Senji* green manured.
6. *Senji* green manured +  $P_2O_5$  at 100 lb./ac. broadcast at the time of sowing.
7. Berseem roots (3 cuttings for fodder).
8. Berseem roots (3 cuttings for fodder) +  $P_2O_5$  at 100 lb./ac. applied at sowing time.
9. Pea roots (crop utilized for fodder).
10. Pea green manured.
11. Pea green manured + 100 lb./ac. of  $P_2O_5$  applied at sowing time.
12. Control (no crop).

Sowing of *Rabi* crop on 21 and 22.10.1952. Super broadcast according to treatments on 21 and 22.10.1952 at the time of sowing *Rabi* crop. 1st cutting of Berseem crop on 27 to 30.12.1952. 2nd cutting of Berseem crop on 15 and 16.1.1953. Cutting of G.M. on 1 to 4.2.1953. Turning in of G.M. on 7 and 8-2-1953. after planting.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 12. (b) N.A. (iii) 6. (iv) (a) 52' x 24'. (b) 46' x 18'. (v) Border between plots 1½'. (vi) Yes.

## 4. GENERAL :

(i) Satisfactory. (ii) Slight attack of white fly. (iii) Germination count, tiller count, millable cane and sugarcane yield. (iv) (a) 1953—1955. (b) and (c) No. (v) (a) and (b) No. (vi) Nil. (vii) The experiment was conducted by D.S.R(S).

## 5. RESULTS :

- (i) 16.55 ton/ac.
- (ii) 5.751 ton/ac.
- (iii) Treatment differences are not significant.
- (iv) Av. yield of sugarcane in ton/ac.

Treatment	Av. yield	Treatment	Av. yield
1.	17.52	7.	19.57
2.	13.54	8.	13.09
3.	16.14	9.	15.10
4.	21.02	10.	16.20
5.	14.84	11.	17.92
6.	17.90	12.	15.79
	S.E./mean		= 2.348 ton/ac.

Crop :- Sugarcane.

Ref :- U.P. 53(228).

Site :- Sugarcane Res. Sub-Stn., Neoli (Etah).

Type :- 'M'.

Object :- To study the effect of green manuring of cane with different *khariif* crops.

## 1. BASAL CONDITIONS :

(i) (a) No. (b) Plant cane of CO. 453 and after that as per treatments. (c) As per treatments. (ii) (a) Light sandy loam (*khaddar* soil having alkaline patches). (b) Refer soil analysis, Neoli. (iii) 15.2.1953. (iv) (a) 6 ploughings by tractor and planking. (b) N.A. (c) 623-budded setts/row. (d) 3' between rows. (e) —. (v) Nil. (vi) CO. 245 (medium). (vii) Irrigated. (viii) 2 hoeings by cultivator and planking and 1 hoeing by spade. (ix) N.A. (x) N.A.

## 2. TREATMENTS :

1. *Sanai* green manured.
2. *Sanai* green manured +  $P_2O_5$  at 50 lb./ac. broadcast at sowing time.
3. *Guar* green manured.
4. *Guar* green manured +  $P_2O_5$  at 50 lb./ac. broadcast at sowing time.
5. *Lobia* green manured.
6. *Lobia* green manured +  $P_2O_5$  at 50 lb./ac. broadcast at sowing time.
7. *Dhanicha* green manured.
8. *Dhanicha* green manured +  $P_2O_5$  at 50 lb./ac. applied at sowing time.
9. Fallow (control).

$P_2O_5$  applied as Super at the time of sowing of green manures. Turning in of *Sanai* on 3.9.1952.



**3. DESIGN :**

(i) R.B.D. (ii) (a) 9. (b) N.A. (iii) 6 (But only 5 replications considered for analysis). (iv) (a) 60' x 24'. (b) 54' x 18'. (v) Border between plots 1½'. (vi) Yes.

**4. GENERAL :**

(i) Satisfactory, one replication has been rejected from analysis due to poor yield. (ii) Slight damage due to borers in whole of the experiment (observed on 15.6.1953) shoots damaged by top borer and top rot seen on 24.8.1953 mostly in replication No. 6. (iii) Germination, tiller count, millable canes and yield of sugarcane. (iv) (a) 1953—1955. (b) and (c) No. (v) (a) and (b) No. (vi) Nil. (vii) The experiment was conducted by D.S.R.(S).

**5. RESULTS :**

(i) 23.21 ton/ac.  
 (ii) 2.80 ton/ac.  
 (iii) Treatment differences are not significant.  
 (iv) Av. yield of sugarcane in ton./ac.

Treatment	Av. yield	Treatment	Av. yield
1.	23.01	6.	23.64
2.	24.34	7.	24.69
3.	22.01	8.	26.14
4.	22.50	9.	21.32
5.	21.27		
S.E./mean	=1.252 ton/ac.		

Crop :- Sugarcane.

Ref :- U.P. 48(77).

Site :- Sugarcane Res. Stn., Shahjahanpur.

Type :- 'M'.

Object :- To study the response of Sugarcane to the application of N, P and K.

**4. BASAL CONDITIONS :**

(i) (a) Sugarcane-Wheat-Fallow. (b) Fallow. (c) No. (ii) (a) Loam. (b) Refer soil analysis, Shahjahanpur. (iii) 26, 28.1.1948. (iv) (a) 6 ploughings with soil turning plough, 7 ploughings with *desi* plough and 15 plankings. (b) N.A. (c) 533-budded setts/line. (d) N.A. (e) N.A. (v) Nil. (vi) CO-421 (medium). (vii) Irrigated. (viii) 2 hoeings by spring tooth harrow and planking after hoeing. 5 hoeings by cultivator and planking after hoeing. One hoeing by *kassi*. (ix) 40.81" (from March '48 to March '49). (x) 31.12.1948 to 1.6.1949.

**2. TREATMENTS :**

Main-plot treatments :

3 levels of N :  $N_0=0$ ,  $N_1=100$  and  $N_2=200$  lb./ac. of N.

Sub-plot treatments :

All combinations of (1) and (2)

(1) 3 levels of  $P_2O_5$  :  $P_0=0$ ,  $P_1=75$  and  $P_2=150$  lb./ac.

(2) 3 levels of  $K_2O$  :  $K_0=0$ ,  $K_1=75$  and  $K_2=150$  lb./ac.

N applied as A/S,  $P_2O_5$  as Super and  $K_2O$  as Pot. Sulphate.

**3. DESIGN :**

(i) Split-plot. (ii) (a) 3 main-plots/replication and 9 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 53½' x 31½'. (b) 47½' x 24½'. (v) One row left on either side and 3' at either end. (vi) Yes.

**4. GENERAL :**

(i) Fair. (ii) Slight attack of leaf yellowing disease in October. (iii) Sugarcane yield. (iv) (a) 1935-contd. (b) Yes—in alternate years. (c) N.A. (v) (a) and (b) No. (vi) Nil. (vii) Experiment conducted by D.S.R.(S).

**3. RESULTS :**

(i) 16.52 ton/ac.  
 (ii) (a) 3.721 ton/ac.  
 (b) 1.726 ton/ac.  
 (iii) Only N effect is highly significant.

(iv) Av. yield of cane in ton/ac.

	K <sub>0</sub>	K <sub>1</sub>	K <sub>2</sub>	Mean	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>
N <sub>0</sub>	10.50	10.81	10.48	10.60	10.58	11.12	10.09
N <sub>1</sub>	18.47	18.86	19.43	18.92	18.59	18.93	19.24
N <sub>2</sub>	20.05	19.91	20.12	20.03	19.38	19.83	20.89
Mean	16.34	16.53	16.68	16.52	16.18	16.63	16.74
P <sub>0</sub>	15.71	16.01	16.83	16.18			
P <sub>1</sub>	16.55	16.42	16.91	16.63			
P <sub>2</sub>	16.76	17.16	16.29	16.74			

S.E. of difference of two

1. marginal means of N = 0.877 ton/ac.
2. marginal means of P or K = 0.407 ton/ac.
3. P or K means at the same level of N = 0.705 ton/ac.
4. N means at the same level of P or K = 1.049 ton/ac.
5. means of the body of P × K table = 0.705 ton/ac.

Crop :- Sugarcane.

Ref :- U.P. 49(163)/48(77).

Site :- Sugarcane Res. Stn., Shahjahanpur.

Type :- 'M'.

Object :- To study the response of Sugarcane to the application of N, P and K.

**1. BASAL CONDITIONS :**

(i) (a) Cane-Wheat-Fallow. (b) Fallow. (c) No. (ii) (a) Loam. (b) Refer soil analysis, Shahjahanpur. (iii) 30, 31.1.1949 to 1.2.1949. (iv) (a) 3 ploughings by victory plough and 7 ploughings by *dest* plough. Akola hoe used once. Harrowing twice and *pata*. (b) N.A. (c) 533-budded setts/row. (d) N.A. (e) N.A. (v) Nil. (vi) CO-421 (medium). (vii) Irrigated. (viii) 2 hoeings with *karsi*, 4 hoeings with cultivator and 3 harrowings. (ix) 50.73" (from February 1959 to January 1950). (x) 28, 31.12.1949, 1, 6.1.1950.

**2. TREATMENTS :**

Main-plot treatments :

3 levels of N : N<sub>0</sub>=0, N<sub>1</sub>=100 and N<sub>2</sub>=200 lb./ac.

Sub-plot treatments :

All combinations of (1) and (2)

(1) 3 levels of P<sub>2</sub>O<sub>5</sub> : P<sub>0</sub>=0, P<sub>1</sub>=75 and P<sub>2</sub>=150 lb./ac(2) 3 levels of K<sub>2</sub>O : K<sub>0</sub>=0, K<sub>1</sub>=75 and K<sub>2</sub>=150 lb./ac.N applied as A/S, P<sub>2</sub>O<sub>5</sub> as Super and K<sub>2</sub>O as Pot. Sulphate.**3. DESIGN :**

(i) Split-plot. (ii) (a) 3 main-plots/replication and 9 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 53½' × 31½'. (b) 47½' × 24½'. (v) One row left on either side and 3' at each end of the plot. (vi) Yes.

**4. GENERAL :**

(i) Good. Plots with N<sub>1</sub> and N<sub>2</sub>—lodged. (ii) Attack of borers on the crop in June 1949 leaf yellowing disease observed. (iii) Germination, tillers, millable cane and yield. (iv) (a) 1935—Still continued. (b) Yes—in alternate years. (c) N.A. (v) (a) and (b) No. (vi) Nil. (vii) Experiment was conducted by D.S.R.(S).

**5. RESULTS :**

- (i) 13.74 ton/ac.
- (ii) (a) 4.165 ton/ac.
- (b) 2.611 ton/ac.
- (iii) Only N effect is highly significant.

(iv) Av. yield of cane in ton/ac.

	K <sub>0</sub>	K <sub>1</sub>	K <sub>2</sub>	Mean	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>
N <sub>0</sub>	8.77	7.35	7.97	8.03	7.83	8.01	8.25
N <sub>1</sub>	16.74	16.49	14.93	16.05	15.41	16.41	16.34
N <sub>2</sub>	17.13	17.18	17.15	17.15	15.76	16.86	18.83
Mean	14.21	13.63	13.35	13.74	13.00	13.76	14.47
P <sub>0</sub>	13.74	13.02	12.25	13.00			
P <sub>1</sub>	14.55	13.73	13.00	13.76			
P <sub>2</sub>	14.35	14.27	14.80	14.47			

S.E. of difference of two

1. marginal means of N = 0.982 ton/ac.
2. marginal means of P or K = 0.615 ton/ac.
3. P or K means at the same level of N = 1.066 ton/ac.
4. N means at the same level of P or K = 1.312 ton/ac.
5. means of the body of P×K table = 1.07 ton/ac.

Crop :- Sugarcane.

Ref :- U.P. 50 (196)/49(163)/48(77).

Site :- Sugarcane Res. Sub-Stn., Shahjahanpur. Type :- 'M'.

Object :- To study the response of Sugarcane to the application of N, P and K.

## 1. BASAL CONDITIONS :

(i) (a) Cane—Wheat—Fallow. (b) Fallow. (c) No. (ii) (a) Loam, (b) Refer soil analysis, Shahjahanpur. (iii) 18 and 20.2.1950. (iv) 3 ploughings by *victory* plough, 5 ploughings by *desi* plough and 4 plankings Picking of grass. (b) N.A. (c) 53 3-budded setts/line. (d) N.A. (e) —. (v) Nil. (vi) CO 421 (medium). (vii) Irrigated. (viii) 1 hoeing with *kassi* and 5 hoeings with cultivator and 1 harrowing and 2 earthings. (ix) 38.33°. (x) 29.12.1950 to 2.1.1951.

## 2. TREATMENTS :

Main-plot treatments :

3 levels of N : N<sub>0</sub>=0, N<sub>1</sub>=100 and N<sub>2</sub>=200 lb./ac.

Sub-plot treatments :

All combinations of (1) and (2).

(1) 3 levels of P<sub>2</sub>O<sub>5</sub> : P<sub>0</sub>=0, P<sub>1</sub>=75 and P<sub>2</sub>=150 lb./ac.(2) 3 levels of K<sub>2</sub>O : K<sub>0</sub>=0, K<sub>1</sub>=75 and K<sub>2</sub>=150 lb./ac.N applied as A/S, P<sub>2</sub>O<sub>5</sub> as Super and K<sub>2</sub>O as Pot. Sulphate.

## 3. DESIGN :

(i) Split-plot. (ii) (a) 3 main-plots/replication and 9 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 53½'×31½'. (b) 47½'×24½'. (v) 3½' on either side and 3' at either end of the gross plot. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Some of the shoots were effected by stem borer in June 1950. Attack of top borer and slight effect of yellowing disease in July. (iii) Germination count, tillers, millable canes and yield of cane. (iv) (a) 1935 continuing. (b) Yes—alternate years. (c) N.A. (v) (a), (b) No. (vi) Nil. (vii) The experiment was conducted by D.S.R. (S).

## 5. RESULTS :

(i) 15.17 ton/ac.

(ii) (a) 7.050 ton/ac.

(b) 1.975 ton/ac.

(iii) N effect is highly significant. P and K effects are significant. Others are not significant.

(iv) Av. yield of sugarcane in ton/ac.

	K <sub>0</sub>	K <sub>1</sub>	K <sub>2</sub>	Mean	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>
N <sub>0</sub>	10.25	9.51	10.61	10.12	9.97	10.52	9.87
N <sub>1</sub>	14.86	15.89	16.85	15.87	15.06	15.71	16.84
N <sub>2</sub>	18.81	19.59	20.15	19.52	18.30	19.71	20.54
Mean	14.64	15.00	15.87	15.17	14.44	15.31	15.75
P <sub>0</sub>	13.95	13.91	15.47				
P <sub>1</sub>	14.74	14.94	16.26				
P <sub>2</sub>	15.23	16.14	15.88				

S.E. of difference of two

1. marginal means of N = 1.662 ton/ac.
2. marginal means of P or K = 0.465 ton/ac.
3. P or K means at the same level of N = 0.806 ton/ac.
4. N means at the same level of P or K = 1.787 ton/ac.
5. Means of the body of P × K table = 0.81 ton/ac.

Crop :- Sugarcane.

Ref :- U.P. 51(187)/50(196)/49(163)/48(77).

Site :- Sugarcane Res. Stn. Shahjahanpur.

Type :- 'M'.

Object :- To study the response of Sugarcane to the application of N, P and K.

## 1. BASAL CONDITIONS :

(i) (a) Cane—Wheat—Fallow—Cane. (from 1935 to 1951) Cane—G.M. of *Sanai*—Cane (from 1952 and onwards). (b) Fallow. (c) Nil. (ii) (a) Loam. (b) Refer soil analysis, Shahjahanpur. (iii) 12 to 14.2.1951. (iv) (a) Ploughings 3 with *victory* plough, 7 with *desi* plough, 1 with cultivator, 1 with level harrow and 4 ploughings. (b) N.A. (c) 53 3-budded setts/line. (d) N.A. (e) —. (v) Nil. (vi) CO 421 (medium). (vii) Irrigated. (viii) 1 hoeing with *kassl*, 3 hoeing with cultivator and 1 with spring harrow. (ix) 30.50' (x) 4 to 6.1.1952. and 1, 2.2.1952.

## 2. TREATMENTS :

Main-plot treatments :

3 levels of N : N<sub>0</sub>=0, N<sub>1</sub>=100 and N<sub>2</sub>=200 lb/ac.

Sub-plot treatments :

All combinations of (1) and (2)

(1) 3 levels of P<sub>2</sub>O<sub>5</sub> : P<sub>0</sub>=0, P<sub>1</sub>=75 and P<sub>2</sub>=150 lb./ac.(2) 3 levels of K<sub>2</sub>O : K<sub>0</sub>=0, K<sub>1</sub>=75 and K<sub>2</sub>=150 lb./ac.N applied as A/S, P<sub>2</sub>O<sub>5</sub> as Super and K<sub>2</sub>O as Pot. Sulphate.

## 3. DESIGN :

(i) Split-plot. (ii) (a) 3 main-plots/replication and 9 sub-plots/main-plot. (b) N.A. (iv) (a) 53½' × 31½'. (b) 47½' × 24½'. (v) 3½' on either side and 3' at either end of the gross plot. (vi) Yes.

## 4. GENERAL :

(i) Poor. (ii) N.A. (iii) Germination, tillers, millable cane and yield of sugarcane. (iv) (a) 1935—continuing. (b) Yes—in alternate years. (c) N.A. (v) (a) and (b) No. (vi) Nil. (vii) The experiment was conducted by D.S.R. (S).

## 5. RESULTS :

- (i) 8.77 ton/ac.
- (ii) (a) 4.479 ton/ac.
- (b) 1.811 ton/ac.
- (iii) Only N effect is highly significant.

(iv) Av. yield of sugarcane in ton/ac.

	K <sub>0</sub>	K <sub>1</sub>	K <sub>2</sub>	Mean	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>
N <sub>0</sub>	4.25	4.15	3.67	4.02	4.04	4.14	3.88
N <sub>1</sub>	9.96	9.85	9.50	9.77	9.89	9.82	9.60
N <sub>2</sub>	12.68	12.27	12.61	12.52	12.36	12.79	12.41
Mean	8.96	8.76	8.59	8.77	8.76	8.92	8.63
P <sub>0</sub>	8.56	8.30	9.43				
P <sub>1</sub>	9.50	9.09	8.16				
P <sub>2</sub>	8.83	8.16	8.18				

S.E. of difference of two

1. marginal means of N = 1.056 ton/ac.
2. marginal means of P or K = 0.427 ton/ac.
3. P or K means at the same level of N = 0.739 ton/ac.
4. N means at the same level of P or K = 1.216 ton/ac.
5. means of the body of P × K table = 0.74 ton/ac.

Crop :- Sugarcane. Ref :- U.P. 52(238)/51(187)/50(196)/49(163)/48(77).

Site :- Sugarcane Res. Stn., Shahjahanpur. Type :- 'M'.

Object :- To study the response of Sugarcane to the application of N, P and K.

**1. BASAL CONDITIONS :**

(i) (a) Sugarcane—Fallow—Sugarcane (from 1935 to 1951) and Sugarcane—*Sanai*—Sugarcane (from 1952 and onwards). (b) *Sanai*. (c) No. (ii) (a) Loam. (b) Refer soil analysis, Shahjahanpur. (iii) 23 to 26.2.1952. (iv) (a) 3 ploughings by *victory* plough, 4 by *desi* plough and 2 by cultivator. (b) N.A. (c) 53 3-budded setts/plot. (d) N.A. (e)—. (v) *Sanai* turned in on 13 and 14.9.1951. (vi) CO. 453 (late). (vii) Irrigated. (viii) 4 hoeings, 1 hoeing by cultivator, earthing and picking of grass twice. (ix) 34.16". (x) 3 to 7.1.1953.

**2. TREATMENTS :**

Main-plot treatments :

3 levels of N : N<sub>0</sub>=0, N<sub>1</sub>=100 and N<sub>2</sub>=200 lb./ac. of N.

Sub-plot treatments :

All combinations of (1) and (2)

(1) 3 levels of P<sub>2</sub>O<sub>5</sub> : P<sub>0</sub>=0, P<sub>1</sub>=75 and P<sub>2</sub>=150 lb./ac.(2) 3 levels of K<sub>2</sub>O : K<sub>0</sub>=0, K<sub>1</sub>=75 and K<sub>2</sub>=150 lb./ac.N applied as A/S, P<sub>2</sub>O<sub>5</sub> as Super and K<sub>2</sub>O as Pot. Sulphate.**3. DESIGN :**

(i) Split-plot. (ii) (a) 3 main-plots/replication and 9 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 53½' × 31½'. (b) 47½' × 24½'. (v) 3½' left on both sides and 3' at either ends was excluded as border out of the gross plot. (vi) Yes.

**4. GENERAL :**

(i) Good. (ii) N.A. (iii) Germination, tillers, millable sugarcane and yield. (iv) (a) 1935—continuing. (b) Yes—in alternate years. (c) N.A. (v) (a) and (b) No. (vi) Nil. (vii) Experiment was conducted by D.S.R. (S).

**5. RESULTS :**

(i) 21.83 ton/ac.

(ii) (a) 5.457 ton/ac.

(b) 3.287 ton/ac.

(iii) Only N effect is highly significant.

(iv) Av. yield of sugarcane in ton/ac.

	K <sub>0</sub>	K <sub>1</sub>	K <sub>2</sub>	Mean	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>
N <sub>0</sub>	16.02	15.98	15.32	15.77	15.73	16.52	15.07
N <sub>1</sub>	23.72	24.21	23.70	23.88	24.17	23.30	24.16
N <sub>2</sub>	24.77	26.75	26.00	25.84	25.35	25.12	27.04
Mean	21.50	22.31	21.67	21.83	21.75	21.65	22.09
P <sub>0</sub>	2.01	21.70	22.53				
P <sub>1</sub>	21.31	22.03	21.60				
P <sub>2</sub>	22.19	23.19	20.89				

S.E. of difference of two

1. marginal means of N = 1.286 ton/ac.
2. marginal means of P or K = 0.775 ton/ac.
3. P or K means at the same level of N = 1.342 ton/ac.
4. N means at the same level of P or K = 1.690 ton/ac.
5. means of body of P × K table = 1.34 ton/ac.

Crop :- Sugarcane. Ref :- U.P. 53(269)/52(233)/51(187)/50(196)/49(163)/48(77).  
 Site :- Sugarcane Res. Stn., Shahjahanpur. Type :- 'MP'.

Object :- To study the response of Sugarcane to the application of N, P and K.

**1. BASAL CONDITIONS :**

(i) (a) Sugarcane—Fallow—Sugarcane (from 1935 to 1951) and Sugarcane—*Sanai*—Sugarcane (since 1952—1953). (b) *Sanai* for G.M. (c) Nil. (ii) (a) Loam. (b) Refer soil analysis, Shahjahanpur. (iii) 30.11.1952 to 2.2.1953. (iv) (a) 1 ploughing by *victory* plough, 1 by tractor, 7 *desi* ploughings, 2 harrowings and 7 plankings. (b) Flat planting. (c) 33 3-budded setts/line. (d) Rows 3½' apart. (e) —. (v) *Sanai* (turned in on 28.8.1952.) (vi) Co. 453 (late). (vii) Irrigated. (viii) Hoecings after each irrigation in addition to one bund hoeing, earthing and picking of grass. (ix) 44.19" (x) 4.1.1954.

**2. TREATMENTS :**

Main-plot treatments :

3 levels of N : N<sub>0</sub>=0, N<sub>1</sub>=100 and N<sub>2</sub>=200 lb./ac.

Sub-plot treatments :

All combinations of (1) and (2)

(1) 3 levels of P<sub>2</sub>O<sub>5</sub> : P<sub>0</sub>=0, P<sub>1</sub>=75 and P<sub>2</sub>=150 lb./ac.(2) 3 levels of K<sub>2</sub>O : K<sub>0</sub>=0, K<sub>1</sub>=75 and K<sub>2</sub>=150 lb./ac.N applied as A/S, P<sub>2</sub>O<sub>5</sub> as Super and K<sub>2</sub>O as Pot. Sulphate.**3. DESIGN :**

(i) Split-plot. (ii) (a) 3 main-plots/replication and 9 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 53½' × 31½'. (b) 47½' × 24½'. (v) 3½' on either side and 3' at either end. (vi) Yes.

**4. GENERAL :**

(i) Normal. No lodging. (ii) No major incidence of pests and diseases. (iii) Germination, tillers, millable sugarcane and yield of sugarcane at harvest. (iv) (a) 1935—continuing. (b) Yes—in alternate years. (c) N.A. (v) (a) and (b) No. (vi) Nil. (vii) Experiment was conducted by D.S.R. (S).

**5. RESULTS :**

- (i) 22.78 ton/ac.
- (ii) (a) 7.659 ton/ac.
- (b) 2.485 ton/ac.
- (iii) Only N effect is highly significant.

(iv) Av. yield of cane in ton/ac.

	K <sub>0</sub>	K <sub>1</sub>	K <sub>2</sub>	Mean	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>
N <sub>0</sub>	15.88	15.99	15.99	15.95	16.14	15.61	16.10
N <sub>1</sub>	26.10	25.69	26.21	26.00	25.58	27.25	25.18
N <sub>2</sub>	26.49	25.43	27.22	26.38	25.63	26.08	27.43
Mean	22.82	22.37	23.14	22.78	22.45	22.98	22.90
P <sub>0</sub>	23.31	21.29	22.74				
P <sub>1</sub>	22.70	22.70	23.54				
P <sub>2</sub>	22.46	23.11	23.14				

S.E. of difference of two

1. marginal means of N = 1.805 ton/ac.
2. marginal means of P or K = 0.586 ton/ac.
3. P or K means at the same level of N = 1.014 ton/ac.
4. N means at the same level of P or K = 1.986 ton/ac.
5. means of body of P × K table = 1.01 ton/ac.

Crp :- Sugarcane.

Ref :- U.P. 48(75).

Site :- Sugarcane Res. Stn., Shahjahanpur.

Type :- 'M'.

Object :- To study the effect of alternate use of G.M. crops on Sugarcane.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) As per treatments. (c) N.A. (ii) (a) Loam. (b) Refer soil analysis, Shahjahanpur. (iii) 5 and 6.3.1948. (iv) (a) Ploughings by cultivators, 1 ploughing by victory plough, 7 ploughings by *dest* plough and 7 plankings. (b) N.A. (c) 67 3-budded setts/row. (d) and (e) N.A. (v) Top dressing of the castor cake at 40 lb./ac. of N on 5 and 6.3.1948. (vi) CO.453 (late). (vii) Irrigated. (viii) Planking after planting, hoeing by spraying tooth harrow, planking after hoeing on 17.7.1948, hoeing by cultivator on 7, 8 and 26.4.1948, 5, 30 and 31.5.1948, 1.6.1948, hoeing by *kassi* on 5 and 6.7.1948 and earthing on 10.11.1948. (ix) 40.24". (x) 22, 26, 28.2.1949 and 5, 23, 24, 29.3.1949.

## 2. TREATMENTS :

1. *Sanal* crop taken for fibre (fallow in *Rabi*).
2. *Sanal* green manure (fallow in *Rabi*).
3. *Lobia* crop taken for fodder (fallow in *Rabi*).
4. *Lobia* green manure (fallow in *Rabi*).
5. *Guar* crop taken for fodder (fallow in *Rabi*).
6. *Guar* green manure (fallow in *Rabi*).
7. Pea crop taken for fodder (maize for fodder in *Kharif*).
8. Pea green manure (maize for fodder in *Kharif*).
9. Berseem roots—3 cutting taken for fodder (maize fodder in *Kharif*).
10. Berseem inter cropped with sugarcane (maize for fodder in *Kharif*).
11. Control (fallow in *Kharif* and *Rabi*).
12. Control (maize for fodder in *Kharif* and fallow in *Rabi*).

## 3. DESIGN :

(i) R.B.D. (ii) (a) 12. (b) N.A. (iii) 4. (iv) (a) 67' × 24'. (b) 61' × 18'. (v) 3' all round. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) N.A. (iii) Sugarcane yield. (iv) (a) to (c) No. (v) (a) and (b) No. (vi) Nil. (vii) Experiment conducted by D.S.R. (S).

## 5. RESULTS :

- (i) 25.20 ton/ac.  
 (ii) 2.682 ton/ac.  
 (iii) Treatment differences are highly significant.  
 (iv) Av. yield of sugarcane in ton/ac.

Treatment	Av. yield	Treatment	Av. yield
1.	25.88	7.	24.92
2.	27.87	8.	24.42
3.	25.23	9.	27.60
4.	29.77	10.	15.34
5.	23.82	11.	24.70
6.	27.79	12.	25.07

S.E./mean = 1.341 ton/ac.

Crop :- Sugarcane.

Ref :- U.P. 49(60).

Site :- Sugarcane Res. Stn., Shahjahanpur.

Type :- 'M'.

Object :- To study the effect of alternative use of green manure crops.

## 1. BASAL CONDITIONS :

- (i) (a) Nil. (b) As per treatments. (c) No. (ii) (a) Loam. (b) Refer soil analysis, Shahjahanpur.  
 (iii) 27.3.1949. (iv) (a) 3 ploughings by victory plough, 1 *desi* ploughing, 1 with cultivator, picking of roots, *pata* and roller. (b) N.A. (c) 67 3-budded Setts/row. (d) and (e) N.A. (v) Manuring by castor cake on 25 to 27.3.1949. (vi) CO.453 (late). (vii) Irrigated. (viii) 4 hoeings with cultivator, harrowing and earthing. (ix) 50.23°. (x) 3) and 31.12.1949, 7 to 10, 12.2.1950 and 21, 24.4.1950.

## 2. TREATMENTS :

1. *Sonai* tops and roots (crop harvested for fibre).
2. *Sonai* green manure.
3. *Metha* green manure.
4. *Metha* roots (crop harvested for fodder).
5. *Lobia* roots (crop harvested for fodder).
6. *Lobia* green manure.
7. *Guar* roots (crop harvested for fodder).
8. *Guar* green manure.
9. Pea roots (crop harvested for fodder).
10. Pea green manure.
11. *Senji* roots only (crop harvested for fodder).
12. *Senji* green manure.
13. Control after maize (maize taken for fodder).
14. Control (no crop taken).

## 3. DESIGN :

- (i) R.B.D. (ii) (a) 14. (b) N.A. (iii) 4. (iv) (a) 67' x 24'. (b) 61' x 18'. (v) 3' around. (vi) Yes.

## 4. GENERAL :

- (i) Growth good. Some plots of replication IV were damaged due to lodging. (ii) Slight attack of leaf yellow disease in July. (iii) Germination count, millable canes and sugarcane yield. (iv) (a) to (c) No. (v) (a) and (b) No. (vi) Nil. (vii) Experiment was conducted by D.S.R. (S).

## 5. RESULTS :

- (i) 21.83 ton/ac.  
 (ii) 1.274 ton/ac.  
 (iii) Treatment differences are highly significant.  
 (iv) Av. yield of sugarcane in ton/ac.

Treatment	Av. yield	Treatment	Av. yield
1.	23.89	8.	20.86
2.	22.96	9.	21.07
3.	22.72	10.	23.93
4.	22.02	11.	20.76
5.	21.00	12.	21.86
6.	22.47	13.	20.98
7.	20.79	14.	20.29

S.E./mean = 0.637 ton/ac.



Crop :- Sugarcane.

Ref :- U.P. 50(99).

Site :- Sugarcane Res. Stn., Shahjahanpur.

Type :- 'M'.

Object :- To study the effect of alternative use of green manure crops.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) As per treatments. (c) No. (ii) (a) Loam. (b) Refer soil analysis, Shahjahanpur. (iii) 15 and 16.3.1950. (iv) (a) Ploughing with victory plough, 2 *desi* ploughs, 2 plankings 1 spring tooth harrow. (b) to (e) N.A. (v) Nil. (vi) CO-453 (late). (vii) Irrigated. (viii) 4 hoeings with cultivator, 1 with spring tooth harrow, binding and earthing. (ix) 39.87°. (x) 9.2.1951 to 13.3.1951.

## 2. TREATMENTS :

1. *Metha* roots (crop harvested for fodder).
2. *Metha* green manure.
3. *Metha* green manure + 100 lb./ac. of  $P_2O_5$  at sowing.
4. *Senji* roots (crop harvested for fodder).
5. *Senji* green manure.
6. *Lobia* roots (crop harvested for fodder).
7. *Lobia* green manure.
8. *Lobia* green manure + 100 lb./ac. of  $P_2O_5$  at sowing.
9. Berseem roots (3 cuttings of crop for fodder).
10. Berseem roots (3 cuttings of crop for fodder) + 100 lb./ac. of  $P_2O_5$  at sowing).
11. Pea roots (crop harvested for fodder).
12. Pea green manure.
13. Pea green manure + 100 lb./ac. of  $P_2O_5$  at sowing.
14. Control (no crop).

## 3. DESIGN :

(i) R.B.D. (ii) (a) 14. (b) N.A. (iii) 4. (iv) (a) 67' x 24'. (b) 61' x 18'. (v) 3' around. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Attack of white ant in one plot. (iii) Sugarcane yield. (iv) (a) to (c) No. (v) (a) and (b) No. (vi) Nil. (vii) Experiment was conducted by D.S.R.(S).

## 5. RESULTS :

- (i) 19.57 ton/ac.  
 (ii) 3.120 ton/ac.  
 (iii) Treatment differences are highly significant.  
 (iv) Av. yield of sugarcane in ton/ac.

Treatment	Av. yield	Treatment	Av. yield
1.	17.71	8.	20.75
2.	19.27	9.	18.29
3.	22.40	10.	23.60
4.	16.89	11.	16.40
5.	22.36	12.	23.57
6.	15.27	13.	25.52
7.	18.22	14.	13.73
S.E./mean		= 1.56 ton/ac.	

Crop :- Suagrcane.

Ref :- U.P. 51(131).

Site :- Sugarcane Res. Stn., Shahjahanpur.

Type :- 'M'.

Object :- To study the effect of alternative use of green manure crops.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) As per treatments. (c) No. (ii) (a) Loam. (b) Refer soil analysis, Shahjahanpur. (iii) 12 and 13.3.1951. (iv) (a) 1 ploughing with victory plough, 1 by *desi* plough and 2 plankings. (b) N.A. (c) 67 3—budded setts/row. (d) N.A. (e) —. (v) Nil. (vi) CO-453 (late). (vii) Irrigated. (viii) 2 hoeings with cultivator and 2 harrowings. (ix) 29.00°. (x) 26, 27.12.1951 and 8, 9.1.1952.

## 2. TREATMENTS :

1. *Metha* roots (crop taken for fodder).
2. *Metha* green manure.
3. *Metha* green manure+100 lb./ac. of  $P_2O_5$  at sowing.
4. *Senji* roots (crop taken for fodder).
5. *Senji* green manure.
6. *Senji* green manure+100 lb./ac. of  $P_2O_5$  at sowing.
7. Berseem roots (3 cuttings of crop taken for fodder).
8. Berseem roots (3 cuttings of crop taken for fodder)+100 lb./ac. of  $P_2O_5$  at sowing.
9. Pea roots (crop taken for fodder).
10. Pea green manure.
11. Pea green manure+100 lb./ac. of  $P_2O_5$  at sowing.
12. Control (no crop).

Date of turning in green manuring 6 to 8.2.1951 and 25.1.1951. Date of harvesting green manures between 24.1.1951 to 8.2.1951 and  $P_2O_5$  as super as on 10 to 11.3.1951.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 12. (b) N.A. (iii) 4. (iv) (a) 67'×24'. (b) 61'×18'. (v) 3' around. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Nil. (iii) Germination count, tillers, millable canes and sugarcane yield. (iv) (a) 1951—1952. (b) and (c) No. (v) (a) and (b) No. (vi) Nil. (vii) Experiment was conducted by D.S.R.(S).

## 5. RESULTS :

- (i) 17.64 ton/ac.
- (ii) 2.516 ton/ac.
- (iii) Treatment differences are highly significant.
- (iv) Av. yield of sugarcane in ton/ac.

Treatment	Av. yield	Treatment	Av. yield
1.	15.56	7.	16.60
2.	17.00	8.	20.51
3.	18.24	9.	16.93
4.	14.88	10.	20.42
5.	14.14	11.	21.08
6.	19.09	12.	17.29
S.E./mean		=1.258 ton/ac.	

Crop :- Sugarcane.

Site :- Sugarcane Res. Stn., Shahjahanpur.

Ref :- U.P. 52(180).

Type :- 'M'.

Object :- To study the effect of alternative use of green manure crops.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) As per treatments. (c) No. (ii) (a) Loam. (b) Refer soil analysis, Shahjahanpur. (iii) 30, 31.3.1952 and 1.4.1952. (iv) (a) 2 ploughings with victory plough, 2 ploughings with *desi* plough and planking. (b) to (e) N.A. (v) Nil. (vi) CO-453 (late). (vii) Irrigated. (viii) Hoeing with *kassi* on 12 to 15.4.1952 and earthing on 5 to 7.9.1952. (ix) 33.30". (x) 28.1.1953 to February 1953.

## 2. TREATMENTS :

1. *Metha* roots (crop for fodder).
2. *Metha* green manure.
3. *Metha* green manure+100 lb./ac. of  $P_2O_5$  at sowing.
4. *Senji* roots (crop for fodder).
5. *Senji* green manure.
6. *Senji* green manure+100 lb./ac. of  $P_2O_5$  at sowing.
7. Berseem roots (3 cuttings of crop for fodder).
8. Berseem roots (3 cuttings of crop for fodder)+100 lb./ac. of  $P_2O_5$  at sowing.
9. Pea roots (crop for fodder).

10. Pea green manure.  
 11. Pea green manure+100 lb./ac. of  $P_2O_5$  at sowing.  
 12. Control (no crop).  
 Sowing of green manure on 19 to 21.10.1951 and 30.10.51 Turning in of G.M. on 8 to 14.2.1952.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 12. (b) N.A. (iii) 4. (iv) (a) 70'×21'. (b) 64'×15'. (v) 3' around plot. (vi) Yes.

## 4. GENERAL :

(i) Fair. (ii) Nil. (iii) No. of tillers, millable canes and sugarcane yield. (iv) (a) 1951—1952. (b) No. (c) No. (v) (a) and (b) No. (vi) Nil. (vii) Experiment was conducted by D.S.R.(S).

## 5. RESULTS :

- (i) 21.22 ton/ac.  
 (ii) 2.376 ton/ac.  
 (iii) Treatment differences are highly significant.  
 (iv) Av. yield of sugarcane in ton/ac.

Treatment	Av. yield	Treatment	Av. yield
1.	19.58	7.	17.56
2.	23.64	8.	19.10
3.	23.72	9.	19.16
4.	18.61	10.	22.49
5.	22.79	11.	23.72
6.	23.90	12.	20.40

S E./mean = 1.188 ton/ac.

Crop :- Sugarcane.

Site :- Sugarcane Res. Stn., Shahjahanpur.

Ref :- U.P. 48(54).

Type :- 'M'.

Object :- To study the effect and availability of different organic and inorganic manures under fallow and cropped conditions.

## 1. BASAL CONDITIONS :

- (i) (a) Nil. (b) *Guar*. (c) No. (ii) (a) Light loam. (b) Refer soil analysis, Shahjahanpur. (iii) 8.3.1948.  
 (iv) (a) 12 ploughings. (b) N.A. (c) 65 3-budded setts/line. (d) Rows 3' apart. (e) —. (v) Manuring of *guar* on 9.7.1947. (vi) CO-453 (late). (vii) Irrigated. (viii) 5 hoeings and earthing. (ix) 40.22". (x) 14.2.1949 to 19.2.1949.

## 2. TREATMENTS :

1. A/S at 120 lb./ac. of N on 2.3.1948.
2. Castor cake at 120 lb./ac. of N applied on 16.2.1948.
3. G.N.C. at 120 lb./ac. of N applied on 16.2.1948.
4. M.C. at 120 lb./ac. of N applied on 14.2.1948.
5. F.Y.M. at 120 lb./ac. of N applied on 16.2.1948.
6. Urine earth at 120 lb./ac. of N applied on 16, 18.2.1948.
7. Press mud at 120 lb./ac. of N applied on 14.2.1948.
8. Control.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a) 65'×21'. (b) 59'×15'. (v) Plot border 3'. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) No. (iii) Sugarcane yield. (iv) (a) 1945—1948. (b) No. (c) No. (v) (a) and (b) No. (vi) Nil. (vii) Experiment was conducted by D.S.R.(S).

## 5. RESULTS :

- (i) 27.15 ton/ac.  
 (ii) 1.501 ton/ac.  
 (iii) Treatment differences are highly significant.

(iv) Av. yield of sugarcane in ton/ac.

Treatment	Av. yield	Treatment	Av. yield
1.	32.00	5.	24.59
2.	28.79	6.	26.67
3.	27.89	7.	28.93
4.	27.53	8.	20.79
	S.E./mean		=0.750 ton/ac.

Crop :- Sugarcane.

Ref :- U.P. 49(122).

Site :- Sugarcane Res. Stn., Shahjahanpur.

Type :- 'M'.

Object :- To study the availability of different organic and inorganic manures under cropped and fallow conditions.

## 1. BASAL CONDITIONS :

(i) (a) Sugarcane—Fallow—Wheat—*Sanai*. (b) *Sanai*. (c) No. (ii) (a) Light loam. (b) Refer soil analysis, Shahjahanpur. (iii) 9 and 10.3.1949. (iv) (a) and (b) N.A. (c) 65, three budded setts/line. (d) Rows 3' apart. (e) —. (v) *Sanai*. (vi) CO. 453 (late). (vii) Irrigated. (viii) 1 hoeing with *kassi*, 4 hoeings with cultivator and earthing. (ix) 49.79°. (x) 6 and 7.1.1950.

## 2. TREATMENTS :

1. A/S (20.05% N) at 120 lb./ac. of N applied on 8.3.1949.
2. Castor cake at 120 lb./ac. of N (4.49% N) applied on 8, 9.3.1949.
3. G.N.C. at 100 lb./ac. of N (2.86% N) applied on 9.3.1949.
4. *Mahwa* (*Basia Latifolia*) cake applied on 8 and 9.3.1949.
5. Press mud at 120 lb./ac. of N (1.28% N) applied on 8 and 9.4.1949.
6. T.C. at 120 lb./ac. of N (0.27% N) applied on 9 and 10.3.1949.
7. F.Y.M. at 120 lb./ac. of N (0.513% N) applied on 9.3.1949.
8. Urine (cattle) earth at 120 lb./ac. of N (0.254% N) applied on 9.3.1949.
9. Control.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 9. (b) N.A. (iii) 4. (iv) (a) 70.5' × 18'. (b) 64.5' × 12'. (v) 3' around. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) No. (iii) Yield data and sample of soil from cropped and uncropped fields. (iv) (a) to (c) No. (v) (a) and (b) No. (vi) Nil. (vii) The experiment was conducted by D.S.R(S).

## 5. RESULTS :

- (i) 17.43 ton/ac.
- (ii) 2.574 ton/ac.
- (iii) Treatment differences are highly significant.
- (iv) Av. yield of sugarcane in ton/ac.

Treatment	Av. yield	Treatment	Av. yield
1.	21.51	6.	18.22
2.	17.97	7.	15.29
3.	25.09	8.	15.29
4.	17.99	9.	14.25
5.	16.22		
	S.E./mean		=1.287 ton/ac.

Crop :- Sugarcane.

Ref :- U.P. 49(61).

Site :- Sugarcane Res. Stn., Shahjahanpur.

Type :- 'M'.

Object :- To study the utilization of Night soil in Sugarcane cultivation.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) *Moong*. (c) No. (ii) (a) Loam. (b) Refer soil analysis, Shahjahanpur. (iii) 12 and 13.4.1949. (iv) (a) 2 ploughings by victory plough, 3 by *desi* plough, 1 by harrow and 3 by rollerings. (b) N.A. (c) 56 three budded setts/line. (d) N.A. (e) —. (v) Nil. (vi) CO. 186. (vii) Irrigated. (viii) 1 hoeing with *kassi*, 4 hoeings with cultivator and harrowing. (ix) 50.02°. (x) 18.2.1950.

**2. TREATMENTS :**

1. T.C. broadcasted at 200 lb./ac. of N.
2. Night soil with Trash in trenches in inter-space at 200 lb./ac. of N.
3. Trash in trenches in inter-space.
4. Trenches only in inter-space.
5. Control (no manure).
6. A/S at 200 lb./ac. of N.

**3. DESIGN :**

- (i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) 85' × 21'. (b) 79' × 15'. (v) Left 3' along all sides. (vi) Yes.

**4. GENERAL :**

- (i) Lodged due to heavy rain. (ii) Nil. (iii) Germination, millable cane and sugarcane yield. (iv) (a) No. (b) and (c) No. (v) (a) and (b) No. (vi) Nil. (vii) Experiment was conducted by D.S.R.(S).

**5. RESULTS :**

- (i) 11.65 ton/ac.
- (ii) 1.936 ton/ac.
- (iii) Treatment differences are not significant.
- (iv) Av. yield of sugarcane in ton/ac.

Treatment	Av. yield
1.	12.82
2.	12.17
3.	12.48
4.	10.21
5.	10.13
6.	12.10
S.E./mean	=0.968 ton/ac.

Crop :- Sugarcane.

Ref :- U.P. 50(199).

Site :- Sugarcane Res Stn., Shahjahanpur.

Type :- 'M'.

Object : To investigate the effect of A/S, A/N, C/N and Mineral Super on the growth, yield and juice quality of Sugarcane.

**1. BASAL CONDITIONS :**

- (i) (a) Non legumenous G.M.—Sugarcane—Wheat. (b) Oats. (c) No. (ii) (a) Loam. (b) Refer soil analysis, Shahjahanpur. (iii) 22, 23.3.1950. (iv) (a) and (b) N.A. (c) 3 budds/ft. of the length of row. (d) Rows 3' apart. (e) —. (v) G.M. by oats. (vi) CO 421 (medium). (vii) Irrigated. (viii) N.A. (ix) 38.08%. (x) 2.1.1951.

**2. TREATMENTS :**

All combinations of (1), (2) and (3).

- (1) 3 sources of N :  $S_1 = A/S$ ,  $S_2 = \text{Sodium Nitrate}$  and  $S_3 = A/N$ .
- (2) 3 levels of N :  $N_0 = 0$ ,  $N_1 = 100$  and  $N_2 = 200$  lb./ac. of N.
- (3) 3 levels of  $P_2O_5$  as Super :  $P_0 = 0$ ,  $P_1 = 75$  and  $P_2 = 150$  lb./ac. of  $P_2O_5$ .  
Super applied at the time of green manuring of oats.

**3. DESIGN :**

- (i) 3<sup>3</sup> Fact. in R.B.D. (ii) (a) 27. (b) N.A. (iii) 3. (iv) (a) N.A. (b) 55' × 15'. (v) N.A. (vi) Yes.

**4. GENERAL :**

- (i) N.A. (ii) N.A. (iii) Tillers, millable cane and sugarcane yield. (iv) (a) 1950—1957. (b) and (c) No. (v) (a) and (b) No. (vi) Nil. (vii) The experiment was conducted by D.S.R.(S).

**5. RESULTS :**

- (i) 19.37 ton/ac.
- (ii) 2.566 ton/ac.
- (iii) Main effect of N and dummy treatments vs others are highly significant. Interaction F × N is significant. Other effects and interactions are not significant.

(iv) Av. yield of sugarcane in ton/ac.

Dummy treatment of N × S combinations:

- |             |                |
|-------------|----------------|
| 1. $N_0P_0$ | =11.34 ton/ac. |
| 2. $N_0P_1$ | =11.69 ton/ac. |
| 3. $N_0P_2$ | =12.01 ton/ac. |

	$N_1$	$N_2$	Mean	$P_0$	$P_1$	$P_2$
$S_1$	22.10	26.76	24.43	22.82	25.78	24.69
$S_2$	22.14	22.71	22.42	20.52	23.54	23.20
$S_3$	22.22	23.35	22.78	24.56	22.50	21.29
Mean	22.15	24.27	23.21	22.63	23.94	23.06
$P_0$	21.20	24.07				
$P_1$	22.36	25.52				
$P_2$	22.90	23.22				

- |  |                |
|--|----------------|
| 1. S.E. of S or P marginal means                     | =0.605 ton/ac. |
| 2. S.E. of N marginal means                          | =0.494 ton/ac. |
| 3. S.E. of body of S × N or P × N <sub>2</sub> table | =0.856 ton/ac. |
| 4. S.E. of body of P × S table                       | =1.046 ton/ac. |

Crop :- Sugarcane.

Ref :- U.P. 51(188).

Site :- Sugarcane. Res. Stn., Shahjahanpur.

Type :- 'M'.

Object :- To investigate the effect of A/S, A/N and C/N and mineral Super on the growth, yield and juice quality of Sugarcane.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) Oats. (c) N.A. (ii) (a) Loam. (b) Refer soil analysis, Shahjahanpur. (iii) 7.3.1951. (iv) (a) Ploughings on 5-3-1951. (b) N.A. (c) 55 three budded setts/row. (d) N.A. (e) —. (v) G.M. with oats on 10.2.1951. (vi) CO 421 (medium). (vii) Irrigated. (viii) Hoecings with *akola* and *desi* plough on 22.3.1951 and 4, 5.4.1951. Hoeing on 13.4.1951, 5, 6, 7.5.1951 and 27.5.1951. (ix) 28.68°. (x) 22.12.1951.

## 2. TREATMENTS :

All combinations of (1), (2) and (3)

(1) 3 sources of N :  $S_1=A/S$ ,  $S_2=C/N$  and  $S_3=A/N$ .(2) 3 levels of N :  $N_0=0$ ,  $N_1=100$  and  $N_2=200$  lb./ac. of N.(3) 3 levels of  $P_2O_5$  as Super :  $P_0=0$ ,  $P_1=75$  and  $P_2=150$  lb./ac. of  $P_2O_5$ .

Super application in the field on 9.2.1951 at the time of turning in of oats. Manuring on 22.5.1951. (top dressed). Application of C/N on 25.7.1951 as top dressing.

## 3. DESIGN :

(i) 3<sup>3</sup> Fact. in R.B.D. (ii) (a) 27. (b) N.A. (iii) 3. (iv) (a) N.A. (b) 55' × 15'. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) N.A. (iii) Tillers, millable cane and sugarcane yield. (iv) (a) 1950 to 1952. (b) and (c) N.A. (v) (a) and (b) N.A. (vi) Nil. (vii) The experiment was conducted by D.S.R. (S).

## 5. RESULTS :

(i) 13.56 ton/ac.

(ii) 4.259 ton/ac.

(iii) Dummy treatments vs others are highly significant. Other effects and interactions are not significant.

(iv) Av. yield of sugarcane in ton/ac.

Dummy treatments of NS combination :

1.  $N_0P_0$  = 8.90 ton/ac.
2.  $N_0P_1$  = 9.00 ton/ac.
3.  $N_0P_2$  = 8.51 ton/ac.

	$N_1$	$N_2$	Mean	$P_0$	$P_1$	$P_2$
$S_1$	13.80	18.44	16.12	16.54	15.35	16.48
$S_2$	15.03	15.55	15.31	12.90	16.15	16.89
$S_3$	15.59	17.21	16.40	20.09	13.66	15.45
Mean:	14.81	17.08	15.94	16.51	15.05	16.27
$P_0$	14.02	19.00				
$P_1$	14.48	15.62				
$P_2$	15.93	16.62				

1. S.E. of marginal means of S or P = 1.003 ton/ac.
2. S.E. of marginal means of N = 0.809 ton/ac.
3. S.E. of body of  $S \times N$  or  $P \times N$  table = 1.421 ton/ac.
4. S.E. of body of  $P \times S$  table = 1.739 ton/ac.

Crop :- Sugarcane.

Ref :- U.P. 52(240).

Site :- Sugarcane Res. Stn., Shahjahanpur.

Type :- 'M'.

Object :- To investigate the effect of A/S, C/N and A/N and mineral Super on the growth, yield and juice quality of Sugarcane.

## 1. BASAL CONDITIONS :

- (i) (a) N.A. (b) Oats (ploughed in). (c) No. (ii) (a) Loam. (b) Refer soil analysis, Shahjahanpur. (iii) 18.3.1952. (iv) (a) Application of *pata* on 13.1.1952. (b) to (e) N.A. (v) G.M. with oats on 11.1.1952. (vi) CO.421 (medium). (vii) Irrigated. (viii) Hoing with cultivator, hoing and weeding. (ix) 32.63°. (x) 10.12.1952.

## 2. TREATMENTS :

All combinations of (1), (2) and (3)

- (1) 3 sources of N :  $S_1=A/S$ ,  $S_2=C/N$  and  $S_3=A/N$ .
- (2) 3 levels of N :  $N_0=0$ ,  $N_1=100$  and  $N_2=200$  lb./ac. of N.
- (3) 3 levels of  $P_2O_5$  as Super :  $P_0=0$ ,  $P_1=75$  and  $P_2=150$  lb./ac. of  $P_2O_5$

Application of Super on 11.2.1952 at the time of green manuring with oats. Manuring of N doses on 28.5.1952 (method N.A.).

## 3. DESIGN :

- (i) 3<sup>3</sup> Fact. in R.B.D. (ii) (a) 27. (b) N.A. (iii) 3. (iv) (a) N.A. (b) 54' x 15'. (v) N.A. (vi) Yes.

## 4. GENERAL :

- (i) N.A. (ii) N.A. (iii) Tiller, millable cane and sugarcane yield. (iv) (a) 1950 to 1952. (b) and (c) No. (v) (a) and (b) No. (vi) Missing values estimated for treatments  $S_1 N_2 P_1$ ,  $S_2 N_1 P_2$  and  $S_3 N_2 P_1$  in replication I,  $S_1 N_1 P_0$ ,  $S_2 N_1 P_0$  in replication II and  $S_1 N_0 P_0$  in replication I. These plots were severely damaged by rats. (vii) Experiment conducted by D.S.R. (S).

## 3. RESULTS:

- (i) 16.00 ton/ac.  
 (ii) 2.03 ton/ac.  
 (iii) Effect of P is significant. Effect of N is highly significant. Others are not significant.  
 (iv) Av. yield of sugarcane in ton/ac.

Dummy treatments of NS combinations :

1.  $N_0P_0$  = 14.86 ton/ac.  
 2.  $N_0P_1$  = 11.59 ton/ac.  
 3.  $N_0P_2$  = 14.76 ton/ac.

	$N_1$	$N_2$	Mean	$P_0$	$P_1$	$P_2$
$S_1$	18.10	17.54	17.82	18.15	17.22	18.09
$S_2$	15.90	14.95	15.42	15.01	14.03	17.23
$S_3$	17.45	18.88	18.16	18.20	17.58	18.71
Mean	17.15	17.12	17.13	17.12	16.28	18.01
$P_0$	16.74	17.50				
$P_1$	16.94	15.62				
$P_2$	17.77	18.24				

1. S.E. of  $N_1$  marginal mean = 0.59 ton/ac.  
 2. S.E. of  $N_2$  marginal mean = 0.60 ton/ac.  
 3. S.E. of  $P_0$  marginal mean = 0.76 ton/ac.  
 4. S.E. of  $P_1$  marginal mean = 0.74 ton/ac.  
 5. S.E. of  $P_2$  marginal mean = 0.72 ton/ac.  
 6. S.E. of  $S_1$  marginal mean = 0.76 ton/ac.  
 7. S.E. of  $S_2$  marginal mean = 0.74 ton/ac.  
 8. S.E. of  $S_3$  marginal mean = 0.72 ton/ac.

Crop :- Sugarcane.

Ref :-U.P. 52(193).

Site :- Sugarcane Res. Stn., Shahjahanpur.

Type :- 'M'.

Object :-To study the effect of adding a mixture of Ferrous Sulphate and lime to Castor cake, G.N.C. Mohwa cake and F.Y.M and then applying to Sugarcane.

## 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Loam. (b) Refer soil analysis, Shahjahanpur. (iii) 22.3.1952. (iv) (a) to (e) N.A. (v) Nil. (vi) CO.453 (late). (vii) Irrigated. (viii) 6 hoeings and earthing. (ix) 32.63°. (x) N.A.

## 2. TREATMENTS :

All combinations of (1) and (2) + 2 selective treatments.

(1) 4 sources of N :  $S_1$ =Castor cake at 100 lb./ac. of N,  $S_2$ =G.N.C. at 100 lb./ac. of N,  
 $S_3$ =Mohwa cake at 100 lb./ac. of N and  $S_4$ =F.Y.M. at 100 lb./ac. of N.

(2) 2 levels of chemical mixture :  $C_0$ =control (no chemical) and  $C_1$ = $FeSO_4$  at 26.6 lb./ac.+lime at 13.3 lb./ac.

Selective treatments :

$T_1$ =control (no manure) and  $T_2$ =A/S at 100 lb./ac. of N.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 10. (b) N.A. (iii) 3. (iv) (a) N.A. (b) 37'x24'. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) N.A. (iii) Tiller, millable cane and sugarcane yield. (iv) (a) 1952 to 1954. (b) and (c) No. (v) (a) and (b) No. (vi) Nil. (vii) Experiment conducted by D.S.R. (S).



## 3. RESULTS :

- (i) 33.22 ton/ac.  
 (ii) 2.332 ton/ac.  
 (iii) Only effect of selective treatments is highly significant.  
 (iv) Av. yield of sugarcane in ton/ac.

Selective treatments :

$T_1$  = 29.80 ton/ac.  
 $T_2$  = 35.82 ton/ac.

	$S_1$	$S_2$	$S_3$	$S_4$	Mean
$C_0$	33.96	35.36	29.77	30.60	32.42
$C_1$	34.13	34.09	33.93	34.72	34.22
Mean	34.04	34.72	31.85	32.66	33.22

1. S.E. of marginal means of S = 0.952 ton/ac.
2. S.E. of marginal means of C = 0.673 ton/ac.
3. S.E. of body of table = 1.343 ton/ac.
4. S.E. of selective treatments = 1.343 ton/ac.

Crop :- Sugarcane.

Ref :- U.P. 53(220).

Site :- Sugarcane Res. Stn., Shahjahanpur.

Type :- 'M'.

Object :- To study the effect of adding a mixture of Ferrous Sulphate and lime to Castor cake, G.N.C., Mohwa cake and F.Y.M. and then applying to Sugarcane.

## 1. BASAL CONDITIONS :

- (i) (a) to (c) N.A. (ii) (a) Loam. (b) Refer soil analysis, Shahjahanpur. (iii) 7.3.1953. (iv) (a) to (e) N.A. (v) Nil. (vi) CO. 453 (late). (vii) Irrigated. (viii) 5 hoeings with *kassl.* (ix) 43.43". (x) 18.1.1954.

## 2. TREATMENTS :

All combinations of (1) and (2)+2 selective treatments

- (1) 4 sources of N :  $S_1$  = Castor cake at 100 lb./ac. of N,  $S_2$  = G.N.C. at 100 lb./ac. of N,  $S_3$  = Mohwa cake at 100 lb./ac. of N and  $S_4$  = F.Y.M. at 100 lb./ac. of N.  
 (2) 2 levels of chemical mixture :  $C_0$  = No chemical and  $C_1$  =  $FeSO_4$  at 26.6 lb./ac. + lime at 13.3 lb./ac.

Selective treatments :

$T_1$  = control (no manure) and  $T_2$  = A/S at 100 lb./ac. of N.

## 3. DESIGN :

- (i) R.B.D. (ii) (a) 10. (b) N.A. (iii) 3. (iv) (a) N.A. (b) 40' x 27'. (v) N.A. (vi) Yes.

## 4. GENERAL :

- (i) Rats were active during the growth seasons and they were responsible for high mortality of tillers. Rats were responsible for erratic sugarcane yield figures. (ii) N.A. (iii) Tillers, millable sugarcane and yield. (iv) (a) 1952 to 1955. (b) and (c) No. (v) (a) and (b) No. (vi) Nil. (vii) Experiment conducted by D.S.R. (S).

## 5. RESULTS :

- (i) 33.50 ton/ac.  
 (ii) 2.591 ton/ac.  
 (iii) Effect of S is highly significant, effect of selective treatments is significant. Others are not significant.

## (iv) Av. yield of sugarcane in ton/ac.

Selective treatments :

T<sub>1</sub> = 30.30 ton/ac.  
T<sub>2</sub> = 35.96 tons/ac.

	S <sub>1</sub>	S <sub>2</sub>	S <sub>3</sub>	S <sub>4</sub>	Mean
C <sub>0</sub>	37.39	36.17	32.31	30.88	34.19
C <sub>1</sub>	35.31	35.68	31.13	29.89	33.00
Mean	36.35	35.93	31.72	30.38	33.60

S.E. of marginal mean of S = 1.058 ton/ac.  
S.E. of marginal mean of C = 0.748 ton/ac.  
S.E. of body of table = 1.499 ton/ac.  
S.E. of selective treatments = 1.499 ton/ac.

Crop :- Sugarcane,

Ref :- U.P. 49(115).

Site :- Sugarcane Res. Stn., Shahjahanpur.

Type :- 'M'.

Object :- To study the catalysing effect of potassium permanganate, ferrous sulphate and lime upon castor cake in improving growth and sugar content of Sugarcane.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Berseem. (c) N.A. (ii) (a) Loam. (b) Refer soil analysis, Shahjahanpur. (iii) 20.3.1949. (iv) (a) and (b) N.A. (c) 40, three budded setts/row. (d) N.A. (e) N.A. (v) Castor cake at 100 lb./ac. of N. (vi) CO. 421 (medium). (vii) N.A. (viii) N.A. (ix) 48.54°. (x) N.A.

## 2. TREATMENTS :

1. Control (no manure).
2. KMnO<sub>4</sub> at 28 lb./ac.
3. Fe SO<sub>4</sub> at 26.6 lb./ac.
4. Lime at 13.3 lb./ac.
5. (3)+(4).
6. (2)+(3).
7. (2)+(3)+(4).

## 3. DESIGN :

(i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 3. (iv) (a) N.A. (b) 40' x 21'. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) N.A. (iii) Sugarcane yield. (iv) (a) 1949-1950. (b) and (c) No. (v) (a) and (b) No. (vi) NIL. (vii) Experiment conducted by D.S.R. (S).

## 5. RESULTS :

- (i) 21.46 ton/ac.
- (ii) 3.93 ton/ac.
- (iii) The treatments do not differ significantly.
- (iv) Av. yield of sugarcane in lb./ac.

Treatment	Av. yield
1.	19.61
2.	19.30
3.	21.80
4.	20.89
5.	22.95
6.	23.13
7.	22.55
S.E./mean	= 2.26 ton/ac.

Crop :- Sugarcane.

Ref :- U.P. 50(153).

Site :- Sugarcane Res. Stn., Shahjahanpur.

Type :- 'M'.

Object :- To study the catalysing effect of potassium permanganate, ferrous sulphate and lime upon castor cake in improving growth and sugar content of Sugarcane.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Wheat. (c) N.A. (ii) (a) Loam. (b) Refer soil analysis, Shahjahanpur. (iii) 30.4.1950. (iv) (a) and (b) N.A. (c) 40—3 budded setts/row. (d) N.A. (e) —. (v) Castor cake at 100 lb./ac. of N. (vi) CO-421 (medium). (vii) Irrigated. (viii) N.A. (ix) 35.89°. (x) 5.1.1951.

## 2. TREATMENTS :

1. Control (no manure).
2.  $\text{KMnO}_4$  at 28 lb./ac.
3.  $\text{FeSO}_4$  at 26.6 lb./ac.
4. Lime at 13.3 lb./ac.
5. (3)+(4).
6. (2)+(3).
7. (2)+(3)+(4).

## 3. DESIGN :

(i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 3. (iv) (a) N.A. (b) 40'×21'. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) N.A. (iii) Tillers, millable cane and sugarcane yield. (iv) (a) 1949—1950. (b) and (c) No. (v) (a) and (b) No. (vi) Nil. (vii) Experiment conducted by D.S.R.(S).

## 5. RESULTS :

- (i) 10.87 ton/ac.  
 (ii) 2.035 ton/ac.  
 (iii) Treatment differences are not significant.  
 (iv) Av. yield of sugarcane in ton/ac.

Treatment	Av. yield
1.	12.90
2.	11.79
3.	10.92
4.	9.87
5.	7.98
6.	10.14
7.	12.52
S.E./mean	=1.17 ton/ac.

Crop :- Sugarcane.

Ref :- U.P. 51(144).

Site :- Sugarcane Res. Stn., Shahjahanpur.

Type :- 'M'.

Object :- To study the effect of manuring Sugarcane with Castor cake to which a catalyser has been added.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) and (c) N.A. (ii) (a) Loam. (b) Refer soil analysis, Shahjahanpur. (iii) 21.2.1951. (iv) (a) Ploughing on 27.1.1951. (b) to (e) N.A. (v) Manuring on 25.1.1951. (vi) CO-453 (late). (vii) Irrigated. (viii) 3 hoeings and earthing. (ix) 31.66°. (x) 20.3.1952.

## 2. TREATMENTS :

1. Control (no manure).
  2. Castor cake.
  3. Castor cake +  $\text{KMnO}_4$  at 28 lb./ac.
  4. Castor cake +  $\text{FeSO}_4$  at 26.6 lb./ac.
  5. Castor cake + lime at 13.3 lb./ac.
  6. Castor cake +  $\text{FeSO}_4$  and lime at 13.3 lb./ac.
  7. Castor cake +  $\text{FeSO}_4$  and  $\text{KMnO}_4$  at 13.3 lb./ac.
  8. Castor cake +  $\text{FeSO}_4$ ,  $\text{KMnO}_4$  and lime at 13.3 lb./ac.
- Castor cake at 100 lb./ac. of N.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 8. (b) N.A. (iii) 3. (iv) (a) N.A. (b) 40'×15'. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) N.A. (iii) Millable canes, tillers and sugarcane yield. (iv) (a) to (c) No. (v) (a) and (b) No. (vi) Nil. (vii) Experiment conducted by D.S.R.(S).

## 5. RESULTS:

- (i) 22.82 ton/ac.  
 (ii) 2.85 ton/ac.  
 (iii) The treatments differ significantly.  
 (iv) Av. yield of sugarcane in ton/ac.

Treatment	Av. yield	Treatment	Av. yield
1.	17.82	5.	26.77
2.	25.54	6.	22.08
3.	23.58	7.	22.57
4.	20.58	8.	23.62
S.E./mean		=1.64 ton/ac.	

Crop : Sugarcane.

Ref :- U.P. 53(227).

Site :- Sugarcane Res. Stn., Shahjahanpur.

Type :- 'M'.

Object :- To study the effect of methods of application of different N manures on Sugarcane.

## 1. BASAL CONDITIONS :

(i) (a) Sugarcane—Fallow—Wheat—*Sanai*. (b) *Sanai*. (c) No. (ii) (a) Sandy loam. (b) Refer soil analysis, Shahjahanpur. (iii) 9, 10 and 11.3.1953. (iv) (a) and (b) N.A. (c) 80 three budded setts/line. (d) N.A. (e) —. (v) Green manuring with *Sanai* at 60 lb./ac. of N. (vi) CO 453, (late). (vii) N.A. (viii) N.A. (ix) 45.79°. (x) 15.1.1954 (Rep. II) to 9—13.3.1954 (Rep I, III and IV).

## 2. TREATMENTS :

All combinations of (1) and (2) and one control (no manure)

- (1) 3 sources of 60 lb./ac. of N :  $S_1=A/S$ ,  $S_2=G.N.C.$  and  $S_3=A/S+G.N.C.$  in 1 : 1 ratio.  
 (2) 4 methods of application of N :  $M_1=By$  broadcast before planting,  $M_2=As$  surface band in May  
 $M_3=As$  pellets in May and  $M_4=As$  pellets at planting.

Method of preparation of pellets : For pellets of A/S. The calculated quantity of A/S required for the size of the test was dissolved in as little water as possible, and the soil was thoroughly mixed with representative soil sample and kneaded thoroughly. For the mixture, pellets of one inch diameter were made and applied to the plots in rows along with the setts at planting time, and near the root of cane in May. For pellets of Groundnut cake : The required quantity of the cake was finally powdered and thoroughly mixed with the representative sample of the soil of the field and then mixture was kneaded with water and pellets of one inch diameter were prepared and applied to the field as in the case of A/S pellets.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 13. (b) N.A. (iii) 4. (iv) (a) 80' x 15'. (b) 74' x 9'. (v) *Barha*=3', *Mend*=2'. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) N.A. (iii) Germination, tillers, juice quality and sugarcane yield. (iv) (a) 1953—1955. (b) and (c) No. (v) (a) and (b) No. (vi) Nil. (vii) The experiment was conducted by D.S.R.(S).

## 5. RESULTS :

- (i) 31.42 ton/ac.  
 (ii) 2.225 ton/ac.  
 (iii) Control vs treated effects alone is highly significant.

(iv) Av. yield of sugarcane in ton/ac.

Control=27.84 ton/ac.					
	M <sub>1</sub>	M <sub>2</sub>	M <sub>3</sub>	M <sub>4</sub>	Mean
S <sub>1</sub>	31.31	31.56	31.59	31.13	31.40
S <sub>2</sub>	33.91	30.48	30.53	32.14	31.76
S <sub>3</sub>	34.60	31.58	31.05	30.80	32.01
Mean	33.27	31.21	31.06	31.36	31.72

1. S.E. of M marginal means =0.640 ton/ac.
2. S.E. of S marginal means =0.560 ton/ac.
3. S.E. of control or mean in body of table =1.112 ton/ac.

Crop :-Sugarcane.

Ref :- U.P. 49(164).

Site :- Sugarcane. Res. Strn., Shahjahanpur.

Type :-'M'.

Object :—To assess the relative efficiency of A/S and A/N, C/N and F.Y.M. with regard to the yield and juice quality of Sugarcane.

## 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Loam. (b) Refer soil analysis, Shahjahanpur. (iii) 5.3.1949. (iv) (a) and (b) N.A. (c) 45 three budded setts/plot. (d) N.A. (e) —. (v) Nil. (vi) CO 42I (medium). (vii) Irrigated. (viii) N.A. (ix) N.A. (x) N.A.

## 2. TREATMENTS :

1. Control (no manure).
  2. A/S at 100 lb./ac. of N.
  3. A/N at 100 lb./ac. of N.
  4. F.Y.M. at 100 lb./ac. of N.
  5. C/N at 100 lb./ac. of N.
- (As C/N was not available, the treatment was not applied and so treatment 5 is also control).

## 3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 43'×15'. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) N.A. (iii) Tillers, millable cane and sugarcane yield. (iv) (a) No. (b) and (c) No. (v) (a) and (b) No. (vi) Nil. (vii) The experiment was conducted by D.S.R.(S).

## 5. RESULTS :

- (i) 16.90 ton/ac.
- (ii) 2.185 ton/ac.
- (iii) Treatment differences are significant. Treatment vs control effect is not significant.
- (iv) Av. yield of sugarcane in ton/ac.

Treatment	Av. yield
1+5.	17.94
2.	17.14
3.	14.83
4.	16.90
S.E./mean	=1.092 ton/ac. (for 2, 3 and 4)
S.E./mean	=0.772 ton/ac. (for 1 and 5)

Crop :- Sugarcane.

Ref :-U.P. 48(48).

Site :- Sugarcane Res. Stn., Shahjahanpur.

Type :-'M'.

Object :-To study the catalysing effect of manganese, Sulphate, Ferrows sulphate singly and in combination with Copper sulphate upon Castor cake in relation with growth and sugar quality of Sugarcane.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) Maize for fodder. (c) N.A. (ii) (a) Loam. (b) Refer soil analysis, Shahjahanpur. (iii) 5.2.1948. (iv) (a) and (b) N.A. (c) 51, three budded setts/row. (d) N.A. (e) —. (v) Nil. (vi) CO-421 (medium). (vii) Irrigated. (viii) N.A. (ix) N.A. (x) N.A.

## 2. TREATMENTS :

1. Control (unmanured).
  2. Castor cake alone at 60 lb./ac. of N.
  3. Castor cake at 60 lb./ac. of N+FeSO<sub>4</sub> at 28 lb./ac.
  4. Castor cake+FeSO<sub>4</sub> at 28 lb./ac.+CuSO<sub>4</sub> at 1.4 lb./ac.
  5. Castor cake+MnSO<sub>4</sub> at 28 lb./ac.
  6. Castor cake+MnSO<sub>4</sub> at 28 lb./ac.+CuSO<sub>4</sub> at 1.4 lb./ac.
- Treatments were top dressed at sowing time.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 3. (iv) (a) N.A. (b) 40'×27'. (v) Yes, but details are not available. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) N.A. (iii) Germination, tillering, millable sugarcane and yield. (iv) (a) 1947—1948. (b) No. (c) No. (v) (a) and (b) No. (vi) Nil. (vii) Experiment conducted by D.S.R.(S).

## 5. RESULTS :

- (i) 25.60 ton/ac.  
 (ii) 3.576 ton/ac.  
 (iii) Treatment differences are not significant.  
 (iv) Av. yield of sugarcane in ton/ac.

Treatment	Av. yield
1.	26.60
2.	24.78
3.	25.41
4.	24.18
5.	28.19
6.	24.41
S.E./mean	=2.065 ton/ac.

Crop :- Sugarcane.

Ref :-U.P.49(113).

Site :- Sugarcane Res. Stn., Shahjahanpur.

Type :-'M'.

Object :-To study the effect of application of Super on the juice quality and yield of Sugarcane.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) Berseem-Sanai as G.M. (c) No. (ii) (a) Loam. (b) Refer soil analysis, Shahjahanpur. (iii) 4.3.1949. (iv) (a) and (b) N.A. (c) 45 three budded setts/row. (d) N.A. (e) N.A. (v) Sanai as G.M. at 50 lb./ac. of N, Top dressing of A/S at 100 lb./ac. of N. (vi) CO-421 (medium). (vii) Irrigated. (viii) N.A. (ix) 48.59%. (x) N.A.

## 2. TREATMENTS :

- M<sub>0</sub>=Control—No Super.  
 M<sub>1</sub>=P<sub>2</sub>O<sub>5</sub> placed one foot deep.  
 M<sub>2</sub>=P<sub>2</sub>O<sub>5</sub> placed four inches deep with setts.  
 M<sub>3</sub>=P<sub>2</sub>O<sub>5</sub> placed dibbling 7" deep.  
 Super at 75 lb./ac. of P<sub>2</sub>O<sub>5</sub>.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 18'×44'. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) N.A. (iii) Tillers, millable sugarcane and yield. (iv) (a) No. (b) No. (c) No. (v) (a) and (b) No. (vi) Nil. (vii) Experiment conducted by D.S.R.(S).

## 5. RESULTS :

- (i) 21.05 ton/ac.  
 (ii) 1.86 to /ac.  
 (iii) Treatment differences are not significant.  
 (iv) Av. yield of sugarcane in ton/ac.

Treatment	Av. yield
M <sub>0</sub>	21.60
M <sub>1</sub>	20.12
M <sub>2</sub>	19.56
M <sub>3</sub>	22.93
S.E./mean	=0.93 ton/ac.

Crop :- Sugarcane.

Ref :- U.P. 48(51).

Site :- Sugarcane Res. Stn., Shahjahanpur.

Type :- 'M'.

Object :- To study the effect of application of Potash on the yield of Sugarcane.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) Wheat. (c) N.A. (ii) (a) Loam. (b) Refer soil analysis, Shahjahanpur. (iii) 21.3.1948.  
 (iv) (a) 5 ploughings and 4 *pata*. (b) N.A. (c) 45, three budded setts/row. (d) N.A. (e) —. (v) Top dressing of A/S at 200 lb./ac. of N on 12.4.1948. (vi) CO. 421 (medium). (vii) Irrigated. (viii) 3 hoeings, weeding and earthing. (ix) N.A. (x) 25.1.1949.

## 2. TREATMENTS :

- No potash.
- 75 lb./ac. of potash in July.
- 75 lb./ac. of potash in May.
- 75 lb./ac. of potash in September.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 3. (iv) (a) N.A. (b) 37'-6" x 24'. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) N.A. (iii) Tillers, millable sugarcane and yield. (iv) (a) to (c) No. (v) (a) and (b) No. (vi) Nil. (vii) Experiment conducted by D.S.R. (S).

## 5. RESULTS :

- (i) 24.81 ton/ac.  
 (ii) 1.503 ton/ac.  
 (iii) Treatment differences are significant.  
 (iv) Av. yield of sugarcane in ton/ac.

Treatment	Av. yield
1.	25.86
2.	25.66
3.	25.89
4.	21.84
S.E./mean	= 0.868 ton/ac.

Crop :- Sugarcane.

Ref :- U.P. 53(219).

Site :- Sugarcane Res. Stn., Shahjahanpur.

Type :- 'M'.

Object :- To study the effect of applying nitrogen fertilizers partly to soil and partly as a spray on the leaves as weak solution on the growth, juice quality and yield of Sugarcane.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) *Sana*. (c) N.A. (ii) (a) Light loam. (b) Refer soil analysis, Shahjahanpur. (iii) 29.1.1953.  
 (iv) (a) to (c) N.A. (v) *Sana* at 40 lb./ac. of N. (vi) CO.453 (late). (vii) Irrigated. (viii) 2 hoeings with cultivator, 2 hoeings with *kassi*, 1 hoeing and earthing. (ix) 43.13%. (x) 23.12.1953.

## 2. TREATMENTS :

1. No additional N (water spray).
2. No additional N (A/S spray).
3. 50 lb./ac. of N at sowing time+10 lb./ac. of N as top dressing at tillering time (with water spray).
4. 50 lb./ac. of N at sowing time+8 lb./ac. of N at tillering time+2 lb./ac. of N as spray.
5. 100 lb./ac. of N at sowing time+10 lb./ac. of N as top dressing at tillering (water spray).
6. 100 lb./ac. of N at sowing time+8 lb./ac. of N at tillering time+2 lb./ac. of N as spray.

The sprayings were repeated till 2 lb./ac. of N as A/S had been applied. Sprayings done on leaves with a spreader. 0.2% soil of A/S (on salt basis) was sprayed in each spray.

A/S applied on 7.4.53 and 8.6.53 while sprayed on 11.5.53, 11.6.53, 21.7.53 and 19.8.53

## 3. DESIGN :

- (i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 3. (iv) (a) N.A. (b) 40'×27'. (v) N.A. (vi) Yes.

## 4. GENERAL :

- (i) N.A. (ii) N.A. (iii) Tillers, millable sugarcane and yield. (iv) (a) 1953—1955. (b) and (c) No. (v) (a) and (b) No. (vi) Nil. (vii) Experiment was conducted by D.S.R. (S).

## 5. RESULTS :

- (i) 30.07 ton/ac.  
 (ii) 1.903 ton/ac.  
 (iii) Treatment differences are not significant.  
 (iv) Av. yield of sugarcane in ton/ac.

Treatment	Av. yield
1.	28.06
2.	27.94
3.	31.54
4.	29.32
5.	32.05
6.	31.49
S.E./mean	= 1.099 ton/ac.

Crop :- Sugarcane.

Ref :- U.P. 53(262).

Site :- Sugarcane Res. Stn., Shahjahanpur.

Type :- 'M'.

Object :- To study the effect of applying phosphate fertilizer partly to the soil and partly as spray over the leaves, on the growth, juice quality and yield of Sugarcane.

## 1. BASAL CONDITIONS :

- (i) (a) N.A. (b) *Sanai*. (c) No. (ii) (a) Loam. (b) Refer soil analysis, Shahjahanpur. (iii) 29.1.1953.  
 (iv) (a) to (e) N.A. (v) *Sanai* at 60 lb./ac. of N and top dressing by A/S at 60 lb./ac. of N on 7.4.1953.  
 (vi) CO.453 (late). (vii) Irrigated. (viii) Hoening with cultivator on 25.2.1953, 18.3.1953, hoeing with *kassf* on 16, 30.4.1953, 18.5.1953 and earthing on 16.8.1953. (ix) 42.45". (x) 24.12.1953.

## 2. TREATMENTS :

1. No additional  $P_2O_5$  (water spray).
2. No additional  $P_2O_5$  ( $KH_2PO_4$  spray).
3. 75 lb./ac. of  $P_2O_5$  at tillering time+water spray.
4. 75 lb./ac. of  $P_2O_5$  at tillering time+2 lb./ac. of  $P_2O_5$  as spray.
5. 150 lb./ac. of  $P_2O_5$  at tillering time+water spray.
6. 148 lb./ac. of  $P_2O_5$  at tillering time+2 lb./ac. of  $P_2O_5$  as spray.

Spraying on 19.5.1953, 13.6.1953, 22.7.1953 and 25.8.1953. Solution of Potassium dihydrophosphate was applied on leaves till a total of 2 lb./ac. of  $P_2O_5$  had been applied 0.20% sol. of  $KH_2PO_4$  (on salt basis) was applied in each spraying, water used per spray=15 litres. Super applied on 9.5.1953.

## 3. DESIGN :

- (i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 3. (iv) (a) N.A. (b) 40'×27'. (v) N.A. (vi) Yes.

## 4. GENERAL :

- (i) N.A. (ii) N.A. (iii) Tillers, millable canes and sugarcane yield. (iv) (a) 1953 to 1955. (b) and (c) No. (v) (a) and (b) No. (vi) Nil. (vii) Experiment conducted by D.S.R. (S).



**3. RESULTS :**

- (i) 29.84 ton/ac.  
 (ii) 1.781 ton/ac.  
 (iii) Treatment differences are not significant.  
 (iv) Av. yield of sugarcane in ton/ac.

Treatment	Av. yield
1.	28.42
2.	28.63
3.	29.62
4.	30.59
5.	31.49
6.	30.29

S.E./mean except treatment No. 2=1.028 ton/ac.

S.E. of difference of the treatment No. (2) with any other treatment mean=1.660 ton/ac.

Note : Yield of treatment No. (2) in replication I was missing and has been estimated for analysis and summary of result.

Crop :- Sugarcane.

Ref :- U.P. 48(52).

Site :- Sugarcane Res. Stn., Shahjahanpur.

Type :- 'M'.

Object :—To study the best time and method of application of A/S to Sugarcane for better yield and quality.

**1. BASAL CONDITIONS :**

- (i) (a) N.A. (b) Wheat. (c) N.A. (ii) (a) Loam. (b) Refer soil analysis, Shahjahanpur. (iii) 22.3.1948.  
 (iv) (a) and (b) N.A. (c) 40, 3' budded setts/row. (d) N.A. (e) —. (v) Nil. (vi) CO.527 (early).  
 (vii) Irrigated. (viii) Hoeing on 19.4.1948, 25.5.1948, 24.6.1948 and earthing on 11.8.1948. (ix) N.A.  
 (x) 20.12.1948.

**2. TREATMENTS :**

- No nitrogen (control).
  - 100 lb./ac. of N as A/S at sowing time.
  - 100 lb./ac. of N as A/S at tillering time.
  - 50 lb./ac. of N as A/S at the sowing time+50 lb./ac. of N as A/S at tillering time.
  - 50 lb./ac. of N as A/S at sowing+50 lb./ac. of N as A/S in July.
  - 50 lb./ac. of N as A/S at tillering time+50 lb./ac. of N as A/S in July.
- A/S top dressed on 12.4.1948, 18.5.1948 and 13.7.1948.

**3. DESIGN :**

- (i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 3. (iv) (a) N.A. (b) 15'x37.5'. (v) N.A. (vi) Yea.

**4. GENERAL :**

- (i) N.A. (ii) N.A. (iii) Germination, tillers, millable cane and sugarcane yield. (iv) (a) 1946 to 1948.  
 (b) and (c) No. (v) (a) and (b) N.A. (vi) Nil. (vii) Experiment conducted by D.S.R. (S).

**5. RESULTS :**

- (i) 27.81 ton/ac.  
 (ii) 2.502 ton/ac.  
 (iii) Treatment differences are not significant.  
 (iv) Av. yield of sugarcane in ton/ac.

Treatment	Av. yield
1.	24.94
2.	27.76
3.	27.79
4.	30.69
5.	27.91
6.	27.74
S.E./mean	= 1.445 ton/ac.

Crop :-Sugarcane.

Ref :-U.P. 48(74).

Site :-Sugarcane Res. Stn. Shahjahanpur.

Type :-'M'.

Object :-To study the effect of incorporation of cane trash directly into the soil.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) N.A. (c) N.A. (ii) (a) Loam. (b) Refer soil analysis, Shahjahanpur. (iii) 24.1.1948. (iv) (a) 5 ploughings by soil turning plough, 8 *desi* ploughs and 7 plankings. (b) N.A. (c) 90 3-budded setts/row. (d) N.A. (e) —. (v) Nil. (vi) CO 453 (late). (vii) Irrigated. (viii) Plankings on 25.1.1948, hoeing with *kassi* on 29, 30.1.1948, 13 and 15.2.1948., 2, 3, 21 and 22.3.1948., hoeing with cultivator on 29, 30.4.1948., 18, 19, 31.5.1948 to 1.6.1948., hoeing with *kassi* again on 4 to 5.6.1948., 26.6.1948., and earthing on 27.8.1948. (ix) 40.81°. (x) 12.1.1949.

## 2. TREATMENTS :

1. Control (unmanured).
2. Cane trash at 75 md./ac. ploughed in directly into the soil with 20 md. of cowdung+80 md./ac of sulphitation press mud and 1 md./ac. of A/S
3. Same as in treatment 2 but without cane trash.
4. Compost made out of 75 md. cane trash.

Manuring of compost in treatment 4 on 10.12.1947. Manuring of cowdung, A/S+Press mud on 29.6.1947. Ploughing in of trash on 29.6.1947. after spreading of trash by victory plough.

Cane trash contains : % organic carbon=53.95, % N=0.63 and C/N=94.1.

F.Y.M. (cow dung) contains : organic 25.20%, % N=0.816 and C/N=39.1.

Compost made out of trash contains : % organic=5.645, % N= 0.4516 and C/N=12.5

## 3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 4. (iv) (a) 89'x21'. (b) 83'x15'. (v) 3' on all sides of the gross plot. (vi) Yes.

## 4. GENERAL :

(i) Fair. (ii) Attack of top borer in May, increasing in June and ending by Ju'y. Attack of yellowing disease in August only. (iii) Germination counting, tillers, millable cane and sugarcane yield. (iv) (a) to (c) No. (v) (a) and (b) N.A. (vi) Nil. (vii) The experiment was conducted by D.S.R.(S).

## 5. RESULTS :

- (i) 23.83 ton/ac.
- (ii) 1.660 ton/ac.
- (iii) Treatments are highly significant.
- (iv) Av. yield of sugarcane in ton/ac.

Treatment	Av. yield
1.	21.26
2.	25.39
3.	22.94
4.	25.74
S.E./mean	0.530 ton/ac.

Crop :-Sugarcane.

Ref :-U.P. 49(59).

Site :-Sugarcane Res. Stn. Shahjahanpur.

Type :- 'M'.

Object :-To study the effect of incorporation of cane trash directly into the soil.

## 1. BASAL CONDITIONS :

(i) (a) Cane—Wheat. (b) Wheat during 1947-48. (c) N.A. (ii) (a) Loam. (b) Refer soil analysis, Shahjahanpur. (iii) 6, 7.3.1949. (iv) (a) Ploughings by victory plough on 27, 28 11.1949., 23 1.1949., 1, 2.3 1949, by *desi* plough on 5.3.1949, harrow on 13.7.1948., *pats* on 2) 11.1948., 25.1 1949., 3, 4.1.1949., 5.3 1949. and 8.3 1949. (b) N.A. (c) 71, 3-budded setts/row. (d) N.A. (e) —. (v) Nil. (vi) Co 453 (late). (vii) Irrigated. (viii) Hoeing with cultivator on 22.4.1949., 13, 14.5.1949., 2), 21.6.1949., harrow on 13.7.1949 and earthing up on 31.8.1949. (ix) 48.59°. (x) 27.12.1949.

## 2. TREATMENTS :

1. Control (no manure).
2. Trash at 150 md/ac. + cowdung at 20 md/ac. + press mud at 8 md/ac. + A/S at 1 md/ac.
3. Press mud at 8 md/ac. + cowdung at 20 md/ac. + A/S at 1 md/ac.
4. Compost made out of 150 md/ac. of trash.

Trash, Press mud, F.Y.M. and A/S applied on 17, 18.8.1948. Trash as compost applied on 1.3.1949.

## 3. DESIGN :

- (i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 4. (iv) (a) 71.5' x 24'. (b) 65.5' x 18'. (v) 3' around. (vi) Yes.

## 4. GENERAL :

- (i) Fair, having thin canes, stunted growth. (ii) Nil. (iii) Tillers per plot, millable canes and sugarcane yield. (iv) (a) No. (b) and (c) No. (v) (a) and (b) No. (vi) Nil. (vii) The experiment was conducted by D.S.R. (S).

## 5. RESULTS :

- (i) 16.52 ton/ac.  
 (ii) 1.081 ton/ac.  
 (iii) Treatment effects are highly significant.  
 (iv) Av. yield of sugarcane in ton/ac.

Treatment	Av. yield
1.	13.67
2.	17.43
3.	18.44
4.	16.55
S.E /mean	= 0.54 ton/ac.

Crop :- Sugarcane.

Ref :- U.P. 50(98).

Site :- Sugarcane Res. Stn., Shahjahanpur.

Type :- 'M'.

Object :- To study the effect of incorporation of cane trash directly into the soil.

## 1. BASAL CONDITIONS :

- (i) (a) N.A. (b) Berseem. (c) No. (ii) (a) Loam. (b) Refer soil analysis, Shahjahanpur. (iii) 10.2.1950. (iv) (a) 4 ploughings by victory plough, 5 by *desi* plough and 4 *pata*. (b) N.A. (c) 50,3 budded setts/row. (d) N.A. (e) —. (v) Nil. (vi) Co-453 (late). (vii) Irrigated. (viii) Hoeing with *kassi* on 24.3.1950, 18.5.1950 (on 3 plots) 31.5.1950, 1.6.1950 and hoeing with cultivator on 22.4.1950. (ix) 36.37%. (x) 25.12.1950.

## 2. TREATMENTS :

1. 75 md./ac. of trash incorporated into soil distinctly.
2. 75 md./ac of trash + 1 md./ac. of A/S.
3. 75 md./ac of trash + 1 md./ac. of A/S + 100 lb./ac. of  $P_2O_5$  + 100 lb./ac. of  $MgSO_4$ .
4. Compost made out of 75 md./ac. of trash.

Fertilizers were dropped on 16 and 17.7.1950. Compost applied on 14.1.1950 and  $P_2O_5$  applied as Superphosphate.

## 3. DESIGN :

- (i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 4. (iv) (a) 48' x 21'. (b) 42' x 15'. (v) 3' around. (vi) Yes.

## 4. GENERAL :

- (i) Good. (ii) Nil. (iii) Germination count, tillers, millable canes and sugarcane yield/plot. (iv) (a) to (c) No. (v) (a) and (b) No. (vi) Nil. (vii) Experiment conducted by D.S.R.(S).

## 5. RESULTS :

- (i) 22.40 ton/ac.  
 (ii) 3.314 ton/ac.  
 (iii) Treatment differences are not significant.

(iv) Av. yield of sugarcane in ton/ac.

Treatment	Av. yield
1.	22.80
2.	21.95
3.	21.78
4.	23.06
S.E./mean	=1.658 ton/ac.

Crop :- Sugarcane.

Ref :- U.P. 51(128).

Site :- Sugarcane Res. Stn., Shahjahanpur.

Type :- 'M'.

Object :- To study the effect of incorporation of cane trash directly into soil.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) Gram (1949-1950). (c) N.A. (ii) (a) Loam. (b) Refer soil analysis, Shahjahanpur. (iii) 11.2.1951. (iv) (a) 3 ploughings by victory plough, 2 by *desi* plough and 3 plankings. (b) N.A. (c) 70,3 budded setts/row. (d) N.A. (e) —. (v) Nil. (vi) CO-453 (late). (vii) Irrigated. (viii) 3 hoeings with cultivator, 1 with *kassi* and 2 earthings. (ix) 29.30°. (x) 15.12.1951.

## 2. TREATMENTS :

- 75 md./ac. of trash incorporated into soil distinctly.
- 75 md./ac of trash+1 md./ac. of A/S.
- 75 md./ac of trash+1 md./ac A/S+100 lb./ac. of  $P_2O_5$ +10 lb./ac. of Magnesium sulphate.
- Compost made out of 75 md./ac. of trash.
- Control (no trash).

Manuring on 15.7.1950 of inorganic manures Addition of inorganic manure for the 2nd time on 16.7.1950, there was heavy down pour and all the manure was washed away. Spreading of trash compost on 9.1.1951.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 4. (iv) (a) 18'×68'. (b) 12'×62'. (v) 3' around. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Nil. (iii) Germination, tillers, millable canes and sugarcane yield. (iv) (a) to (c) No. (v) (a) and (b) No. (vi) Nil. (vii) Experiment was conducted by D.S.R.(S).

## 5. RESULTS :

- 15.07 ton/ac.
- 1.675 ton/ac.
- Treatment effects are highly significant.
- Av. yield of sugarcane in ton/ac.

Treatment	Av. yield
1.	14.69
2.	16.84
3.	18.00
4.	12.72
5.	13.12
S.E./mean	=0.847 ton/ac.

Crop :- Sugarcane.

Ref :-U.P. 50(157).

Site :-Sugarcane Res. Stn., Shahjahanpur.

Type :-'M'.

Object :-To study the response of sugarcane to phosphatic manures with and without F.Y.M. applied at two depths.

## 1. BASAL CONDITIONS :

(i) (a) Sugarcane=Fallow—Wheat=*Sanai*. (b) *Sanai*. (c) No. (ii) (a) Light loam. (b) Refer soil analysis, Shahjahanpur. (iii) 11 and 13 3.1950. (iv) (a) and (b) N.A. (c) 40, 3 budded setts/line. (d) N.A. (e) —. (v) Nil. (vi) CO. 453 (late). (vii) Irrigated. (viii) 4 to 5 hoeings with *kassi*, 2 with cultivator and 1 earthing up. (ix) 38.72°. (x) 23, 24 and 26.2.1951 and 1.3.1951.

## 2. TREATMENTS:

All combinations of (1) and (2)+a selective treatment

(1) 2 levels of F.Y.M. :  $F_0=0$ ,  $F_1=60$  lb./ac. of N.

(2)  $P_2O_5$  as Super or Bonemeal :  $P_0=0$ ,  $P_1$ =Super at 150 lb./ac. of  $P_2O_5$  applied at 3" depth,  $P_2$ =Super at 150 lb./ac. of  $P_2O_5$  applied at 6" depth.  $P_3$ =Bonemeal at 150 lb./ac. of  $P_2O_5$  applied at 3" depth and  $P_4$ =Bonemeal at 150 lb./ac. of  $P_2O_5$  applied at 6" depth.

Selective treatment T=Super at 150 lb./ac. of  $P_2O_5$ +A/S equivalent to N content of Bonemeal applied at 3" depth.

Manures applied in furrows at the time of planting (3" by country plough and 6" by victory plough).

## 3. DESIGN:

(i) R.B.D. (ii) (a) 11. (b) N.A. (iii) 4. (iv) (a) 36'×28'. (b) 30'×32'. (v) Main *Basha* : 3', *Bahra* : 2', Border : 2½'. (vi) Yes.

## 4. GENERAL:

(i) N.A. (ii) No. (iii) Germination %, tillers, yield data and juice analysis. (iv) (a) 1950—1952. (b) and (c) No. (v) (a) and (b) No. (vi) Nil. (vii) The experiment conducted by D.S.R.(S).

## 5. RESULTS:

- (i) 23.72 ton/ac.  
 (ii) 4.053 ton/ac.  
 (iii) None of the effects and interaction is significant.  
 (iv) Av. yield of sugarcane in ton/ac.

	T=26.41 ton/ac.					
	$P_0$	$P_1$	$P_2$	$P_3$	$P_4$	Mean
$F_0$	23.01	19.88	23.91	22.30	23.35	22.49
$F_1$	24.85	25.10	24.44	24.02	23.70	24.42
Mean	23.93	22.49	24.18	23.16	23.52	23.46

S.E. of F marginal means = 0.906 ton/ac.  
 S.E. of P marginal means = 1.433 ton/ac.  
 S.E. of body of table = 2.026 ton/ac.

Crop :- Sugarcane.

Ref :-U.P. 51(147).

Site :-Sugarcane Res. Stn, Shahjahanpur.

Type :-'M'.

Object :-To study the response of Sugarcane to phosphatic manures with and without F.Y.M. applied at two depths.

## 1. BASAL CONDITIONS:

(i) (a) Sugarcane—Fallow—Wheat—*Sanai*. (b) *Sanai*. (c) No. (ii) (a) Light loam. (b) Refer soil analysis, Shahjahanpur. (iii) 24 and 25.2.1951. (iv) (a) and (b) N.A. (c) 39, 3 budded setts/line. (d) and (e) N.A. (v) Basal dressing and green manuring has been done in the field and as per treatments. (vi) CO. 453 (late). (vii) Irrigated. (viii) N.A.; (ix) 31.66" (x) Rep. II and IV on 20 to 27.2.1952 and Rep. I and III on 25 to 27.2.1952.

## 2. TREATMENTS:

All combinations of (1) and (2)+2 selective treatments

(1) 2 levels of F.Y.M. :  $F_0=0$ ,  $F_1=60$  lb./ac. of N.

(2)  $P_2O_5$  as Super or Bonemeal :  $P_0=0$ ,  $P_1$ =Super at 150 lb./ac. of  $P_2O_5$  applied at 3" depth,  $P_2$ =Super at 150 lb./ac. of  $P_2O_5$  applied at 6" depth,  $P_3$ =Bonemeal at 150 lb./ac. of  $P_2O_5$  applied at 3" depth and  $P_4$ =Bonemeal at 150 lb./ac. of  $P_2O_5$  applied at 6" depth.

Selective treatments are:  $T_1$ =Super at 150 lb./ac. of  $P_2O_5$ +A/S equivalent to N content of Bonemeal at 3" depth and  $T_2$ =Super at 150 lb./ac. of  $P_2O_5$  equivalent to N content of Bonemeal at 6" depth.

Manures applied at the time of planting at the bottom of furrows (3" by country plough and 6" by victory plough.)

**3. DESIGN :**

(i) R.B.D. (ii) (a) 12. (b) N.A. (iii) 4. (iv) (a) 39' × 27'. (b) 33' × 21' (v) Border=2'. (vi) Yes.

**4. GENERAL :**

(i) The weather conditions being generally infavourable throughout the season Plants in the experimental plots did not make satisfactory growth. (ii) No. (iii) Juice analysis, germination %, no. of tillers and cane yield. (iv) (a) 1950 -1952. (b) and (c) No. (v) (a) and (b) No. (vi) Nil. (vii) The experiment was conducted by D.S.R.(S).

**5. RESULTS :**

- (i) 14.61 ton/ac.  
 (ii) 2.024 ton/ac.  
 (iii) Selective vs others component of treatments is highly significant. Main effects of P and F and their interaction are not significant.  
 (iv) Av. yield of sugarcane in ton/ac.

$T_1=16.79$  ton/ac.

$T_2=17.76$  ton/ac.

	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>	P <sub>3</sub>	P <sub>4</sub>	Mean
F <sub>0</sub>	14.38	12.62	13.07	13.57	16.28	13.98
F <sub>1</sub>	13.93	12.39	14.71	15.76	14.08	14.17
Mean	14.16	12.50	13.89	14.66	15.18	14.08

S.E. of F marginal mean =0.453 ton/ac.

S.E. of P marginal means =0.716 ton/ac.

S.E. of body of table =1.012 ton/ac.

**Crop :- Sugarcane.**

**Ref :- U.P. 52(241).**

**Site :- Sugarcane Res. Stn., Shahjahanpur.**

**Type :- 'M'.**

**Object :-**To study the response of Sugarcane to Phosphate manures with and without F.Y.M. applied at two depths.

**1. BASAL CONDITIONS :**

(i) (a) Sugarcane-Fallow-Wheat-Sanal-Cane. (b) Sanal. (c) No. (ii) (a) Light loam. (b) Refer soil analysis. Shahjahanpur. (iii) 27, 29.3.1952. (iv) (a) and (b) N.A. (c) 48, 3 budded setts/line. (d) N.A. (e) N.A. (v) Green manuring by Sanal. (vi) CO-453 (late). (vii) Irrigated. (viii) N.A. (ix) 33.30° (from March 52 to January 53). (x) 8.1.1953.

**2. TREATMENTS :**

All combinations of (1) and (2)+2 selective treatments.

(1) 2 levels of F.Y.M. : F<sub>0</sub>=0 and F<sub>1</sub>=60 lb./ac. of N.

(2) P<sub>2</sub>O<sub>5</sub> as Super or Bonemeal : P<sub>0</sub>=0, P<sub>1</sub>=Super at 150 lb./ac. of P<sub>2</sub>O<sub>5</sub> applied at 3" depth, P<sub>2</sub>=Super at 150 lb./ac. of P<sub>2</sub>O<sub>5</sub> applied at 6" depth, P<sub>3</sub>=Bonemeal at 150 lb./ac. of P<sub>2</sub>O<sub>5</sub> applied at 3" depth and P<sub>4</sub>=Bonemeal at 150 lb./ac. of P<sub>2</sub>O<sub>5</sub> applied at 6" depth.

The selective treatments are : T<sub>1</sub>=Super at 150 lb./ac. of P<sub>2</sub>O<sub>5</sub>+A/S equivalent to N content of Bonemeal at 3" depth, and T<sub>2</sub>=Super at 150 lb./ac. of P<sub>2</sub>O<sub>5</sub> equivalent to N content of Bonemeal at 6" depth.

Manures applied at the time of planting at the bottom of furrows (3" by country plough and 6" by delta plough).

**3. DESIGN :**

(i) R.B.D. (ii) (a) 12. (b) N.A. (iii) 4 (replication I and II rejected due to poor germination). (iv) (a) 48' × 24'. (b) 42' × 18'. (v) Main irrigation channel=3', Border=2' and 3' on all the sides of the gross plot left as non experimental area. (vi) Yes.

## 4. GENERAL :

(i) Germination poor and not uniform. The germination in replication I and II was very poor and hence the yields of these two replications have not been taken into consideration. (ii) Damage by termites to the setts. (iii) Sugarcane yield. (iv) (a) 1950-1952. (b) No. (c) No. (v) (a) and (b) No. (vi) The experimental plot was situated in the sandy area and great damage was done to the setts by termites and rats. Even the germination in the Replication III and IV., which have been taken into consideration, was not uniform and consequently the data are not strictly comparable. (vii) Experiment conducted by D.S.R. (S).

## 5. RESULTS :

- (i) 15.90 ton/ac.  
 (ii) 2.695 ton/ac.  
 (iii) Main effect of F is highly significant, main effect of P and interaction of F×P are not significant. Selective treatments and selective vs. others are not significant.  
 (iv) Av. yield of sugarcane in ton/ac.  
 $T_1=15.25$  ton/ac.  
 $T_2=19.71$  ton/ac.

	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>	P <sub>3</sub>	P <sub>4</sub>	Mean
F <sub>0</sub>	11.60	14.03	10.69	8.68	17.36	12.47
F <sub>1</sub>	13.70	22.51	20.52	19.15	17.62	18.70
Mean	12.65	18.27	15.60	13.92	17.49	15.59

S.E. of F marginal mean = 0.852 ton/ac.  
 S.E. of P marginal mean = 1.347 ton/ac.  
 S.E. of body of table = 1.905 ton/ac.

Crop :- Sugarcane.

Ref :- U.P. 48(79).

Zone :- Barhni (Basti).

Type :- 'M'.

Object :- To study the effect of application of different levels of N and P<sub>2</sub>O<sub>5</sub> to Sugarcane.

## 1. BASAL CONDITIONS :

(i) (a) and (c) N.A. (ii) Clayey soil. (iii) N.A. (iv) CO-453 (improved). (v) (a) N.A. (b) N.A. (c) N.A. (d) 7 rows in each plot. (e) N.A. (vi) 7.2.1948. (vii) Irrigated. (viii) N.A. (ix) N.A. (x) 10, 12.2.1949.

## 2. TREATMENTS :

All combination of (1) and (2)

(1) 3 levels of N as A/S : N<sub>0</sub>=0, N<sub>1</sub>=60 lb./ac., N<sub>2</sub>=120 lb./ac.

(2) 3 levels of P<sub>2</sub>O<sub>5</sub> as Super : P<sub>0</sub>=0., P<sub>1</sub>=40 lb./ac., P<sub>2</sub>=80 lb./ac.

Manures applied on 6 to 8.2.1948.

## 3. DESIGN :

(i) to (ii) 3×3 Fact. in R.B.D. with 7 replications (one replication rejected as yield in some plots was too low in comparison with others). (iii) (a) N.A. (b) 1/40 of an acre. (iv) N.A.

## 4. GENERAL :

(i) N.A. (ii) N.A. (iii) Sugarcane yield. (iv) (a) 1948-1949. (b) N.A. (c) N.A. (v) N.A. (vi) The plot with treatment N<sub>0</sub> P<sub>2</sub> was treated missing. (vii) The experiment was conducted by D.S.R.(S). Experiment on cultivators' field.

## 5. RESULTS :

- (i) 16.49 ton/ac.  
 (ii) 4.668 ton/ac.  
 (iii) None of the effects is significant.

## (iv) Av. yield of Sugarcane in ton/ac.

	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>	Mean
N <sub>0</sub>	15.28	13.54	18.38	15.73
N <sub>1</sub>	16.63	13.47	17.09	15.73
N <sub>2</sub>	17.43	20.63	15.95	18.00
Mean	16.45	15.88	17.14	16.49

S.E. of marginal mean (N <sub>1</sub> or N <sub>2</sub> )	=1.100 ton/ac.
S.E. of marginal mean (N <sub>0</sub> )	=1.148 ton/ac.
S.E. of marginal mean (P <sub>0</sub> or P <sub>1</sub> )	=1.100 ton/ac.
S.E. of marginal mean (P <sub>2</sub> )	=1.148 ton/ac.
S.E. of any mean (except N <sub>0</sub> P <sub>2</sub> ) in the body of table	=1.906 ton/ac.
S.E. of treatment mean (N <sub>0</sub> P <sub>2</sub> )	=2.109 ton/ac.

Crop :-Sugarcane.

Ref :-U.P. 49(169).

Zone :-Barhni (Basti).

Type :-'M'.

Object:—To study the effect of application of different levels of N and P<sub>2</sub>O<sub>5</sub> to Sugarcane.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) N.A. (c) N.A. (ii) Clayey soil. (iii) F.Y.M., according to local practice. (iv) CO 453 (improved). (v) (a) to (c) N.A. (d) 7 trenches at 3' apart. (e) N.A. (vi) 13, 14.2.1948. (vii) N.A. (viii) N.A. (ix) N.A. (x) 14, 16.1.1949.

## 2. TREATMENTS :

All combinations of (1) and (2).

(1) 3 levels of N as A/S : N<sub>0</sub>=0, N<sub>1</sub>=60 lb/ac. and N<sub>2</sub>=120 lb/ac.(2) 3 levels of P<sub>2</sub>O<sub>5</sub> as Super : P<sub>0</sub>=0, P<sub>1</sub>=40 lb/ac and P<sub>2</sub>=80 lb/ac.

Manures applied in two doses—one at the time of planting and the other at the time of earthing.

## 3. DESIGN :

(i) and (ii) 3 × 3 Fact. in R.B.D. (6 replications). (iii) (a) N.A. (b) 51' × 21'. (iv) N.A.

## 4. GENERAL :

(i) N.A. (ii) N.A. (iii) Sugarcane yield. (iv) (a) 1948—1949. (b) N.A. (c) N.A. (v) N.A. (vi) Nil. (vii) The experiment was conducted by D.S.R.(S) on cultivators' field.

## 5. RESULTS :

- (i) 28.78 ton/ac.  
(ii) 6.689 ton/ac.  
(iii) None of the effects is significant.  
(iv) Av. yield of sugarcane in ton/ac.

	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>	Mean
N <sub>0</sub>	25.56	28.90	25.30	26.59
N <sub>1</sub>	28.50	28.22	30.69	29.14
N <sub>2</sub>	30.81	29.46	31.55	30.61
Mean	28.29	28.86	29.18	28.78

S.E. of any marginal mean	=1.577 ton/ac
S.E. of any mean in the body of table	=2.731 ton/ac.



Crop :- Sugarcane.  
Zone :- Walterganj (Basti).

Ref :- U.P. 49(170).  
Type :- 'M'.

Object :- To study the effect of application of different levels of N and  $P_2O_5$  to Sugarcane.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) N.A. (c) N.A. (ii) Type D—Surface soil is fairly rich in coarse sand fraction and is at times extremely coarse. (iii) F.Y.M. according to local practice. (iv) CO. 453 (improved) (v) (a) to (c) N.A. (d) 8 rows 3' apart. No other information is available. (e) N.A. (vi) 23, 24 and 25.3.1948. (vii) N.A. (viii) N.A. (ix) N.A. (x) N.A.

2. TREATMENTS :

All combinations of (1) and (2).

(1) 3 levels of A/S :  $N_0=0$ ,  $N_1=60$  lb./ac. and  $N_2=120$  lb./ac.

(2) 3 levels of  $P_2O_5$  as Super :  $P_0=0$ ,  $P_1=40$  lb./ac. and  $P_2=80$  lb./ac.

Manures applied in two doses—one at the time of sowing and the other at the time of earthing.

3. DESIGN :

(i) and (ii)  $3 \times 3$  Fact. in R.B.D. (4 replications) (iii) (a) N.A. (b)  $60' \times 24'$ . (iv) N.A.

4. GENERAL :

(i) N.A. (ii) N.A. (iii) Sugarcane yield. (iv) (a) No. (b) N.A. (c) N.A. (v) N.A. (vi) Nil. (vii) The experiment was conducted by D.S.R. (S). on cultivators' field.

5. RESULTS :

- (i) 33.67 ton/ac.  
(ii) 2.568 ton/ac.  
(iii) Main effects of N and P and their interactions are all highly significant.  
(iv) Av. yield of sugarcane in ton/ac.

	$P_0$	$P_1$	$P_2$	Mean
$N_0$	26.91	31.02	35.14	31.02
$N_1$	32.95	32.14	33.50	32.86
$N_2$	31.57	36.21	43.65	37.14
Mean	30.48	33.12	37.43	33.67

S.E. of any marginal means = 0.767 ton/ac.  
S.E. of any mean in the body of table = 1.284 ton/ac.

Crop :- Sugarcane.  
Zone :- Khalilabad (Basti).

Ref :- 49 (171).  
Type :- 'M'.

Object :- To study the effect of application of different levels of N and  $P_2O_5$  to Sugarcane.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) Peas. (c) N.A. (ii) Surface of soil from loam to clayey. (iii) F.Y.M. applied according to local practice. (iv) CO.453 (improved). (v) (a) Slight earthing done in July. (b) and (c) N.A. (d) 6 trenches 6 rows of sugarcane setts in each plot at 3' apart. (e) —. (vi) 26 and 27.3.1949. (vii) Irrigated. (viii) N.A. (ix) N.A. (x) 7.9.1.1950-

2. TREATMENTS :

All combinations of (1) and (2)

(1) 3 levels of N as A/S :  $N_0=0$ ,  $N_1=60$  lb./ac. and  $N_2=120$  lb./ac.

(2) 3 levels of  $P_2O_5$  as Super :  $P_0=0$ ,  $P_1=40$  lb./ac. and  $P_2=80$  lb./ac.

Manures put in two doses one at the time of sowing and the other at the time of earthing.

3. DESIGN :

(i) and (ii)  $3 \times 3$  Fact. in R.B.D. (4 replications). (iii) (a) N.A. (b)  $60.5' \times 18'$ . (iv) N.A.

## 4. GENERAL :

(i) and (ii) N.A. (iii) Sugarcane yield. (iv) (a) No. (b) and (c) N.A. (v) N.A. (vi) Nil. (vii) The experiment was conducted by D.S.R. (S). on cultivators' field.

## 5. RESULTS :

- (i) 35.24 ton/ac.  
 (ii) 3.720 ton/ac.  
 (iii) Only main effect of N is significant.  
 (iv) Av. yield of sugarcane in ton/ac.

	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>	Mean
N <sub>0</sub>	31.60	31.24	32.23	31.69
N <sub>1</sub>	34.70	40.90	35.02	36.87
N <sub>2</sub>	35.18	36.67	39.62	37.16
Mean	33.83	36.27	35.62	35.24

S.E. of any marginal mean = 0.759 ton/ac.  
 S.E. of any mean in body of table = 1.860 ton/ac.

Crop :- Sugarcane.  
 Zone : Barhni (Basti).

Ref :- U.P. 49(135).  
 Type :- 'M'.

Object :- To study the response of Sugarcane to Super.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) Fallow. (c) Nil. (ii) *Domat*. (iii) As per treatments. (iv) (a) CO.453 mid-late (Improved). (iv) (a) 2 hoeings after planting. (b) to (e) N.A. (vi) 4.3.1949. (vii) N.A. (viii) N.A. (ix) 20". (x) 20.1.1950.

## 2. TREATMENTS:

P<sub>0</sub> = Control.

P<sub>1</sub> = 60 lb./ac. of P<sub>2</sub>O<sub>5</sub> broadcast before planting.

P<sub>2</sub> = 60 lb./ac. of P<sub>2</sub>O<sub>5</sub> drilled 3"–4" deep in furrows before planting.

## 3. DESIGN :

(i) and (ii) R.B.D. with 6 replications (iii) (a) N.A. (b) 50' × 30'. (iv) N.A.

## 4. GENERAL :

(i) N.A. (ii) N.A. (iii) Germination, tillers, millable canes and sugarcane yield. (iv) (a) No. (b) and (c) N.A. (v) N.A. (vi) Nil. (vii) The experiment was conducted by D.S.R. (G) on cultivators' field.

## 5. RESULTS :

- (i) 31.74 ton/ac.  
 (ii) 5.200 ton/ac.  
 (iii) Treatment differences are not significant.  
 (iv) Av. yield of sugarcane in ton/ac.

Treatment	Av. yield
P <sub>0</sub>	29.89
P <sub>1</sub>	31.43
P <sub>2</sub>	33.89
S.E./mean	= 2.123 ton/ac.

Crop :- Sugarcane.

Ref :- U.P. 48(61).

Zone :- Barhni (Basti).

Type :- 'M'.

Object :- To study the response of Sugarcane to Super.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) Fallow. (c) N.A. (ii) *Domat*. (iii) Castor cake at 60 lb./ac. of N applied on 10.2.1948 and A/S at 40 lb./ac. of N applied on 16.2.1948. (iv) CO. 356 mid-late (improved). (v) (a) By tractor on 20.12.1947 and by Meston plough on 1.1.1948. Hoeings by cultivator on 2.3.1948 and 25.12.1947 (twice). (b) to (e) N.A. (vi) 16.2.1948. (vii) *Palewa* by means of pumping from river on 12.2.1948 and irrigation on 18.3.1948. (viii) N.A. (ix) 20". (x) 25.2.1949.

## 2. TREATMENTS :

P<sub>0</sub>=No Super.P<sub>1</sub>=40 lb./ac. of P<sub>2</sub>O<sub>5</sub> in furrows, 3" to 4" deep.P<sub>2</sub>=80 lb./ac. of P<sub>2</sub>O<sub>5</sub> in furrows, 3" to 4" deep.

## 3. DESIGN :

(i) and (ii) R.B.D. (iii) (a) 64'×27'. (b) 64'×27'. (iv) N.A.

## 4. GENERAL :

(i) N.A. (ii) N.A. (iii) Sugarcane yield. (iv) (a) No. (b) and (c) N.A. (v) N.A. (vi) Nil. (vii) The experiment was conducted by D.S.R. (G) on cultivator's field.

## 5. RESULTS :

(i) 14.28 ton/ac.

(ii) 3.16 ton/ac.

(iii) Treatment differences are not significant.

(iv) Av. yield of sugarcane in ton/ac.

Treatment	Av. yield
P <sub>0</sub>	14.47
P <sub>1</sub>	15.03
P <sub>2</sub>	13.33
S.E./mean	=1.29 ton/ac.

Crop :- Sugarcane.

Ref :- U.P. 49(148).

Zone :- Seohara (Bijnor).

Type :- 'M'.

Object :- To find the response of Sugarcane to Super.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) *Sanal* as G.M. (c) Nil. (ii) Loam. (iii) 1 md. of A/N on 4.3.1949. (iv) CO. 421 medium (improved). (v) (a) 1 ploughing by *victory* plough, 2 by *desi* plough, 3 by *desi* harrow and hoeing by spade. (b) Flat planting. (c) 1752 buds/plot. (d) 3' distance in lines. (e) —. (vi) 6.3.1949. (vii) 2 irrigations by tubewell on 5.5.1949 and 6.6.1949. (viii) N.A. (ix) N.A. (x) 28 to 30.1.1950.

## 2. TREATMENTS :

P<sub>0</sub>=No P<sub>2</sub>O<sub>5</sub>.P<sub>1</sub>=60 lb./ac. of P<sub>2</sub>O<sub>5</sub> broadcast at planting time.P<sub>2</sub>=60 lb./ac. of P<sub>2</sub>O<sub>5</sub> applied in furrows 3"—4" deep at planting time.

## 3. DESIGN :

(i) and (ii) 6 replications in R.B.D. (iii) (a) 73'×24'. (b) 67'×18'. (iv) N.A.

## 4. GENERAL :

(i) N.A. (ii) N.A. (iii) Germination and sugarcane yield. (iv) (a) 1949—1950. (b) and (c) N.A. (v) N.A. (vi) Nil. (vii) The experiment was conducted by D.S.R. (S) on cultivator's field.

## 5. RESULTS :

(i) 19.45 ton/ac.

(ii) 2.776 ton/ac.

(iii) Treatment differences are not significant.

## (iv) Av. yield of sugarcane in ton/ac.

Treatment	Av. yield
P <sub>0</sub>	18.31
P <sub>1</sub>	19.94
P <sub>2</sub>	20.10
S.E./mean	=1.133 ton/ac.

Crop :- Sugarcane.  
Zone :- Seohara (Bijnor).

Ref :- U.P. 50(166).

Type :- 'M'.

Object :- To study the response of Sugarcane to Super.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) G.M. *sanai*. (c) Nil. (ii) Loam. (iii) Top dressing A/S 1 md. on 23.7.1950. (iv) Co-421. (v) (a) 4 hoeings with cultivator, 1 ploughing with *meston* plough, 1 with *desi* plough and 1 with tractor. (b) Flat planting. (c) 1728 buds/plot. (d) 3' distance in line. (e) —. (vi) 1.3.1950. (vii) 2 irrigations by tube well on 7.2.1950, 10.4.1950 and 6.5.1950. (viii) N.A. (ix) N.A. (x) 1 and 2.3.1951.

## 2. TREATMENTS :

P<sub>0</sub> = control (no manure).P<sub>1</sub> = 60 lb./ac. of P<sub>2</sub>O<sub>5</sub> broadcast before planting.P<sub>2</sub> = 60 lb./ac. of P<sub>2</sub>O<sub>5</sub> drilled with 3"–4" deep in furrows before planting.

## 3. DESIGN :

(i) and (ii) R.B.D. with 6 replications. (iii) (a) 64'×27'. (b) 58'×21'. (iv) N.A.

## 4. GENERAL :

(i) and (ii) N.A. (iii) Germination % and sugarcane yield. (iv) (a) 1949–1950. (b) and (c) N.A. (v) N.A. (vi) Nil. (vii) The expt. was conducted by D.S.R.(S). on cultivators' field.

## 5. RESULTS :

(i) 17.90 ton/ac.

(ii) 2.69 ton/ac.

(iii) The treatment differences are not significant.

(iv) Av. yield of sugarcane in ton/ac.

Treatment	Av. yield
P <sub>0</sub>	15.82
P <sub>1</sub>	18.67
P <sub>2</sub>	19.21
S.E./mean	=1.09 ton/ac.

Crop :- Sugarcane.

Zone :- Seohara (Bijnor).

Ref :- U.P. 52(161).

Type :- 'M'.

Object :- To study the comparative utility of different green manures for Sugarcane.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) Different G.M. crops. (c) No. (ii) Loam. (iii) Nil. (iv) CO-421. (v) (a) *Desi* plough, 3 hoeings with the *kassi*, 2 with cultivator on 17.4.1950, 13.5.1950, earthing up by spade, ploughing by *meston* plough once and with *desi* plough on 3, 4, 5, and 6.2.1950. (vi) 7.2.1950. (vii) Irrigated. (viii) and (ix) N.A. (x) 5 and 6.2.1950.

**2. TREATMENTS :**

The following green manures were applied as treatments.

1. *Sanai*.
2. *Guar*.
3. *Lobia*.
4. *Dhaincha*.
5. *Guar* for fodder.
6. *Urd* seed.
7. Fallow (control).

**3. DESIGN :**

(i) and (ii) R.B.D. with 4 replications. (iii) (a) 83'×27'. (b) 75'×21'. (iv) N.A.

**4. GENERAL :**

(i) and (ii) N.A. (iii) Germination and sugarcane yield. (iv) (a) No. (b) and (c) N.A. (v) N.A. (vi) Nil. (vii) The expt. was conducted by D.S.R. (S) on cultivators' field.

**5. RESULTS :**

- (i) 14.04 ton/ac.
- (ii) 2.34 ton/ac.
- (iii) The treatments do not differ significantly.
- (iv) Av. yield of sugarcane in ton/ac.

Treatment	Av. yield
1.	17.43
2.	15.24
3.	13.21
4.	13.68
5.	13.78
6.	11.46
7.	13.46
S.E./mean	=1.17 ton/ac.

Crop :- Sugarcane.

Zone :- Seohara (Bijnor).

Ref :- U.P. 48(65).

Type :- 'M'.

Object :- To study the comparative utility of different green manures for Sugarcane.

**1. BASAL CONDITIONS :**

(i) (a) N.A. (b) As per treatments. (c) N.A. (ii) Loam. (iii) N.A. (iv) CO.421 medium (improved). (v) (a) to (e) N.A. (vi) NA. (vii) N.A. (viii) N.A. (ix) N.A. (x) 25.2.1949 to 8.3.1949.

**2. TREATMENTS :**

1. Control.
2. *Sanai*.
3. *Lobia* (for fodder).
4. *Lobia* (for G.M.).
5. *Guar*.
6. Pea (for fodder).
7. Pea (for G.M.).

**3. DESIGN :**

(i) and (ii) R.B.D. with 4 replications (iii) (a) N.A. (b) 46'×24'. (iv) N.A.

**4. GENERAL :**

(i) and (ii) N.A. (iii) % germination and sugarcane yield. (iv) (a) No. (b) and (c) N.A. (v) N.A. (vi) Nil. (vi) The experiment was conducted by D.S.R. (S) on cultivators' field.

**5. RESULTS :**

- (i) 20.28 ton/ac.
- (ii) 2.107 ton/ac.
- (iii) Treatment differences are significant.

## (iv) Av. yield of sugarcane in ton/ac.

Treatment	Av. yield
1.	17.76
2.	22.85
3.	18.21
4.	21.16
5.	22.32
6.	19.70
7.	19.99
S.E./mean	= 1.053 ton/ac.

Crop :- Sugarcane.

Ref :- U.P. 48(71).

Zone :- Seohara (Bijnor).

Type :- 'M'.

Object :- To study the response of Sugarcane to super.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) and (c) N.A. (ii) Loam. (iii) As per treatments. (iv) CO.421—medium (improved).  
 (v) (a) to (e) N.A. (vi) N.A. (vii) N.A. (viii) N.A. (ix) N.A. (x) 18.2.1249 to 21.2.1949.

## 2. TREATMENTS :

$P_0$  = 0 lb./ac. of  $P_2O_5$ .  
 $P_1$  = 40 lb./ac. of  $P_2O_5$  in furrows 3"–4" deep.  
 $P_2$  = 80 lb./ac. of  $P_2O_5$  in furrows 3"–4" deep'

## 3. DESIGN :

(i) and (ii) R.B.D. with 6 replications (iii) (a) N.A. (b) 67' × 18'. (iv) N.A.

## 4. GENERAL :

(i) and (ii) N.A. (iii) Germination and sugarcane yield. (iv) (a) No. (b) and (c) N.A. (v) N.A. (vi) Nil.  
 (vii) The experiment was conducted by D.S.R. (S) on cultivators' field.

## 5. RESULTS :

(i) 21.07 ton/ac.  
 (ii) 1.788 ton/ac.  
 (iii) Treatment differences are significant.  
 (iv) Av. yield of sugarcane in ton/ac.

Treatment	Av. yield
$P_0$	19.12
$P_1$	21.51
$P_2$	22.58
S.E./mean	= 0.730 ton/ac.

Crop :- Sugarcane.

Ref :- U.P.51(194).

Zone :- Doiwala (Dehradun).

Type :- 'M'.

Object : To study the response of Sugarcane to super.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) Paddy. (c) N.A. (ii) Loam. (iii) Compost on 15.2.1951. (iv) CO-356 (improved). (v)  
 (a) Ploughings 14 times from Oct. 1950 to March 1951, 2 ploughings by *dest* plough and 7 hoeings by *kassf*  
 2 earthings. (b) Planting in furrows by flat system of planting. (c) 48 3-budded setts/row; 296 buds/plot.  
 (d) Rows 3' apart. (e) N.A. (vi) Planting 14.3.1951. (vii) Irrigated. (viii) N.A. (ix) N.A. (x) N.A.

## 2. TREATMENTS :

All combinations of (1) and (2)+a control (no manure)

(1) 2 levels of  $P_2O_5$  :  $P_1$ =60 and  $P_2$ =120 lb./ac.

(2) 2 methods of application :  $M_1$ =Broadcast and  $M_2$ =applied 3"–4" deep in furrows.  
 $P_2O_5$  applied as Super.

## 3. DESIGN :

(i), (ii) R.B.D. with 4 replications (iii) (a) 48'×27'. (b) 42'×21'. (iv) N.A.

## 4. GENERAL :

(i) N.A. (ii) Stripping on 8.9.1951 to remove *Pyrrilla*. (iii) Germination countings, tillers counting, millable sugarcane and yield. (iv) (a) 1951-1952. (b) N.A. (c) N.A. (v) N.A. (vi) Nil. (vii) The experiment was conducted by D.S.R.(M) on cultivators' field.

## 5. RESULTS :

- (i) 76.42 ton/ac.  
 (ii) 13.281 ton/ac.  
 (iii) Treatment differences are not significant.  
 (iv) Av. yield of sugarcane in ton/ac.

Control = 73.14 ton/ac.

	P <sub>1</sub>	P <sub>2</sub>	Mean
M <sub>1</sub>	80.05	73.87	76.96
M <sub>2</sub>	80.79	74.27	77.53
Mean	80.42	74.07	77.24

S.E. of any marginal mean  
 S.E. of body of table

=4.696 ton/ac.  
 =6.641 ton/ac.

Crop :- Sugarcane.

Ref :-U.P. 52(269).

Zone :- Doiwala (Dehradun).

Type :-'M'.

Object :-To study the response of Sugarcane to Super.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) Paddy. (c) N.A. (ii) Loam. (iii) Compost 200 mds. on 24.3.1952. (iv) N.A. (v) (a) Ploughings 12 and 3 hoeings by *kassi*; earthing by spade and weeding. (b) Flat system. (c) 62, 3-budded setts/row. (d) Rows 3' apart. (e) —. (vi) 5.4.1952. (vii) Irrigated (river water). (viii) N.A. (ix) N.A. (x) 22.2.1953.

## 2. TREATMENTS :

All combinations of (1) and (2)+a control (no manure)

(1) 2 levels of P<sub>2</sub>O<sub>5</sub> : P<sub>1</sub>=60 and P<sub>2</sub>=120 lb./ac.

(2) 2 methods of application : M<sub>1</sub>=Broadcast and M<sub>2</sub>=applied 3"-4" deep in furrows.

P<sub>2</sub>O<sub>5</sub> applied as Super.

## 3. DESIGN :

(i), (ii) R.B.D. with 4 replications. (iii) (a) 60'×24'. (b) 54'×18'. (iv) N.A.

## 4. GENERAL :

(i) N.A. (ii) Nil. (iii) Germination, tillers, millable canes and yield of sugarcane. (iv) (a) 1951-1952. (b) N.A. (c) N.A. (v) N.A. (vi) Nil. (vii) The experiment was conducted by D.S.R. (M) on cultivators' field.

## 5. RESULTS :

- (i) 15.02 ton/ac.  
 (ii) 2.199 ton/ac.  
 (iii) Treatment differences are not significant.  
 (iv) Av. yield of sugarcane in ton/ac.

Control =12.45 ton/ac.

	P <sub>1</sub>	P <sub>2</sub>	Mean
D <sub>1</sub>	16.36	13.99	15.17
D <sub>2</sub>	15.23	17.08	16.16
Mean	15.80	15.53	15.67

S.E. of any marginal mean  
 S.E. of body of table

=0.775 ton/ac.  
 =1.097 ton/ac.

Crop :- Sugarcane.  
Zone :- Tamkohi(Deoria).

Ref :- U.P. 48(55).  
Type :- 'M'.

Object :- To study the response of Sugarcane to Super.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) Barley and *Sanai*. (c) N.A. (ii) Light loam. (iii) *Sanai*, top dressing by A/S at 50 lb./ac. of N on 4, 13.5.1948. (iv) CO. 453 - (mid-late) improved. (v) (a) Ploughing in of *sanai* on 20.9.1947 by *victory* plough, *victory* plough on 27.11.1947, 21.12.1947, tractor ploughing on 8.1.1948, tractor harrowing on 17.1.1948, tractor disc harrow on 27.1.1948 and 4 hoeings by cultivator on 5.4.1948 and by *kudali* on 25.4.1948, cultivator on 12.5.1948 and 5.6.1948. (b) Flat planting. (c) 2400 buds/plot. (d) Rows 3' apart. (e) N.A. (vi) 5.2.1948. (vii) Nil. (viii) N.A. (ix) N.A. (x) 9.4.1949.

2. TREATMENTS :

1. No Super (control).
2. 40 lb./ac. of  $P_2O_5$  as Super in furrows 3" to 4" deep.
3. 80 lb./ac. of  $P_2O_5$  as Super in furrows 3" to 4" deep.

3. DESIGN :

(i) and (ii) R.B.D. with 6 replications. (iii) (a) 73' x 30'. (b) 67' x 24'. (iv) N.A.

4. GENERAL :

(i) N.A. (ii) N.A. (iii) Germination, tillers, millable sugarcane and yield. (iv) (a) No. (b) and (c) N.A. (vi) Nil. (vii) The experiment was conducted by D.S.R. (G) on cultivator's field.

5. RESULTS :

- (i) 30.51 ton/ac.
- (ii) 1.20 ton/ac.
- (iii) Treatments differ highly significantly.
- (iv) Av. yield of sugarcane in ton/ac.

Treatment	Av. yield
1.	28.44
2.	31.80
3.	31.30
S.E./mean	= 0.48 ton/ac.

Crop :- Sugarcane.  
Zone :- Tomkohi (Deoria).

Ref :- U.P. 48(57).  
Type :- 'M'.

Object :- To study the effect of different green manures on Sugarcane.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) Barley. (c) N.A. (ii) Light loam. (iii) Nil. (iv) CO. 513 (early) improved. (v) (a) 4 hoeings by cultivator on 3.4.1948, by *kudali* on 25.4.1948 and again cultivator on 15.5.1948 and 5.6.1948. 2 ploughings with *victory* plough. One tractor plough and one tractor harrowing (b) Flat planting. (c) 2400 buds/plot. (d) Rows 3' apart. (e) N.A. (vi) 7.2.1948. (vii) Nil. (viii) N.A. (ix) N.A. (x) 11.4.1949.

2. TREATMENTS :

1. Fallow.
2. *Sanai* sown on -15.7.1947 and ploughed in on -15.9.1947.
3. *Lobia* sown on -15.7.1947 and ploughed in on -15.9.1947.
4. *Guar* sown on -15.7.1947 and ploughed in on -15.9.1947.
5. Peas sown on -15.10.1947 and ploughed in on -17.12.1947.
6. Oats sown on -15.10.1947 and ploughed in on -17.12.1947.
7. *Bajra* sown on -15.7.1947 and ploughed in on -15.9.1947.

3. DESIGN :

(i) and (ii) R.B.D. with 4 replications. (iii) (a) 73' x 30'. (b) 67' x 24'. (iv) N.A.

4. GENERAL :

(i) N.A. (ii) N.A. (iii) Germination, tillers, millable sugarcane and yield. (iv) (a) No. (b) and (c) N.A. (v) N.A. (vi) Nil. (vii) The experiment was conducted by D.S.R. (G) on cultivator's field.



## 5. RESULTS :

- (i) 11.81 ton/ac.
- (ii) 3.90 ton/ac.
- (iii) Treatments do not differ significantly.
- (iv) Av. yield of sugarcane in ton/ac.

Treatment	Av. yield
1.	10.67
2.	13.74
3.	13.96
4.	12.03
5.	11.26
6.	11.47
7.	9.52
S.E./mean	=1.95 ton/ac.

Crop :- Sugarcane.

Zone :- Baitalpur (Deoria).

Ref :- U.P.49(139).

Type :- 'M'.

Object :-To study response of Sugarcane to Super.

## 1. BASAL CONDITIONS :

- (i) (a) N.A. (b) *Bajra* (fodder), (c) No. (ii) N.A. (iii) 100 lb./ac. of N and  $P_2O_5$  as per treatments. (iv) CO. 109—(Medium, improved). (v) (a) 5 hoeings after planting. (b) to (e) N.A. (vi) 1.3.1949. (vii) 3 irrigations. (viii) N.A. (ix) N.A. (x) 30 and 31.1.1950.

## 2. TREATMENTS :

- 1. Control.
- 2. 60 lb./ac. of  $P_2O_5$  as Super broadcast before planting.
- 3. 60 lb./ac. of  $P_2O_5$  as Super drilled 3"—4" deep in furrows before planting.

## 3. DESIGN :

- (i), (ii) R.B.D. with 4 replications. (iii) (a) N.A. (b) 58'×24'. (iv) N.A.

## 4. GENERAL :

- (i) N.A. (ii) N.A. (iii) Germination, tillers, millable cane and sugarcane yield. (iv) (a) No. (b) and (c) N.A. (v) N.A. (vi) Nil. (vii) The experiment was conducted by D.S.R.(G) on cultivators' field.

## 5. RESULTS :

- (i) 15.61 ton/ac.
- (ii) 2.850 ton/ac.
- (iii) Treatment differences are not significant.
- (iv) Av. yield of sugarcane in ton/ac.

Treatment	Av. yield
1.	16.17
2.	14.56
3.	16.11
S.E./mean	=1.425 ton/ac.

Crop :- Sugarcane.

Zone :- Tamkohi (Deoria).

Ref :-U.P. 49(140).

Type :-'M'.

Object :-To study the response of Sugarcane to Super.

## 1. BASAL CONDITIONS :

- (i) (a) N.A. (b) *Sanai* as G.M. (c) No. (ii) 'Light loam. (iii) 150 lb./ac. of N+ $P_2O_5$  : as per treatments. (iv) CO. 453 (mid-late) improved. (v) (a) 4 hoeings after planting. (b) to (c) N.A. (vi) 26.2.1949. (vii) N.A. (viii) N.A. (ix) N.A. (x) 11 and 12.3.1950.

**2. TREATMENTS :**

1. Control.
2. 60 lb./ac. of  $P_2O_5$  as Super broadcast before planting.
3. 60 lb./ac. of  $P_2O_5$  as Super drilled 3"-4" deep in furrows before planting.

**3. DESIGN :**

(i) and (ii) R.B.D. with 6 replications. (iii) (a) N.A. (b) 67' x 18'. (iv) N.A.

**4. GENERAL :**

(i) N.A. (ii) N.A. (iii) Germination, tillers, millable cane and sugarcane yield. (iv) (a) No. (b) and (c) N.A. (v) N.A. (vi) Nil. (vii) The expt. was conducted by D.S.R.(G) on cultivators' field.

**5. RESULTS :**

- (i) 10.48 ton/ac.
- (ii) 1 297 ton/ac.
- (iii) Treatment differences are not significant.
- (iv) Av. yield of sugarcane in ton/ac.

Treatment	Av. yield
1.	9.83
2.	11.48
3.	10.14
S.E./mean	=0.530 ton/ac.

Crop :- Sugarcane.

Ref :- U.P. 49(142).

Zone :- Chhitanni (Deoria).

Type :- 'M'.

Object :- To study the response of Sugarcane to Super.

**1. BASAL CONDITIONS :**

- (i) (a) N.A. (b) Nil. (c) Nil. (ii) N.A. (iii) As per treatments. (iv) CO-453 (mid-late) (improved).
- (v) (a) 2 hoeings after planting. (b) to (c) N.A. (vi) 3.3.1949. (vii) N.A. (viii) N.A. (viii) and (ix) N.A. (x) 9.3.1950.

**2. TREATMENTS :**

1. Control.
2. 60 lb./ac. of  $P_2O_5$  as Super broadcast before planting.
3. 60 lb./ac. of  $P_2O_5$  as Super drilled 3"-4" deep in furrows before planting.

**3. DESIGN :**

(i) and (ii) R.B.D. with 4 replications. (iii) (a) N.A. (b) 49' x 21'. (iv) N.A.

**4. GENERAL :**

(i) and (ii) N.A. (iii) Germination, tillers, millable canes and sugarcane yield. (iv) (a) No. (b) and (c) N.A. (v) N.A. (vi) Nil. (vii) The expt. was conducted by D.S.R.(G) on cultivators' field.

**5. RESULTS :**

- (i) 23.25 ton/ac.
- (ii) 4.367 ton/ac.
- (iii) Treatment differences are not significant.
- (iv) Av. yield of sugarcane in ton/ac.

Treatment	Av. yield
1.	26.69
2.	23.78
3.	29.18
S.E./mean	=2.184 ton/ac.

Crop :-Sugarcane.

Ref :-U.P. 51(159).

Zone :- Captainganj (Deoria).

Type :-'M'.

Object :-To study the response of Sugarcane to Super.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) *Sanai* (sown on 27.7.1950). (c) Nil (ii) *Bhat* soils. (iii) *Sanai* × 20 seers of A/S on 7.2.1951. (iv) CO-453 (mid-late). Improved. (v) (a) 6 ploughings by *desi* plough and 2 ploughings by victory plough; 6 hoeings by *kassi*. (b) Flat planting followed by earthing. (c) 1512 buds/plot. (d) N.A. (e) —. (vi) 7.2.1951. (vii) Irrigated. (viii) and (ix) N.A. (x) 4.3.1952.

## 2. TREATMENTS :

1. No manure.
2. Super at 150 lb./ac. of  $P_2O_5$  broadcast in the field before sowing.
3. Super at 150 lb./ac. of  $P_2O_5$  applied in the trenches at the time of planting.

## 3. DESIGN :

(i) and (ii) R.B.D. with 4 replications. (iii) (a) 63' × 24'. (b) 57' × 18'. (iv) N.A.

## 4. GENERAL :

(i) and (ii) N.A. (iii) Germinations, tillers, millable cane and sugarcane yield. (iv) (a) No. (b) and (c) N.A. (v) N.A. (vi) Nil. (vii) The expt. was conducted by D.S.R.(G) on cultivators' field.

## 5. RESULTS :

- (i) 16.41 ton/ac.  
 (ii) 1.772 ton/ac.  
 (iii) Treatment differences are not significant.  
 (iv) Av. yield of sugarcane in ton/ac.

Treatment	Av. yield
1.	14.96
2.	16.42
3.	17.85
S.E./mean	= 0.886 ton/ac.

Crop :-Sugarcane.

Ref :-U.P.50(171).

Zone :-Gauribazar (Deoria).

Type :-'M'.

Object :-To study the response of Sugarcane to Super.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) *Sanai* as G.M. (c) Nil. (ii) Clay soil. (iii) *Sanai*. (iv) CO 513 (early) Improved. (v) (a) 5 hoeings. (b) to (e) N.A. (vi) 5.2.1950. (vii) Irrigated. (viii) N.A. (ix) N.A. (x) 25.2.1951.

## 2. TREATMENTS :

1. Control (no manure).
2. Super at 150 lb./ac. of  $P_2O_5$  applied broadcast before planting.
3. Super at 150 lb./ac. of  $P_2O_5$  drilled 3"—4" deep in furrows before planting.

## 3. DESIGN :

(i) and (ii) R.B.D. with 6 replications (iii) (a) N.A. (b) 74' × 15'. (iv) N.A.

## 4. GENERAL :

(i) N.A. (ii) N.A. (iii) Germination, tillers, millable cane and yield. (iv) (a) 1950 to 1951. (b) N.A. (c) N.A. (v) N.A. (vi) Nil (vii) The experiment was conducted by D.S.R.(G) on cultivators' field.

## 5. RESULTS :

- (i) 17.86 ton/ac.  
 (ii) 1.934 ton/ac.  
 (iii) Treatment differences are highly significant.

(iv) Av. yield of sugarcane in ton/ac.

Treatment	Av. yield
1.	13.15
2.	18.85
3.	21.59
S.E./mean	=0.789 ton/ac.

Crop :- Sugarcane.

Ref :- U.P. 51(181).

Zone :- Gauribagar (Deoria).

Type :- 'M'.

Object :- To study the response of Sugarcane to Super.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) *Sanai* (G.M.) (c) Nil. (ii) Clay soil. (iii) N.A. (iv) CO 35 (mid late)(improved). (v) (a) Ploughing by tractor on 13.10.1950. Harrowing by tractor on 15.10.1950, 1.11.1950 and 16.12.1950 8 hoeings by *kudall*. (b) N.A. (c) 1680 buds/plot. (d) N.A. (e) —. (vi) 2, 3.2.1951. (vii) Irrigated. (viii) N.A. (ix) 52" (x) 29.2.1952.

## 2. TREATMENTS :

- Control.
- Super at 150 lb./ac. of  $P_2O_5$  broadcast in the field before planting.
- Super at 150 lb./ac. of  $P_2O_5$  applied at 3"—4" deep in furrows at the time of planting.

## 3. DESIGN :

(i) and (ii) R.B.D. with 4 replications. (iii) (a) 80' x 21'. (b) 74' x 15'. (iv) N.A.

## 4. GENERAL :

(i) N.A. (ii) N.A. (iii) Germination, tillers, millable cane and yield. (iv) (a) 1950-1951. (b) N.A. (c) N.A. (v) N.A. (vi) Nil. (vii) The experiment was conducted by D.S.R.(G) on cultivators' field.

## 5. RESULTS :

- 42.14 ton/ac.
- 1.771 ton/ac.
- Treatment differences are highly significant.
- Av. yield of sugarcane in ton/ac.

Treatment	Av. yield
1.	45.91
2.	42.59
3.	37.93
S.E./mean	=0.886 ton/ac.

Crop :- Sugarcane.

Ref :- U.P. 50(170).

Zone :- Tamkahi (Deoria).

Type :- 'M'.

Object :- To study the response of Sugarcane to Super.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) *Sanai* as G.M. (c) Nil. (ii) *B'at* soils. (iii) *Sanai* ; A/S at 40 lb./ac. of N. (iv) CO-513 (early) (improved). (v) (a) to (e) N.A. (vi) 24, 25.1.1950. (vii) N.A. (viii) N.A. (ix) N.A. (x) 15.1.1951.

## 2. TREATMENTS :

- Control (no manure).
- Super at 150 lb./ac. of  $P_2O_5$  applied broadcast before planting.
- Super at 150 lb./ac. of  $P_2O_5$  drilled 3"—4" deep in furrows before planting.

## 3. DESIGN :

(i), (ii) R.B.D. with 6 replications (iii) (a) N.A. (b) 67'×18'. (iv) N.A.

## 4. GENERAL :

(i) N.A. (ii) N.A. (iii) Germination, tillers, millable cane and sugarcane yield- (iv) (a) 1950—1951. (b) N.A. (c) N.A. (v) N.A. (vi) Nil. (vii) The experiment was conducted by D.S.R.(G) on cultivators' field.

## 5. RESULTS :

- (i) 19.66 ton/ac.  
 (ii) 3.351 ton/ac.  
 (iii) Treatment differences are not significant.  
 (iv) Av. yield of sugarcane in ton/ac.

Treatment	Av. yield
1.	18.75
2.	20.00
3.	20.23
S.E./mean	= 1.368 ton/ac.

Crop :- Sugarcane,

Zone :- Tamkahi (Deoria).

Ref :- U.P. 51(178)/50(170).

Type :- 'M'.

Object :—To study the response of Sugarcane to Super.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) *Sanai* sown on 23.7.1951. (c) Nil. (ii) *Bhar* soils. (iii) F.Y.M. at 400 md./ac. on 25.6.1951 Gammoxene at 25 lb./ac. on 15.1.1951 ; Top dressing of A/S at 20 seers in the field on 25.6.1951. (iv) CO-513 (early) (improved). (v) (a) 3 ploughings and levelling by tractor 2 ploughings by bullocks harrowing and sub soiling by tractor 4 hoeings by *kassi* and earthing up by spade. (b) Flat sowing and earthing after wards. (c) 1752 buds/plot. (d) N.A. (e) —. (vi) 10.2.1951. (vii) N.A. (viii) N.A. (ix) N.A. (x) 10.3.1952.

## 2. TREATMENTS :

- No manure (control).
- Super at 150 lb./ac. of  $P_2O_5$  broadcast in field before planting.
- Super at 150 lb./ac. of  $P_2O_5$  applied at 3½" depth before planting.  
Super applied on 15.1.1951.

## 3. DESIGN :

(i), (ii) R.B.D. with 6 replications. (iii) (a) 73'×24'. (b) 66'×18'. (iv) N.A.

## 4. GENERAL :

(i) N.A. (ii) N.A. (iii) Germination, tillers, millable sugarcane and yield. (iv) (a) 1950—1951. (b) N.A. (c) N.A. (v) N.A. (vi) Nil. (vii) The experiment was conducted by D.S.R.(G) on cultivators' field.

## 5. RESULTS :

- (i) 19.56 ton/ac.  
 (ii) 1.321 ton/ac.  
 (iii) Treatment differences are not significant.  
 (iv) Av. yield of sugarcane in ton/ac.

Treatment	Av. yield
1.	18.54
2.	19.93
3.	20.20
S.E./mean	= 0.539 ton/ac.

Crop :- Sugarcane.  
Zone :- Lakshmiganj (Deoria).

Ref :- U.P. 50(169).  
Type :- 'M'.

Object :- To study the response of Sugarcane to super.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) *Bajra*. (c) N.A. (ii) Loam. (iii) F.Y.M. at 60 lb./ac. of N as basal manuring and A/S at 40 lb./ac. of N as top dressing on 13.6.1950. (iv) CO.513 (early) (improved). (v) (a) 2 hoeings. (b) to (e) N.A. (vi) 24.1.1950. (vii) Irrigated. (viii) N.A. (ix) N.A. (x) 9.2.1951.

2. TREATMENTS :

1. Control (no manure).
2. Super at 150 lb./ac. of  $P_2O_5$  applied broadcast before planting.
3. Super at 150 lb./ac. of  $P_2O_5$  drilled 3"—4" deep in furrows before planting.

3. DESIGN :

(i) and (ii) R.B.D. with 6 replications (iii) (a) N.A. (b) 58' x 21'. (iv) N.A.

4. GENERAL :

(i) and (ii) N.A. (iii) Germination, millable cane and sugarcane yield. (iv) (a) No. (b) and (c) N.A. (v) N.A. (vi) Nil. (vii) The experiment was conducted by D.S.R. (G) on cultivator's field.

5. RESULTS :

- (i) 18.84 ton/ac.
- (ii) 3.461 ton/ac.
- (iii) Treatment differences are not significant.
- (iv) Av. yield of sugarcane in ton/ac.

Treatment	Av. yield
1.	19.07
2.	18.32
3.	19.34
S.E./mean	= 1.731 ton/ac.

Crop :- Sugarcane.  
Zone :- Baitalpur (Deoria).

Ref :- U.P. 49(159).  
Type :- 'M'.

Object :- To study the comparative effect of different green manures.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) As per treatments. (c) N.A. (ii) N.A. (iii) As per treatments. (iv) CO.395 (early) improved. (v) (a) 5 hoeings. (b) to (e) N.A. (vi) 20.2.1949. (vii) irrigated. (viii) N.A. (ix) N.A. (x) 25 and 28.1.1950.

2. TREATMENTS :

1. *Sanai*
2. *Guar*.
3. *Dhaincha*.
4. Pea.
5. *Met'ha*.
6. *Bakra*.
7. Fallow.

3. DESIGN :

(i) and (ii) R.B.D. with 4 replications (iii) (a) N.A. (b) 85' x 18'. (iv) N.A.

## 4. GENERAL :

- (i) and (ii) N.A. (iii) Germination, millable cane and sugarcane yield. (iv) (a) No. (b) and (c) N.A. (v) N.A. (vi) Nil. (vii) The experiment was conducted by D.S.R. (G) on cultivator's field.

## 5. RESULTS :

- (i) 13.41 ton/ac.  
 (ii) 1.847 ton/ac.  
 (iii) Treatment differences are not significant.  
 (iv) Av. yield of sugarcane in ton/ac.

Treatment	Av. yield
1.	13.03
2.	14.09
3.	13.56
4.	12.52
5.	13.79
6.	12.90
7.	14.01
S.E./mean	= 0.924 ton/ac.

Crop :- Sugarcane.

Ref :- U.P. 53(241).

Zone :- Captainganj (Deoria).

Type :- 'M'.

Object :- To study the response of Super with green manure and different times of application.

## 1. BASAL CONDITIONS :

- (i) (a) to (c) As per treatments. (ii) Bangar (iii) A/S at 2 md./ac. on 24.4.1953. and Press mud at 100 md./ac. on 8.1.1953. (iv) CO. 356 - (mid-late), (improved). (v) (a) 5 hoeings. (b) to (e) N.A. (vi) 29.1.1953. (vii) Irrigated. (viii) N.A. (ix) 37". (x) 26.12.1953.

## 2. TREATMENTS :

- Fallow—Sugarcane.
- Fallow+150 lb./ac. of  $P_2O_5$  applied at planting of Sugarcane.
- Sanai or Dhaincha—Sugarcane.
- Sanai or Dhaincha+150 lb./ac. of  $P_2O_5$  at sowing of G.M.—Sugarcane.
- Sanai or Dhaincha+150 lb./ac. of  $P_2O_5$  at turning in of G.M.—Sugarcane.

## 3. DESIGN :

- (i) and (ii) R.B.D. with 4 replications. (iii) (a) N.A. (b) 46'×18'. (iv) N.A.

## 4. GENERAL :

- (i) N.A. (ii) N.A. (iii) Germination, tillers, millable sugarcane and yield. (iv) (a) 1953-1955. (b) and (c) N.A. (v) N.A. (vi) Nil. (vii) The experiment was conducted by D.S.R. (G) on cultivator's field,

## 5. RESULTS :

- (i) 6.31 ton/ac.  
 (ii) 1.657 ton/ac.  
 (iii) Treatment differences are not significant.  
 (iv) Av. yield of sugarcane in ton/ac.

Treatment	Av. yield
1.	6.26
2.	6.56
3.	6.03
4.	5.23
5.	7.48
S.E./mean	=0.829 ton/ac.

Crop :- Sugarcane.  
Zone :- Gorakhpur (Deoria).

Ref :- U.P. 53(244).  
Type :- 'M'.

Object :- To study the response of Super with green manure and different times of application.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) *Urd*, as per treatments. (c) As per treatments. (ii) Sandy loam. (iii) As per treatments. (iv) CO. 443—(mid-late), improved. (v) (a) Ploughings by tractor plough on 8.10.1952, harrowing by tractor on 9.10.1952, 7.12.1952 and 3 hoeings by hand *kudali*. (b) Trench planted. (c) 6720 buds/plot. (d) N.A. (e) —. (vi) 30.1.1953. (vii) Irrigated. (viii) N.A. (ix) 41.77". (x) 3.2.1954.

2. TREATMENTS :

1. Fallow—Sugarcane.
2. Fallow+150 lb./ac. of  $P_2O_5$  as Super 3" deep at planting of Sugarcane.
3. *Sanai* as G.M.—Sugarcane.
4. *Sanai* G.M.+150 lb./ac. of  $P_2O_5$  as Super at sowing of *Sanai*—Sugarcane.
5. *Sanai* G.M.+150 lb./ac. of  $P_2O_5$  as Super at turning of *Sanai*—Sugarcane.

3. DESIGN :

(i) and (ii) R.B.D. with 4 replications. (iii) (a) 80'×21'. (b) 74'×15' (iv) N.A.

4. GENERAL :

(i) N.A. (ii) N.A. (iii) Germination, tillers, millable sugarcane and yield. (iv) (a) 1953—1955. (b) and (c) N.A. (v) N.A. (vi) Nil. (vii) The experiment was conducted by D.S.R. (G) on cultivator's field.

5. RESULTS :

- (i) 26.80 ton/ac.
- (ii) 1.601 ton/ac.
- (iii) Treatment differences are significant.
- (iv) Av. yield of sugarcane in ton/ac.

Treatment	Av. yield
1.	25.22
2.	27.59
3.	24.94
4.	27.57
5.	28.69
S.E./mean	=0.80 ton/ac.

Crop :-Sugarcane.  
Zone :-Faizabad (Faizabad).

Ref :-U.P. 53(240).  
Type :-'M'.

Object :-To study the response of Sugarcane to Super in combination with green manures and different times of application.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) and (c) As per treatments. (ii) Loam with saline patches. (iii) A/S at 30 lb./ac. of N on 6.3.1953. Top dressing of A/S at 40 lb./ac. of N on 18.7.1950. (iv) COS-364 (improved-unreleased). (v) (a) 1 ploughings by victory plough, 2 by *desi* plough, 4 hoeings by *kassi* and earthing up by spade. (b) Flat planting. (c) 1890 buds/plot. (d) 3' distance in lines, furrows opened by ridger. (e) —. (vi) 17.3.1953. (vii) Irrigated. (viii) and (ix) N.A. (x) 3 to 4.2.1954.

2. TREATMENTS :

1. Fallow—Sugarcane.
2. Fallow—150 lb./ac. of  $P_2O_5$  at 3" depth at planting of Sugarcane.
3. *Dhaincha* (G.M.)—Sugarcane.
4. *Dhaincha* (G.M.)+Super at 150 lb./ac. of  $P_2O_5$  at the time of G.M. sowing—Sugarcane.
5. *Dhaincha* (G.M.)+Super at 150 lb./ac. of  $P_2O_5$  at the time of turning under G.M.—Sugarcane.

3. DESIGN :

(i) and (ii) R.B.D. with 4 replications. (iii) (a) 63'×30'. (b) 57'×24'. (iv) N A



## 4. GENERAL :

(i) and (ii) N.A. (iii) Germination, tillers, millable cane and sugarcane yield at harvest (excluding the yield of cane harvested for juice analysis). (iv) (a) 1953—1955. (b) and (c) N.A. (v) Nil. (vi) Nil (vii) The expt. was conducted by D.S.R.(G) on cultivators' field.

## 5. RESULTS :

- (i) 13.68 ton/ac.  
 (ii) 3.434 ton/ac.  
 (iii) Treatment differences are not significant.  
 (iv) Av. yield of sugarcane in ton/ac.

Treatment	Av. yield
1.	10.68
2.	14.16
3.	12.13
4.	15.44
5.	15.97
S.E./mean	=1.717 ton/ac.

Crop :- Sugarcane.

Site :- Faizabad (Faizabad).

Ref :- U.P. 53(245).

Type :- 'M'.

Object :- To study the response of Sugar cane to Super in combination with green manures and different times of application.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) and (c) As per treatments. (ii) Loam. (iii) A/S at 20 lb./ac. of N and G.N.C. at 10 lb./ac. of N on 30.1.1953. Top dressing of A/S at 50 lb./ac. of N on 29.6.1953. (iv) CO-416 (improved). (v) (a) 1 ploughing by victory plough, 4 ploughings by *desi* plough, 4 hoeings by *kassi* and earthing by ridger. (b) Flat planting. (c) 1584 buds/plot. (d) 3' distances in furrows opened by ridger. (e) —. (vi) 30.1.1953. (vii) Irrigated. (viii) and (ix) N.A. (x) 19, 20 and 27.2.1954.

## 2. TREATMENTS :

1. Fallow—Sugarcane.
2. Fallow+super at 150 lb./ac.  $P_2O_5$  at 3" depth at planting of Sugarcane.
3. *Sanai* (G.M.)—Sugarcane.
4. *Sanai* (G.M.)+super at 150 lb./ac. of  $P_2O_5$  at *sanai* sowing—Sugarcane.
5. *Sanai* (G.M.)+super at 150 lb./ac. of  $P_2O_5$  at the time of turning in *sanai*—Sugarcane.

## 3. DESIGN :

(i) and (ii) R.B.D. with 4 replications. (iii) (a) 66'×24'. (b) 60'×18'. (iv) N.A.

## 4. GENERAL :

(i) and (ii) N.A. (iii) Germination, tillers, millable cane and sugarcane yield at harvest (*i.e.* excluding canes harvested for juice analysis). (iv) (a) No. (b) and (c) N.A. (v) N.A. (vi) Nil. (vii) The expt. was conducted by D.S.R.(G) on cultivators' field.

## 5. RESULTS :

- (i) 12.33 ton/ac.  
 (ii) 1.824 ton/ac.  
 (iii) Treatment differences are not significant.  
 (iv) Av. yield of sugarcane in ton/ac.

Treatment	Av. yield
1.	11.11
2.	11.87
3.	12.32
4.	12.68
5.	13.67
S.E./mean	=0.912 ton/ac.

Crop :- Sugarcane.  
Zone :- Faizabad (Faizabad)

Ref :- U.P. 51(173).  
Type :- 'M'.

Object :- To study the response of Sugarcane to Super.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) *Sanai* (G.M.) (c) Nil. (ii) Heavy loam with Alkaline patches. (iii) *Sanai* at 40 lb./ac. of N. A/S at 53 lb./ac. of N on 30.1.1951. Top dressing of mixture 20 lb./ac. of N on 6.8.1951. (iv) CO 313 (early improved). (v) (a) Ploughings by mould board plough (tractor) on 15.10.1950, by disc harrow (by tractor) on 7.11.1950, 17.12.1950, 10.1.1951 and 29.1.1951. M.C. cultivator (by tractor) on 8.12.1950. By *desi* on 30.1.1951. 3 hoeings by *kassi* and earthing by spade. (b) Flat planting in lines. (c) 1728 buds/plot. (d) 3' distance, furrows opened by *kudali*. (e) N.A. (vi) 1.2.1951. (vii) Irrigated. (viii) N.A. (ix) N.A. (x) 22 to 24.3.1952.

2. TREATMENTS :

1. Control.
2. Super at 150 lb./ac. of  $P_2O_5$  broadcasted before planting.
3. Super at 150 lb./ac. of  $P_2O_5$  in furrows 3"-4" deep at planting time.

3. DESIGN :

(i) and (ii) R.B.D. with six replications. (iii) (a) 64' x 27'. (b) 58' x 21'. (iv) N.A.

4. GENERAL :

(i) N.A. (ii) N.A. (iii) Germination, millable canes, tillers and yield. (iv) (a) No. (b) N.A. (c) N.A. (v) N.A. (vi) Nil. (vii) The experiment was conducted by D.S.R. (G) on cultivators' field.

5. RESULTS :

- (i) 9.88 ton/ac.
- (ii) 1.430 ton/ac.
- (ii) Treatment differences are not significant.
- (iv) Av. yield of sugarcane in ton/ac.

Treatment	Av. yield
1.	9.74
2.	9.76
3.	10.14
S.E./mean	=0.584 ton/ac.

Crop :- Sugarcane.  
Zone :- Faizabad (Faizabad).

Ref :- U.P. 50(223).  
Type :- 'M'.

Object :- To find the effect of Spade brand fertilizer on Sugarcane.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) Fallow. (c) Nil. (ii) Loam. (iii) As per treatments. (iv) CO 493 (improved). (v) (a) Ploughing by mould board plough (tractor) on 26.10.1951. Disc harrow (tractor) on 14.12.1951, 3.1.1952, 28.1.1952, and 8.2.1952. (b) Flat planting. (c) N.A. (d) at 3' distance in lines. Furrows opened by bullock ridger. 9 hoeings by *kudali*. Earthing by spade. (e) —. (vi) 11.2.1952. (vii) Irrigated. (viii) N.A. (ix) 32.73". (x) 10, 12.1.1953.

2. TREATMENTS :

1. A/S at 120 lb./ac. of N.
2. A/S at 60 lb./ac. of N + G.N.C. at 60 lb./ac. of N.
3. S. brand fertilizer at 120 lb./ac. of N.
4. S. brand fertilizer at 60 lb./ac. of N + G.N. C. at 60 lb./ac. of N, half at planting and half at tillering.

3. DESIGN :

(i) and (iii) R.B.D. with 4 replications. (iii) (a) 70' x 30'. (b) 64' x 24'. (iv) N.A.

## 4. GENERAL :

(i) N.A. (ii) N.A. (iii) Germination, millable canes, tillers and sugarcane yield at harvest excluding cane harvested for juice analysis (iv) (a) No. (b) N.A. (c) N.A. (v) N.A. (vi) The crop of the plot in which treatment 1 was applied in replication I, was badly damaged by rats. (vii) The experiment was conducted by D.S.R. (G) on cultivators' field.

## 5. RESULTS :

- (i) 16.30 ton/ac.  
 (ii) 1.584 ton/ac.  
 (iii) Treatment differences are highly significant.  
 (iv) Av. yield of sugarcane in ton/ac.

Treatment	Av. yield
1.	13.61
2.	17.71
3.	15.25
4.	18.64
S.E./mean	=0.792 ton/ac.

Crop :- Sugarcane.-

Zone :- Nawabganj (Gonda).

Ref :- U.P. 50(172).

Type :- 'M'.

Object :- To study the effect of Super on Sugarcane.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) *Sanai*. (c) Nil. (ii) loam. (iii) *Sanai* as G.M. Press mud at 100 md/ac. on 24.1.1950. Top dressing by manure on 21.6.1950. (iv) CO 453 (mid-late) improved. (v) (a) 6 hoeings, (b) to (e) N.A. (vi) 9.2.1950. (vii) Irrigated. (viii) N.A. (ix) N.A. (x) 11 and 12.3.1951.

## 2. TREATMENTS :

- Control (no manure).
- Super at 150 lb./ac. of  $P_2O_5$  broadcast before planting.
- Super at 150 lb./ac. of  $P_2O_5$  drilled 3"-4" deep in furrows before planting.

## 3. DESIGN :

(i), (ii) R.B.D. with 5 replications. (iii) (a) and (b) 75'x24'. (iv) N.A.

## 4. GENERAL :

(i) N.A. (ii) N.A. (iii) Germination, tillers, millable canes and sugarcane yield. (iv) (a) 1950-1951. (b) and (c) N.A. (v) N.A. (vi) Nil. (vii) The expt. was conducted by D.S.R.(G). on cultivators' field.

## 5. RESULTS :

- (i) 32.47 ton/ac.  
 (ii) 7.395 ton/ac.  
 (iii) Treatment differences are not significant.  
 (iv) Av. yield of sugarcane in ton/ac.

Treatment	Av. yield
1.	28.18
2.	38.74
3.	30.51
S.E./mean	=3.307 ton/ac.

Crop :- Sugarcane.  
Zone :- Nawabgunj (Gonda).

Ref :- U.P. 51(174).  
Type :- 'M'.

Object : To study the effect of Super on Sugarcane.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) Wheat. (c) N.A. (ii) Loam. (iii) Press mud compost at 100 md./ac. mixture 1 md. 10 srs. at 55 lb./ac. of N on 15.10.1950. Top dressing of manure 5 md. on 30.5.1951. (iv) COK. 26 (improved but unreleased). (v) (a) Tractor [ploughings 2+ tractor harrow 2. *Desi* ploughing on 15.9.1950, 10, 30.10.1950, 4, 21, 25 and 30.1.1951. (b) Sown in flat system. (c) 1320 buds/plot. (d) In lines 3' apart. (e) Plankings 4 along with the last 4 ploughings and 3 hoeings. (vi) Planting 31.1.1951. (vii) Irrigated. (viii) N.A. (ix) N.A. (x) 17.2.1952.

2. TREATMENTS :

1. No Super.
2. Super broadcast at 150 lb./ac. of  $P_2O_5$  before planting.
3. Super at 150 lb./ac. of  $P_2O_5$  applied 3" deep before planting.

3. DESIGN :

(i), (ii) R.B.D. with 4 replications. (iii) (a) and (b) 55'×24'. (iv) N.A.

4. GENERAL :

(i) N.A. (ii) N.A. (iii) Sugarcane yield. (iv) (a) 1950—1951. (b) and (c) N.A. (v) N.A. (vi) Nil. (vii) The expt. was conducted by D.S.R.(G). on cultivator's field.

5. RESULTS :

- (i) 16.83 ton/ac.
- (ii) 4.751 ton/ac.
- (iii) Treatment differences are not significant.
- (iv) Av. yield of sugarcane in ton/ac.

Treatment	Av. yield
1.	16.52
2.	17.67
3.	16.30
S.E./mean	=2.375 ton/ac.

Crop :- Sugarcane.  
Zone :- Balrampur (Gonda).

Ref:- U.P. 50(174).  
Type :- 'M'.

Object : —To study the response of Sugarcane to Super.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) *Sanai*. (c) Nil. (ii) Loam. (iii) *Sanai*. Top dressing—castor cake at 6 mds. and A/S at 2 mds. on 18.3 1950. (iv) CO.453 (mid-late) (improved). (v) (a) 3 hoeings. (b) to (e) N.A. (vi) 7.2.1950 (vii) Irrigated. (viii) N.A. (ix) N.A. (x) 13.1.1951.

2. TREATMENTS :

1. Control (no manure).
2. 150 lb./ac. of  $P_2O_5$  broadcast before planting.
3. 150 lb./ac. of  $P_2O_5$  drilled 3"-4" deep in furrows before planting.

3. DESIGN :

(i), (ii) R.B.D. with 5 replications. (iii) (a) N.A. (b) 140'×15'. (iv) N.A.

4. GENERAL :

(i) N.A. (ii) N.A. (iii) Germination, tillers, millable canes and sugarcane yield. (iv) (a) 1950—1951. (b) N.A. (c) N.A. (v) N.A. (vi) Nil. (vii) The experiment was conducted by D.S.R.(G). Experiment on cultivator's field.

## 5. RESULTS :

- (i) 35.30 ton/ac.  
 (ii) 2.983 ton/ac.  
 (iii) Treatment differences are significant.  
 (iv) Av. yield of sugarcane in ton/ac.

Treatment	Av. yield
1.	31.90
2.	35.72
3.	38.28
S.E./mean	=1.334 ton/ac.

Crop :- Sugarcane.

Ref :-U.P. 51(175).

Zone :- Balrampur (Gonda).

Type :-'M'.

Object :-To study the response of Sugarcane to Super.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) *Sanai* (G.M.). (c) Nil. (ii) Loam. (iii) *Sanai* (G.M.) on 26.8.1950 at 60 lb./ac. of N Top dressing of castor cake 2 mds. 20 seers at 40 lb./ac. of N.  $\text{AmSO}_4$ -1 md. 20 seers at 40 lb./ac. of N. (iv) CO.453 (mid-late) (improved). (v) (a) 3 ploughings by tractor, 5 by *dest* plough and 3 planking along with ploughings and 3 hoeing by *kassi*. (b) Planting in lines. (c) 2540 buds/plot. (d) N.A. (e) —. (vi) 16.2.1951. (vii) Irrigated. (viii) N.A. (ix) N.A. (x) 21.2.1951.

## 2. TREATMENTS :

- Control (no Super).
- Super at 150 lb./ac. of  $\text{P}_2\text{O}_5$  broadcasted.
- Super at 150 lb./ac. of  $\text{P}_2\text{O}_5$  drilled 3"-4" deep in furrows before planting.

## 3. DESIGN :

(i), (ii) R.B.D. with 4 replications. (iii) (a) and (b) 88' x 30'. (iv) N.A.

## 4. GENERAL :

(i) N.A. (ii) N.A. (iii) Germination, tillers, millable sugarcane and yield. (iv) (a) 1950-1951. (b) N.A. (c) N.A. (v) N.A. (vi) Nil. (vii) The experiment was conducted by D.S.R (G) on cultivator's field.

## 5. RESULTS :

- (i) 22.53 ton/ac.  
 (ii) 0.648 ton/ac.  
 (iii) Treatment differences are highly significant.  
 (iv) Av. yield of sugarcane in ton/ac.

Treatment	Av. yield
1.	21.52
2.	23.74
3.	22.33
S.E./mean	=0.324 ton/ac.

Crop :- Sugarcane.

Ref :- U.P. 49(160).

Zone :- Balrampur (Gonda).

Type :- 'M'.

Object :-To study the comparative effect of different green manures.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) As per treatments. (ii) Loam. (iii) As per treatments. (iv) CO.453 (mid-late) (improved). (v) (a) 2 hoeings. (b) to (e) N.A. (vi) 19.3.1949. (vii) Irrigated. (viii) N.A. (ix) N.A. (x) 15.2.1950.

**2. TREATMENTS :**

- |                         |                          |
|-------------------------|--------------------------|
| 1. <i>Sanai</i> (G.M.). | 5. <i>Dhaincha</i> .     |
| 2. <i>Guar</i> .        | 6. <i>Chatri Matri</i> . |
| 3. <i>Lobia</i> .       | 7. Usual crop used.      |
| 4. Pea.                 | 8. Fallow.               |

**3. DESIGN :**

(i) and (ii) R.B.D. with 4 replications. (iii) (a) N.A. (b) 91' x 24'. (iv) N.A.

**4. GENERAL :**

(i) and (ii) N.A. (iii) Germination, tillers millable canes and sugarcane yield. (iv) (a) No. (b) and (c) N.A. (v) N.A. (vi) Nil. (vii) The experiment was conducted by D.S.R. (G) on cultivator's field.

**5. RESULTS :**

- (i) 20.38 ton/ac.  
 (ii) 2.55 ton/ac.  
 (iii) Treatment differences are not significant.  
 (iv) Av. yield of sugarcane in ton/ac.

Treatment	Av. yield	Treatment	Av. yield
1.	23.02	5.	19.26
2.	22.58	6.	19.49
3.	19.40	7.	19.91
4.	20.28	8.	19.14
	S.E./mean	=	1.275 ton/ac.

Crop :- Sugarcane.

Ref :- U.P. 49(137).

Zone :- Balrampur (Gonda).

Type :- 'M'.

Object :—To study the response of cane to Super.

**1. BASAL CONDITIONS :**

(i) (a) N.A. (b) *Sanai*. (c) Nil. (ii) Loam. (iii) Castor cake at 20 lb./ac. of N and A/S at 16 lb./ac. of N+P<sub>2</sub>O<sub>5</sub> as per treatments. (iv) CO.453 (mid-late) (improved). (v) (a) 3 hoeings after planting. (b) to (e) N.A. (vi) 17.2.1949. (vii) Irrigated. (viii) N.A. (ix) N.A. (x) 14.2.1950.

**2. TREATMENTS :**

- Control (no manure).
- 60 lb./ac. of P<sub>2</sub>O<sub>5</sub> applied broadcast before planting.
- 60 lb./ac. of P<sub>2</sub>O<sub>5</sub> drilled 3"–4" deep in furrows before planting.

**3. DESIGN :**

(i) and (ii) R.B.D. with 6 replications. (iii) (a) N.A. (b) 72' x 24'. (iv) N.A.

**4. GENERAL :**

(i) and (ii) N.A. (iii) Germination, tillers, millable cane and sugarcane yield. (iv) (a) No. (b) and (c) N.A. (v) N.A. (vi) Nil. (vii) The experiment was conducted by D.S.R. (G) on cultivator's field.

**5. RESULTS :**

- (i) 22.71 ton/ac.  
 (ii) 0.821 ton/ac.  
 (iii) Treatment differences are highly significant.  
 (iv) Av. yield of sugarcane in ton/ac.

Treatment	Av. yield
1.	20.56
2.	23.19
3.	24.39
S.E./mean	= 0.335 ton/ac.

Crop :- Sugarcane.  
Zone :- Balrampur (Gonda).

Ref :- U.P. 48(63).  
Type :- 'M'.

Object :- To study the response of Sugarcane to Super.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) *Sanai* as G.M. (c) N.A. (ii) N.A. (iii) Nil. (iv) CO. 453 (mid-late) improved. (v) (a) Punjab plough for turning in of *Sanai* on 25.7.1947, meston plough on 5.8.1947 and 15.8.1947, tractor on 7.11.1947 and 4 *desi* ploughings from 10.11.1947 to 10.1.1948. (b) Flat planted by spade. (c) 1752 buds/plot. (d) 3' apart. (e) - . (vi) 23.2.1948. (vii) N.A. (viii) N.A. (ix) N.A. (x) N.A.

TREATMENTS :

1. No Super.
  2. 40 lb./ac. of  $P_2O_5$  in furrows 3" to 4" deep.
  3. 80 lb./ac. of  $P_2O_5$  in furrows 3" to 4" deep.
- Super applied on 30.5.1948.

DESIGN :

(i) and (ii) R.B.D. with 6 replications. (iii) (a) 73' x 24'. (b) 1/25 ac. (iv) N.A.

4. GENERAL :

(i) N.A. (ii) N.A. (iii) Germination, tillers and sugarcane yield. (iv) (a) No. (b) to (c) N.A. (v) N.A. (vi) Nil. (vii) The experiment was conducted by D.S.R. (G) on cultivator's field.

5. RESULTS :

- (i) 25.04 ton/ac.
- (ii) 2.21 ton/ac.
- (iii) Treatment differences are highly significant.
- (iv) Av. yield of sugarcane in ton/ac.

Treatment	Av. yield
1.	22.80
2.	25.71
3.	26.63
S.E./mean	= 0.90 ton/ac.

Crop :- Sugarcane.  
Zone :- Ghugli (Gorakhpur).

Ref :- U.P. 48(56).  
Type :- 'M'.

Object :- To study the response of Sugarcane to Super.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) Sugarcane—*Ratoon*. (c) N.A. (ii) Heavy loam. (iii) F.Y.M. at 16 lb./ac. of N at preparation of field, A/S at 18 lb./ac. of N—at planting time [and Castor cake at 16 lb./ac. of N—top dressing on 30.5.1948. (iv) CO. 453 (mid-late) (improved). (v) (a) 8 ploughings by *desi* plough, 3 hoeings by *kudali* and earthing. (b) Trench planting by *kudali*. (c) 1680 buds/plot. (d) N.A. (e)—. (vi) 6, 7.2.1948. (vii) Irrigated. (viii) N.A. (ix) 45.47". (x) 20, 22.1.1949.

2. TREATMENTS :

1. No Super.
2. 40 lb./ac. of  $P_2O_5$  in furrows 3" to 4" deep.
3. 80 lb./ac. of  $P_2O_5$  in furrows 3" to 4" deep.

3. DESIGN :

(i) and (ii) R.B.D. with 4 replications. (iii) (a) 80' x 21'. (b) 74' x 15'. (iv) N.A.

4. GENERAL :

(i) N.A. (ii) N.A. (iii) Germination, tillers, millable sugarcane and yield. (iv) (a) No. (b) and (c) N.A. (v) N.A. (vi) Nil. (viii) The experiment was conducted by D.S.R. (G) on cultivator's field.

5. RESULTS :

- (i) 14.56 ton/ac.
- (ii) 0.467 ton/ac.
- (iii) Treatment differences are highly significant.

## (iv) Av. yield of sugarcane in ton/ac.

Treatment	Av. yield
1.	13.94
2.	15.59
3.	14.17
S.E./mean	=0.234 ton/ac.

Crop :- Sugarcane.

Ref :- U.P. 48(59).

Zone :- Sardarnagar (Gorakhpur).

Type :- 'M'.

Object :- To study the response of Sugarcane to Super.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) *Sanai* as G.M. (c) Nil. (ii) Sandy loam. (iii) A/S at 40 lb./ac. of N. (iv) CO. 356 (mid. late improved.) (v) (a) 2 ploughings by motor tractor. Trenches made by furrow. 4 hoeing by *kudali*. (b) Planted in trenches. (c) 1440 buds/plot. (d) N.A. (e) —. (vi) 15.2.1948. (vii) Irrigated. (viii) N.A. (ix) 60°. (x) 16.2.1949.

## 2. TREATMENTS :

1. No Super (control).
2. 40 lb./ac. of  $P_2O_5$  in furrows 3"–4" deep.
3. 80 lb./ac. of  $P_2O_5$  in furrows 3"–4" deep.

## 3. DESIGN :

(i) and (ii) R.B.D. with 6 replications. (iii) (a) 80' x 21'. (b) 74' x 14'. (iv) N.A.

## 4. GENERAL :

(i) N.A. (ii) N.A. (iii) Germination, tillers, millable cane and sugarcane yield. (iv) (a) No. (b) N.A. (c) N.A. (v) N.A. (vi) Nil. (vii) The experiment was conducted by D.S.R. (G). on cultivators' field.

## 5. RESULTS :

- (i) 23.39 ton/ac.
- (ii) 2.21 ton/ac.
- (iii) Treatment differences are not significant.
- (iv) Av. yield of sugarcane in ton/ac.

Treatment	Av. yield
1.	21.51
2.	23.52
3.	25.15
S.E./mean	=0.90 ton/ac.

Crop :- Sugarcane.

Ref :- U.P. 48(62).

Zone :- Pharenda (Gorakhpur).

Type :- 'M'.

Object :- To study the response of Sugarcane to Super.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) Fallow. (c) N.A. (ii) Sandy loam. (iii) F.Y.M. on 17.2.1948. (iv) CO. 453 (mid-late improved). (v) (a) Ploughing by tractor. 3 hoeing by spade and earthing up. (b) Planted in trenches with spade. (c) 1752 buds/plot. (d) N.A. (e) —. (vi) 18.2.1948. (vii) Irrigated. (viii) N.A. (ix) 45°. (x) 17.3.1949.

## 2. TREATMENTS :

1. No Super (control).
2. 40 lb./ac. of  $P_2O_5$  in furrows 3"–4" deep.
3. 80 lb./ac. of  $P_2O_5$  in furrows 3"–4" deep.  
Super applied on 4.6.1948.



**3. DESIGN :**

(i) and (ii) R.B.D. with 6 replications. (iii) (a) 73' x 24'. (b) 67' x 18'. (iv) N.A.

**4. GENERAL :**

(i) N.A. (ii) Dead hearts of top borer and stem borer removed by sickle on 20 to 27.5.1948. (iii) Germination, millable cane, tillers and sugarcane yield. (iv) (a) 1948-1949. (b) N.A. (c) N.A. (v) N.A. (vi) Nil. (vii) The experiment was conducted by D.S.R. (G) on cultivators' field.

**5. RESULTS :**

- (i) 21.83 ton/ac.  
 (ii) 4.12 ton/ac.  
 (iii) Treatment differences are not significant.  
 (iv) Av. yield of sugarcane in ton/ac.

Treatment	Av. yield
1.	22.09
2.	20.65
3.	22.75
S.E./mean	=1.68 ton/ac.

Crop :- Sugarcane.

Zone :- Sardarnagar (Gorakhpur).

Ref :- U.P. 49(136).

Type :- 'M'.

Object :- To study the response of Sugarcane to Super.

**1. BASAL CONDITIONS :**

(i) (a) N.A. (b) Wheat. (c) N.A. (ii) Sandy loam. (iii) 100 lb./ac. of N ;  $P_2O_5$  as per treatments. (iv) CO. 356 (mid-late) ; improved. (v) (a) 4 hoeings done after planting. (b) to (e) N.A. (vi) Planted 12.2.1949. (vii) Irrigated. (viii) N.A. (ix) 60°. (x) 15.2.1950.

**2. TREATMENTS :**

- Control (No manure).
- 60 lb./ac. of  $P_2O_5$  broadcast before planting.
- 60 lb./ac. of  $P_2O_5$  drilled 3"—4" deep in furrows before planting.

**3. DESIGN :**

(i), (ii) R.B.D. with 6 replications. (iii) (a) N.A. (b) 74' x 14'. (iv) N.A.

**4. GENERAL :**

(i) N.A. (ii) N.A. (iii) Germination, tillers, millable cane and sugarcane yield. (iv) (a) No. (b) and (c) N.A. (v) N.A. (vi) Nil. (vii) The expt. was conducted by D.S.R.(G). on cultivator's field.

**5. RESULTS :**

- (i) 13.46 ton/ac.  
 (ii) 2.608 ton/ac.  
 (iii) Treatment differences are not significant.  
 (iv) Av. yield of sugarcane in ton/ac.

Treatment	Av. yield
1.	14.60
2.	11.92
3.	13.86
S.E./mean	=1.065 ton/ac.

Crop :- Sugarcane.

Site :- Pharenda (Gorakhpur).

Ref :- U.P. 49(138).

Type :- 'M'.

Object :- To study the response of Sugarcane to Super.

**1. BASAL CONDITIONS :**

(i) (a) N.A. (b) Fallow. (c) Nil. (ii) Sandy loam. (iii) A/S at 100 lb./ac. of N on 29.4.1949.  $P_2O_5$  as per treatments. (iv) CO. 453 (mid-late); improved. (v) (a) 6 hoeings given after planting. (b) to (c) N.A. (vi) Planting 15.2.1949. (vii) Irrigated. (viii) N.A. (ix) 45°. (x) 27.2.1950.

**2. TREATMENTS :**

1. Control (no manure).
  2. 60 lb./ac. of  $P_2O_5$  broadcast before planting.
  3. 60 lb./ac. of  $P_2O_5$  drilled 3"—4" deep in furrows before planting.
- Date of application 15.2.1949.

**3. DESIGN :**

(i), (ii) R.B.D. with 6 replications. (iii) (a) N.A. (b) 67'×18'. (iv) N.A.

**4. GENERAL :**

(i) N.A. (ii) N.A. (iii) Germination, tillers, millable cane and sugarcane yield. (iv) (a) No. (b) and (c) N.A. (v) N.A. (vi) Nil. (vii) The expt. was conducted by D.S.R. (G) on cultivator's field.

**5. RESULTS :**

- (i) 37.23 ton/ac.
- (ii) 3.846 ton/ac.
- (iii) Treatment differences are not significant.
- (iv) Av. yield of sugarcane in ton/ac.

Treatment	Av. yield
1.	35.70
2.	39.40
3.	36.60
S.E./mean	=1.570 ton/ac.

**Crop :- Sugarcane.**

**Ref :- U.P. 49(141).**

**Zone :- Ghugli (Gorakhpur).**

**Type :- 'M'.**

**Object :-** To study the response of Sugarcane to Super.

**1. BASAL CONDITIONS :**

(i) (a) N.A. (b) *Sanat* as G.M. (c) Nil. (ii) Heavy loam. (iii) A/S at 67 lb./ac. of  $N+P_2O_5$  as per treatments. (iv) CO. 453 (mid-late); improved. (v) (a) 7 hoeings after planting. (b) to (e) N. A. (vi) 25.1.1949. (vii) Irrigated. (viii) N.A. (ix) 45.47". (x) 28 to 31.1.1950.

**2. TREATMENTS :**

1. Control.
2. 60 lb./ac. of  $P_2O_5$  broadcast before planting.
3. 60 lb./ac. of  $P_2O_5$  drilled 3"—4" deep in furrows before planting.

**3. DESIGN :**

(i), (ii) R.B.D. with 4 replications. (iii) (a) N.A. (b) 1/52.2 ac. (iv) N.A.

**4. GENERAL :**

(i) N.A. (ii) N.A. (iii) Germination, tillers, millable cane and sugarcane yield. (iv) (a) No. (b) and (c) N.A. (v) N.A. (vi) Nil. (vii) The experiment was conducted by D.S.R. (G) on cultivator's field.

**5. RESULTS :**

- (i) 39.16 ton/ac.
- (ii) 1.823 ton/ac.
- (iii) Treatment differences are not significant.
- (iv) Av. yield of sugarcane in ton/ac.

Treatment	Av. yield
1.	41.05
2.	37.57
3.	38.87
S.E./mean	=0.911 ton/ac.

Crop :- Sugarcane.  
Zone :- Sardarnagar (Gorakhpur).

Ref :-U.P. 50(168).  
Type :- 'M'.

Object :-To study the response of Sugarcane to Super.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) *Sanai* as G.M. (c) Nil. (ii) Loam. (iii) *Sanai* as per treatments ; top dressing of A/S on 4.3.1950 and 21.5.1950. (iv) CO.356 (mid-late) (improved). (v) (a) 4 hceings. (b) to (e) N.A. (vi) 2.2.1950. (vii) Irrigated. (viii) N.A. (ix) N.A. (x) 21.2.1951.

2. TREATMENTS :

1. Control (no manure).
2. 150 lb./ac. of  $P_2O_5$  broadcast before planting.
3. 150 lb./ac. of  $P_2O_5$  drilled 3"-4" deep in furrows before planting.

3. DESIGN :

(i), (ii) R.B.D. with 6 replications. (iii) (a) N.A. (b) 74' x 15'. (iv) N.A.

4. GENERAL :

(i) N.A. (ii) N.A. (iii) Germination, tillers, millable cane and sugarcane yield. (iv) (a) 1950-1951. (b) N.A. (c) N.A. (v) N.A. (vi) Nil. (vii) The experiment was conducted by D.S.R.(G) on cultivator's field.

5. RESULTS :

- (i) 16.00 ton/ac.
- (ii) 3.005 ton/ac.
- (iii) Treatment differences are not significant.
- (iv) Av. yield of sugarcane in ton/ac.

Treatment	Av. yield
1.	15.90
2.	16.57
3.	15.52
S.E./mean	=1.227 ton/ac.

Crop :- Sugarcane.  
Zone :- Sardarnagar (Gorakhpur).

Ref :-U.P. 51(179)/50(168).  
Type :- 'M'.

Object :-To study the response of Sugarcane to Super.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) *Sanai* as G.M. (c) No. (ii) Loam. (iii) A/S on 19.4.1951 as top dressing. (iv) P.O.J. 2878 (mid-late)—improved but unreleased. (v) (a) Hceings by *kudali* on 21.2.1951 and earthing up on 22.8.1951. (b) Trenching by spades. (c) 1680 buds/plot. (d) N.A. (e) —. (vi) 15.2.1951. (vii) Irrigated. (viii) N.A. (ix) N.A. (x) 25, 26.2.1952.

2. TREATMENTS :

1. No manure.
2. Super at 150 lb./ac. of  $P_2O_5$  broadcast before planting.
3. Super at 150 lb./ac. of  $P_2O_5$  broadcast in furrows at the time of planting.

3. DESIGN :

(i), (ii) R.B.D. with 6 replication (iii) (a) 80' x 21'. (b) 74' x 15'. (iv) N.A.

4. GENERAL :

(i) N.A. (ii) N.A. (iii) Germination, tillers, millable sugarcane and yield. (iv) (a) 1950-1951. (b) N.A. (c) N.A. (v) N.A. (vi) Nil. (vii) The experiment was conducted by D.S.R.(G) on cultivator's field.

## 5. RESULTS :

- (i) 18.39 ton/ac.  
 (ii) 2.431 ton/ac.  
 (iii) Treatment differences are not significant.  
 (iv) Av. yield of sugarcane in ton/ac.

Treatment	Av. yield
1.	18.47
2.	17.75
3.	18.95
S.E./mean	=0.992 ton/ac.

Crop :-Sugarcane.

Zone :-Ghugli (Gorakhpur).

Ref :-U.P. 50(173).

Type :-'M'.

Object :-To study the response of Sugarcane to Super.

## 1. BASAL CONDITIONS :

- (i) (a) N.A. (b) Sugarcane. (c) N.A. (ii) *Bhat* soils. (iii) As per treatments +60 lb./ac. of N as *mohwa* cake and 40 lb./ac. of N as A/S on 4.1.1950. (iv) CO-356 (mid-late) improved. (v) (a) 8 hoeings. (b) to (e) N.A. (vi) 6.2.1950. (vii) Irrigated. (viii) and (ix) N.A. (x) 25.2.1951.

## 2. TREATMENTS :

- Control (no manure).
- 150 lb./ac. of  $P_2O_5$  broadcast before planting.
- 150 lb./ac. of  $P_2O_5$  drilled 3"—4" deep in furrows before planting.

## 3. DESIGN :

- (i) and (ii) R.B.D. with 4 replications. (iii) (a) N.A. (b) 79' x 12'. (iv) N.A.

## 4. GENERAL :

- (i) and (ii) N.A. (iii) Germination, tillers, millable cane and sugarcane yield. (iv) (a) 1950—1951. (b) and (c) N.A. (v) N.A. (vi) Nil. (vii) The experiment was conducted by D.S.R. (G) on cultivators' field.

## 5. RESULTS :

- (i) 13.57 ton/ac.  
 (ii) 0.832 ton/ac.  
 (iii) Treatment differences are not significant.  
 (iv) Av. yield of sugarcane in ton/ac.

Treatment	Av. yield
1.	13.50
2.	12.80
3.	14.40
S.E./mean	=0.416 ton/ac.

Crop :-Sugarcane.

Zone :- Ghugli (Gorakhpur).

Ref :-U.P. 51(176).

Type :-'M'.

Object :-To study the response of Sugarcane to Super.

## 1. BASAL CONDITIONS :

- (i) (a) N.A. (b) *Sanai* (G.M.) sown on 22.6.1950. (c) Nil. (ii) *Bhat* soil. (iii) *Sanai* as G.M. Applied *mohwa* cake mixture at 60 lb./ac. of N on 12 to 13.8.1951. (iv) CO—356 (min-late) improved. (v) (a) Ploughing in of *sanai* by victory plough on 12.8.1950. Ploughing by tractor 18.1.1951 and 1.2.1951, 3 hoeings by *kassl*. (b) Flat planting followed by earthing. (c) 2160 buds/plot. (d) N.A. (e) —. (vi) 3.2.1951. (vii) Irrigated. (viii) and (ix) N.A. (x) 16 and 17.2.1952.

## 2. TREATMENTS :

1. No manure.
2. 150 lb./ac. of  $P_2O_5$  broadcasted in field one day before planting.
3. 150 lb./ac. of  $P_2O_5$  applied on the setts at the time of sowing.

## 3. DESIGN :

- (i) and (ii) R.B.D., 4 replications. (iii) (a)  $90' \times 24'$ . (b)  $84' \times 24'$ . (iv) N.A.

## 4. GENERAL :

- (i) and (ii) N.A. (iii) Sugarcane yield. (iv) (a) Yes, 1950—1951. (b) and (c) N.A. (v) N.A. (vi) Nil. (vii) The experiment was conducted by D.S.R.(G) on cultivators' field.

## 5. RESULTS :

- (i) 10.47 ton/ac.  
 (ii) 1.418 ton/ac.  
 (iii) Treatment differences are not significant.  
 (iv) Av. yield of sugarcane in ton/ac.

Treatment	Av. yield
1.	11.08
2.	10.27
3.	10.06
S.E./mean	= 0.709 ton/ac.

Crop :- Sugarcane.

Zone :- Anandnagar (Gorakhpur).

Ref :- U.P.50(177).

Type :- 'M'.

Object :- To study the response of Sugarcane to Super.

## 1. BASAL CONDITIONS :

- (i) (a) N.A. (b) *Sanai* (G.M.). (c) Nil. (ii) Sandy loam. (iii) As per treatments. (iv) CO.453 (mid-late) improved. (v) (a) 4 hoeings. (b) to (c) N.A. (vi) 21.2.1950. (vii) Irrigated. (viii) N.A. (ix) N.A. (x) 25.2.1951.

## 2. TREATMENTS :

1. Control (no manure).
2. 150 lb./ac. of  $P_2O_5$  broadcast before planting.
3. 150 lb./ac. of  $P_2O_5$  drilled  $3''-4''$  deep in furrows before planting.

## 3. DESIGN :

- (i) and (ii) R.B.D. with 4 replications. (iii) (a) N.A. (b)  $57' \times 18'$ . (iv) N.A.

## 4. GENERAL :

- (i) and (ii) N.A. (iii) Germination, tillers, millable cane and sugarcane yield. (iv) (a) 1950—1951. (b) and (c) N.A. (v) N.A. (vi) Nil. (vii) The experiment was conducted by [D.S.R. (G) on cultivator's field.

## 5. RESULTS :

- (i) 32.38 ton/ac.  
 (ii) 3.364 ton/ac.  
 (iii) Treatment differences are not significant.  
 (iv) Av. yield of sugarcane in ton/ac.

Treatment	Av. yield
1.	30.80
2.	34.13
3.	32.20
S.E./mean	= 1.682 ton/ac.

Crop :- Sugarcane.  
Zone :- Anandnagar (Gorakhpur).

Ref :- U.P. 51(180).  
Type :- 'M'.

Object :- To study the response of Sugarcane to Super.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) Fallow. (c) No. (ii) Sandy loam. (iii) N.A. (iv) CO-453 (mid-late) improved. (iv) (a) Ploughing by tractor on 12.1.1951. Ridging by spade on 3.2.1951. Harrowing by tractor on 13.1.1951. 4 hoeings by *kudali*. Earthing by spades on 15.7.1951. (b) N.A. (c) 1752 buds/plot. (d) N.A. (e) — (vi) 20.2.1951. (vii) Irrigated. (viii) N.A. (ix) N.A. (x) 22.2.1952.

2. TREATMENTS :

1. No manure (control).
2. Super at 150 lb./ac. of  $P_2O_5$ .
3. Super at 150 lb./ac. of  $P_2O_5$  applied 3"–4" deep in furrows at the time of planting.

3. DESIGN :

(i) and (ii) R.B.D. with 4 replications, (iii) (a) 73' x 24'. (b) 67' x 18'. (iv) N.A.

4. GENERAL :

(i) and (ii) N.A. (iii) Germination, tillers, millable cane and sugarcane yield. (iv) (a) 1950–1951. (b) and (c) N.A. (v) N.A. (vi) Nil. (vii) Experiment was conducted by D.S.R. (G) on cultivator's field.

5. RESULTS :

- (i) 33.23 ton/ac.  
(ii) 5.946 ton/ac.  
(iii) Treatment differences are not significant.  
(iv) Av. yield of sugarcane in ton/ac.

Treatment	Av. yield
1.	33.46
2.	33.50
3.	32.73
S.E./mean	= 2.973 ton/ac.

Crop :- Sugarcane.  
Zone :- Gorakhpur (Gorakhpur).

Ref :- U.P. 53 (243).  
Type :- 'M'.

Object :- To study the response of Super with G.M. at different times of applications.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) As per treatments. (c) As per treatments. (ii) Sandy loam. (iii) As per treatments. (iv) CO-453 (mid-late) improved. (v) (a) Ploughings by *desi* plough on 16.9.1952, 5.10.1952 and 7.1.1953. Hoeing on 31.10.1952. 2 hoeings by hand *kudali* and 2 weedings. (b) Trench planted. (c) 6720 buds/plot. (d) N.A. (e) —. (vi) 8.2.1953. (vii) Irrigated. (viii) Nil. (ix) 28.17". (x) 24.2.1954.

2. TREATMENTS :

1. Fallow—Sugarcane.
2. Fallow+150 lb./ac. of  $P_2O_5$ , 3" deep at planting of Sugarcane.
3. *Sanai* as G.M.—Sugarcane.
4. *Sanai* as G.M.+150 lb./ac. of  $P_2O_5$  at sowing of *sanai*—Sugarcane.
5. *Sanai* as G.M.+150 lb./ac. of  $P_2O_5$  at turning in of *sanai*—Sugarcane.

3. DESIGN :

(i) and (ii) R.B.D. with 4 replications. (iii) (a) 80' x 21'. (b) 74' x 15'. (iv) N.A.

4. GENERAL :

(i) N.A. (ii) N.A. (iii) Germination, tillers, millable cane and sugarcane yield. (iv) (a) 1953-1955. (b) N.A. (c) N.A. (v) N.A. (vi) Nil. (vii) The experiment was conducted by D.S.R. (G) on cultivator's field.

## 5. RESULTS :

- (i) 17.56 ton/ac.  
 (ii) 3.513 ton/ac.  
 (iii) Treatment differences are not significant.  
 (iv) Av. yield of sugarcane in ton/ac.

Treatment	Av. yield
1.	18.23
2.	15.00
3.	16.38
4.	17.48
5.	20.73
S.E./mean	=1.757 ton/ac.

Crop :-Sugarcane.

Ref :-U.P. 53(242).

Site :-Gorakhpur (Gorakhpur).

Type :-'M'.

Object :-To study the response of Super with G.M. at different times of application.

## 1. BASAL CONDITIONS :

- (i) (a) N.A. (b) As per treatments. (c) As per treatments. (ii) Sandy loam. (iii) As per treatments. (iv) CO. 453 (mid-late) improved. (v) (a) 5 ploughings by tractor and 5 hoeings by hand *kudali*. (b) Trench planting. (c) 7008 buds/plot. (d) N.A. (e) —. (vi) 13.3.1953. (vii) Irrigated. (viii) N.A. (ix) 40.06". (x) 27.2.1954.

## 2. TREATMENTS :

- Fallow—Sugarcane.
- Fallow+150 lb./ac. of  $P_2O_5$ , 3" deep at planting of Sugarcane.
- Sanai* as G.M.—Sugarcane.
- Sanai* as G.M.+150 lb./ac. of  $P_2O_5$  at sowing of *sanai*—Sugarcane.
- Sanai* as G.M.+150 lb./ac. of  $P_2O_5$  at turning in of *sanai*—Sugarcane.

## 3. DESIGN :

- (i) and (ii) R.B.D. with 4 replications. (iii) (a) 73'×24'. (b) 67'×18'. (iv) N.A.

## 4. GENERAL :

- (i) N.A. (ii) N.A. (iii) Germination, tillers, millable cane and sugarcane yield. (iv) (a) 1953—1955. (b) N.A. (c) N.A. (v) N.A. (vi) Nil. (vii) The experiment was conducted by D.S.R. (G) on cultivator's field.

## 5. RESULTS :

- (i) 12.50 ton/ac.  
 (ii) 1.659 ton/ac.  
 (iii) Treatment differences are not significant.  
 (iv) Av. yield of sugarcane in ton/ac.

Treatment	Av. yield
1.	12.60
2.	13.24
3.	11.68
4.	12.20
5.	12.79
S.E./mean	=0.830 ton/ac.

Crop :- Sugarcane.  
Zone :- Sardarnagar (Gorakhpur).

Ref :- U.P. 48(60).  
Type :- 'M'.

Object :- To study the comparative effects of different green manures on Sugarcane.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) Wheat. (c) N.A. (ii) Sandy loam. (iii) N.A. (iv) CO. 356 (medium-late), improved. (v) (a) 2 ploughings by motor tractor and 5 hoeings by *kudali*. (b) Planted in trenches. (c) 1440 buds/plot. (d) N.A. (e) —. (vi) 16.2.1948. (vii) Irrigated. (viii) N.A. (ix) 60°. (x) 18.2.1949.

2. TREATMENTS :

1. *Berseem*.
2. *Sanai*.
3. Pea.
4. *Lobia*.
5. Fallow.
6. *Muttery*.
7. *Arhar*.

3. DESIGN :

(i) and (ii) R.B.D. with 4 replications. (iii) (a) 80'×21'. (b) 74'×14'. (iv) N.A.

4. GENERAL :

(i) N.A. (ii) N.A. (iii) Germination, tillers, millable sugarcane and yield. (iv) (a) No. (b) and (c) N.A. (v) N.A. (vi) Nil. (vii) The experiment was conducted by D.S.R. (G) on cultivator's field.

5. RESULTS :

- (i) 21.35 ton/ac.
- (ii) 3.27 ton/ac.
- (iii) Treatments differ significantly.
- (iv) Av. yield of sugarcane in ton/ac.

Treatment	Av. yield
1.	21.22
2.	25.22
3.	22.38
4.	20.22
5.	21.44
6.	22.68
7.	16.27
S.E./mean	= 1.64 ton/ac.

Crop :- Sugarcane.  
Zone :- Pharenda (Gorakhpur).

Ref :- U.P. 48(64).  
Type :- 'M'.

Object :- To study the comparative effects of green manures on Sugarcane.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) Fallow. (c) Nil. (ii) Sandy loam. (iii) Nil. (iv) CO. 453 (medium-late), improved. (v) (a) 3 ploughings by country plough, twice levelled by *henga*, 3 hoeings by spade and earthing up. (b) to (e) N.A. (vi) 27.2.1948. (vii) Irrigated. (viii) N.A. (ix) 45°. (x) 18.3.1949.

2. TREATMENTS :

1. *Sanai* sown on 29.6.1947, buried on 29.8.1947.
2. *Guar* sown on 29.6.1947, buried on 29.8.1947.
3. *Lobia* sown on 29.6.1947, buried on 29.8.1947.
4. Pea sown on 18.10.1947, buried on 9.1.1947.
5. *Mathi* sown on 18.10.1947, buried on 9.1.1948.
6. Fallow sown on 18.10.1947, buried on 9.1.1948.
7. Rotation peas sown on 18.10.1947, buried on 25.2.1948.

3. DESIGN :

(i) and (ii) R.B.D. with 6 replications. (iii) (a) 73'×30'. (b) 67'×24'. (iv) N.A.



## 4. GENERAL :

(i) N.A. (ii) Dead hearts of top borer and stem borer removed by sickles from 20 to 25.7.1948. (iii) Germination, tillers, millable sugarcane and yield. (iv) (a) to (c) N.A. (v) N.A. (vi) Nil. (vii) The experiment was conducted by D.S.R. (G) on cultivator's field.

## 5. RESULTS :

- (i) 22.32 ton/ac.  
 (ii) 5.76 ton/ac.  
 (iii) Treatment differences are not significant.  
 (iv) Av. yield of sugarcane in ton/ac.

Treatment	Av. yield
1.	23.88
2.	19.73
3.	26.24
4.	20.69
5.	23.72
6.	26.30
7.	15.69
S.E./mean	= 2.88 ton/ac.

Crop :- Sugarcane.

Ref :- U.P. 49(158).

Zone :- Pharenda (Gorakhpur).

Type :- 'M'.

Object :- To study the comparative effects of different green manures on Sugarcane.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) As per treatments. (c) N.A. (ii) Sandy loam. (iii) As per treatments. Also A/S+Castor cake at 60 lb./ac. of N. (iv) CO-453 (mid-late) improved. (v) (a) 6 hoeings. (b) to (e) N.A. (v) 10.2.1949. (vii) Irrigated. (viii) and (ix) N.A. (x) 1.3.1950.

## 2. TREATMENTS :

- |                         |                                  |
|-------------------------|----------------------------------|
| 1. <i>Sanai</i> (G.M.). | 5. <i>Dhaincha</i> .             |
| 2. <i>Guar</i> .        | 6. <i>Matri</i> .                |
| 3. <i>Pea</i> .         | 7. <i>Toria</i> (early mustard). |
| 4. <i>Lobia</i> .       | 8. Fallow.                       |

## 3. DESIGN :

(i) and (ii) R.B.D. with 4 replications. (iii) (a) N.A. (b) 67' x 24'. (iv) N.A.

## 4. GENERAL :

(i) and (ii) N.A. (iii) Germination, tillers, millable cane and sugarcane yield. (iv) (a) No. (b) and (c) N.A. (v) N.A. (vi) Nil. (vii) The experiment was conducted by D.S.R.(G) on cultivator's field.

## 5. RESULTS :

- (i) 33.52 ton/ac.  
 (ii) 4.495 ton/ac.  
 (iii) Treatment differences are not significant.  
 (iv) Av. yield of sugarcane in ton/ac.

Treatment	Av. yield	Treatment	Av. yield
1.	33.06	5.	31.07
2.	33.46	6.	32.52
3.	34.89	7.	34.44
4.	37.26	8.	31.48
S.E./mean	= 2.248 ton/ac.		

Crop :- Sugarcane.  
Zone :- Sardarnagar (Gorakhpur).

Ref :- U.P. 49(157).

Type :- 'M'.

Object :- To study the comparative effects of different green manures on Sugarcane.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) As per treatments. (c) N.A. (ii) Loam. (iii) As per treatments. (iv) CO-356 (mid-late) improved. (v) (a) 1 hoeing. (b) to (e) N.A. (vi) 3.2.1949. (vii) Irrigated. (viii) and (ix) N.A. (x) 5 and 6.2.1950.

## 2. TREATMENTS :

1. <i>Sanai</i> .	5. <i>Dhaincha</i> .
2. <i>Arhar</i> .	6. Pea.
3. <i>Lobia</i> .	7. <i>Guar</i> .
4. <i>Matri</i> .	8. Fallow.

## 3. DESIGN :

(i) and (ii) R.B.D., 4 replications. (iii) (a) N.A. (b) 74' x 14'. (iv) N.A.

## 4. GENERAL :

(i) and (ii) N.A. (iii) Germination, tillers, millable cane and sugarcane yield. (iv) (a) No. (b) and (c) N.A. (v) N.A. (vi) Nil. (vii) The experiment was conducted by D.S.R.(G) on cultivators' field.

## 5. RESULTS :

(i) 19.33 ton/ac.  
(ii) 5.102 ton/ac.  
(iii) Treatment differences are significant.  
(iv) Av. yield of sugarcane in ton/ac.

Treatment	Av. yield	Treatment	Av. yield
1.	18.32	5.	22.62
2.	12.71	6.	23.87
3.	25.35	7.	17.81
4.	19.93	8.	14.02
	S.E./mean	= 2.551 ton/ac.	

Crop :- Sugarcane.  
Zone :- Hardoi (Hardoi).

Ref :- U.P. 48(69).

Type :- 'M'.

Object :- To study the response of Sugarcane to Super.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) *Guar*. (c) N.A. (ii) Loam. (iii) As per treatments. (iv) CO.453 (late) improved. (v) (a) Ploughings by *desi* plough on 13 and 15.1.1948 ploughings with *gujar* plough after *palewa* on 29.2.1948. Ploughings with *desi* plough on 2,3 and 4.3.1948. (b) Flat planting. (c) 2160 buds/plot. (d) Rows 3' apart. (e) N.A. (vi) 5.3.1948. (vii) Irrigated. (viii) N.A. (ix) 60". (x) 15.3.1949.

## 2. TREATMENTS :

P<sub>2</sub>O<sub>5</sub> applied as top dressing on 17.6.1948.

- No P<sub>2</sub>O<sub>5</sub>.
- 40 lb./ac. of P<sub>2</sub>O<sub>5</sub> in furrows 3"—4" deep.
- 80 lb./ac. of P<sub>2</sub>O<sub>5</sub> in furrows 3"—4" deep.

## 3. DESIGN :

(i) and (ii) R.B.D. with 6 replications. (iii) (a) 72' x 36'. (b) 67' x 30'. (iv) N.A.

## 4. GENERAL :

(i) and (ii) N.A. (iii) Germination and sugarcane yield. (iv) (a) No. (b) and (c) N.A. (v) N.A. (vi) Nil. (vii) The experiment was conducted by D.S.R. (G) on cultivators' field.

## 5. RESULTS :

- (i) 33.57 ton/ac.  
 (ii) 1.227 ton/ac.  
 (iii) Treatment differences are not significant.  
 (iv) Av. yield of sugarcane in ton/ac.

Treatment	Av. yield
1.	32.73
2.	33.63
3.	34.36
S.E./mean	= 0.501 ton/ac.

Crop :- Sugarcane.  
 Zone :- Gola (Kheri).

Ref :- U.P. 48(68).  
 Type :- 'M'.

Object :- To study the response of Sugarcane to Super.

## 1. BASAL CONDITIONS :

- (i) (a) N.A. (b) Sugarcane (*ratoon*). (c) N.A. (ii) Light loam. (iii) Top dressing by Castor cake at 75 lb./ac. of N, A/S at 25 lb./ac. of N (iv) CO.527 (early) improved. (iv) (a) Harrow plough twice. Mould board on 15.10.1947, disc on 29.10.1947, 16 and 17.10.1947. Hoeings by *kudali* on 12.3.1948, 3, 4 and 11.4.1948. Earthing up on 7.5.1948 and 5.6.1948. Hoeings by cultivator on 7.5.1948 and 5.6.1948. (b) Flat sowing. (c) 1752 buds/plot. (d) Rows 3' apart. (e) —. (vi) 6 and 7.2.1948. (vii) Irrigated. (viii) N.A. (ix) 45.91'. (x) 25.2.1949 to 7.3.1949.

## 2. TREATMENTS :

1. No  $P_2O_5$ .  
 2. 40 lb./ac. of  $P_2O_5$  in furrows 3"—4" deep.  
 3. 80 lb./ac. of  $P_2O_5$  in furrows 3"—4" deep.  
 Super applied on 6, 7.2.1948.

## 3. DESIGN :

- (i) and (ii) R.B.D. with 6 replications. (iii) (a) 73' x 24'. (b) 67' x 18'. (iv) N.A.

## 4. GENERAL :

- (i) and (ii) N.A. (iii) Germination and sugarcane yield. (iv) (a) No. (b) and (c) N.A. (v) N.A. (vi) Nil.  
 (vi) The experiment was conducted by D.S.R. (G) on cultivator's field.

## 5. RESULTS :

- (i) 19.49 ton/ac.  
 (ii) 2.402 ton/ac.  
 (iii) Treatment differences are not significant.  
 (iv) Av. yield of sugarcane in ton/ac.

Treatment	Av. yield
1.	19.27
2.	19.50
3.	19.71
S.E./mean	= 0.981 ton/ac.

Crop :- Sugarcane.  
 Zone :- Kichha (Kheri).

Ref :- U.P. 49(146).  
 Type :- 'M'.

Object :- To study the response of Sugarcane to Super.

## 1. BASAL CONDITIONS :

- (i) (a) N.A. (b) Fallow. (c) Nil. (ii) Clay loam. (iii) As per treatments. (iv) CO.421 (medium) improved. (v) (a) Ploughings by mould board in June 1948, ploughings by Athens plough in June 1948 ; Oct. 1948 ; by *desi* plough in Dec. 1948 ; By Athen's plough on 22.2.1949 ; Ransom harrowing twice on 25.2.1949 ; planking on 27.2.1949. (b) Flat planting (c) 1458 buds/plot, (d) N.A. (e) —. (vi) 16.3.1949. (vii) N.A. (viii) N.A. (ix) 60°. (x) 14.3.1950.

## 2. TREATMENTS :

1. No  $P_2O_5$ .
2. 60 lb./ac. of  $P_2O_5$  broadcast at planting time.
3. 60 lb./ac. of  $P_2O_5$  in furrows 3"-4" deep at planting time.

## 3. DESIGN :

(i), (ii) R.B.D. with 6 replications. (iii) (a) and (b) 81'×21'. (iv) N.A.

## 4. GENERAL :

(i) N.A. (ii) N.A. (iii) Germination and sugarcane yield. (iv) (a) 1949—1951. (b) N.A. (c) N.A. (v) N.A. (vi) There was no experiment during 1950—1951. (vii) The experiment was conducted by D.S.R. (S) on cultivators' field.

## 5. RESULTS :

- (i) 31.90 ton/ac.
- (ii) 1.531 ton/ac.
- (iii) Treatment differences are highly significant.
- (iv) Av. yield of sugarcane in ton/ac.

Treatment	Av. yield
1.	31.65
2.	33.90
3.	30.15
S.E./mean	=0.625 ton/ac.

Crop :- Sugarcane.

Zone :- Kichha (Kheri).

Ref :- U.P. 51(151).

Type :- 'M'.

Object :- To study the response of Sugarcane to Super.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) *Sanai* as G.M. (c) No. (ii) Loam. (iii) *Sanai*; Top dressing of *mohwa* cake at 10 md./ac. on 25.6.1951. (iv) CO-527 (early) improved. (v) (a) Ploughings by tractor on 21, 24.1.1951 hoeing by cultivator and *kudali* on 14.2.1951; 30.3.1951 and 27.4.1951 and earthing up by tractor on 15.6.1951. (b) Flat sowing. (c) 1752 buds/plot. (d) Rows 3' apart. (e) —. (vi) 7.2.1951. (vii) Irrigated. (viii) N.A. (ix) 47". (x) 1.1.1952.

## 2. TREATMENTS :

1. No  $P_2O_5$ .
  2. 60 lb./ac. of  $P_2O_5$  applied broadcast before planting.
  3. 60 lb./ac. of  $P_2O_5$  applied 3"-4" deep in furrows before planting.
- $P_2O_5$  as Super.

## 3. DESIGN :

(i), (ii) R.B.D. with 6 replications. (iii) (a) 73'×24'. (b) 67'×18'. (iv) N.A.

## 4. GENERAL :

(i) N.A. (ii) N.A. (iii) Germination and yield. (iv) (a) 1949—1951. (b) N.A. (c) N.A. (v) N.A. (vi) No experiment during 1950-1951. (vii) The experiment was conducted by D.S.R. (S) on cultivator's field.

## 5. RESULTS :

- (i) 19.58 ton/ac.
- (ii) 5.090 ton/ac.
- (iii) Treatment differences are not significant.
- (iv) Av. yield of sugarcane in ton/ac.

Treatment	Av. yield
1.	19.24
2.	18.97
3.	20.54
S.E./mean	=2.545 ton/ac.

Note :- 2 replications have been rejected due to poor yield and yields missing. Hence only 4 replications have been included in the analysis.

Crop :- Sugarcane.  
Zone :- Golagokarnath (Kheri).

Ref :- U.P. 50(163)  
Type :- 'M'.

Object : - To find out the comparative effect of different green manures.

### 1. BASAL CONDITIONS :

- (i) (a) N.A. (b) Green manure crops. (c) Nil. (ii) Loam. (iii) Nil. (iv) CO. 527. (v) (a) Ploughing by spade on 6 and 12.3.1950 ; 3 hoeings by *kudali* and cultivator on 7.4.1950 and 15 and 30.5.1950. (b) Flat sowing behind the ridge. (c) 2187 buds/plot. (d) Ridges 3' apart. (e) —. (vi) 13 and 14.3.1950. (vii) Irrigated. (viii) N.A. (ix) 47". (x) 25 and 30.12.1950.

### 2. TREATMENTS :

1. Pea at 30 seers/ac.
2. *Sanai* at 40 seers/ac.
3. *Dhaincha* at 20 seers/ac.
4. Fallow (control).
5. *Lobia* at 25 srs./ac.
6. *Urd* at 20 srs./ac.
7. Pea root for fodder at 30 srs./ac.

### 3. DESIGN :

- (i), (ii) R.B.D. with 4 replications. (iii) (a) 81' x 27'. (b) 75' x 21'. (iv) N.A.

### 4. GENERAL :

- (i) N.A. (ii) N.A. (iii) Germination % and sugarcane yield. (iv) (a) No. (b) and (c) N.A. (v) N.A. (vi) Nil. (vii) The experiment was conducted by D.S.R.(S) on cultivators' field.

### 5. RESULTS :

- (i) 5.32 ton/ac.  
(ii) 2.31 ton/ac.  
(iii) Treatment do not differ significantly.  
(iv) Av. yield of sugarcane in ton/ac.

Treatment	Av. yield
1.	6.22
2.	6.35
3.	5.21
4.	4.83
5.	5.72
6.	4.45
S.E./mean	=1.16 ton/ac.

Crop :- Sugarcane.  
Zone :- Golagokarnath (Kheri).

Ref :- U.P. 53(232).  
Type :- 'M'.

Object : - To study the response of Super in combination with green manure on Sugarcane.

### 1. BASAL CONDITIONS :

- (i) (a) N.A. (b) *Sanai* for G.M. (c) N.A. (ii) Loam. (iii) 5 md. of *neem* cake at planting in furrows on 18.3.1953. 1½ md. of A/S on 12. 6. 1953 as top dressing. (iv) CO. 527. (v) (a) 5 ploughings by mesten plough. 2 hoeings by *kudali* and 4 cultivators on 16.5. 1853, 4.6.1953 (b) Flat planting. (c) 1125 buds/plot. (d) Rows 3' apart. (e) —. (vi) 18.3.1953 (vii) Irrigated. (viii) N.A. (ix) 4.5". (x) 22 and 23.1.1954.

### 2. TREATMENTS :

1. No Super—*Sanai* green manuring.
2. 60 lb./ac. of P<sub>2</sub>O<sub>5</sub> at *sanai* sowing (broadcast).
3. 60 lb./ac. of P<sub>2</sub>O<sub>5</sub> at *sanai* turning in time.

### 3. DESIGN :

- (i), (ii) R.B.D. with 6 replications. (iii) (a) 75' x 15'. (b) 69' x 9'. (iv) N.A.

## 4. GENERAL :

(i) N.A. (ii) N.A. (iii) Germination %, tillers and sugarcane yield. (iv) (a) 1950-1955. (b) and (c) N.A. (vi) Nil. (vii) The expt. was conducted by D.S.R. (S) on cultivators' field.

## 5. RESULTS :

- (i) 19.03 ton/ac.  
 (ii) 4.65 ton/ac.  
 (iii) Treatments do not differ significantly.  
 (iv) Av. yield of sugarcane in ton/ac.

Treatment	Av. yield
1.	18.13
2.	18.51
3.	20.44
S.E./mean	= 1.89 ton/ac.

Crop :- Sugarcane.

Zone :- Lakhimpur (Kheri).

Ref :- U.P. 53(237).

Type :- 'M'.

Object :- To study the effect of placement of Super on Sugarcane.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) *Sanai* as G.M. (c) N.A. (ii) Light loam. (iii) Top dressing of compost 100 md. on 22.6.1953. (iv) CO-527. (v) (a) 7 hoeings by cultivator (bullock and tractors) on 13.3.1953 and 4.4.1953. by *kudali* on 13.3.1953, 28.3.1953, 31.3.1953, 4.3.1953 and 13.5.1953. (b) Flat planting. (c) 1440 buds/plot. (d) N.A. (e) -. (vi) 30, 31.1.1953 and 1.2.1953. (vii) Irrigated. (viii) N.A. (ix) 45°. (x) 23, 24.2.1954.

## 2. TREATMENTS :

- No manure.
- 60 lb./ac.  $P_2O_5$  as Super..
- 120 lb./ac.  $P_2O_5$  as Super.

## 3. DESIGN :

(i) and (ii) R.B.D. with 6 replications. (iii) (a) 60' x 24'. (b) 54' x 18'. (iv) N.A.

## 4. GENERAL :

(i) N.A. (ii) N.A. (iii) Germination, tillers, millable cane and sugarcane yield. (iv) (a) No. (b) N.A. (c) N.A. (v) N.A. (vi) Nil. (vii) The experiment was conducted by D.S.R. (S) on cultivator's field.

## 5. RESULTS :

- (i) 32.02 ton/ac.  
 (ii) 7.02 ton/ac.  
 (iii) Treatments do not differ significantly.  
 (iv) Av. yield of sugarcane in ton/ac.

Treatment	Av. yield
1.	32.72
2.	34.06
3.	29.29
S.E./mean	= 2.86 ton/ac.

Crop :- Sugarcane.

Zone :- Gola (Kheri).

Ref :- U.P. 52(202).

Type :- 'M'.

Object :- To study the response of Sugarcane to Super.

## BASAL CONDITIONS :

(i) (a) N.A. (b) *Sanai* as G.M. (c) No. (ii) Sandy loam. (iii) *Sanai*, G.N. C., at 10 md/ac on 25.3.1952. top dressing at 1½ md./ac on 21.6.1952. (iv) CO 527 (early) improved. (v) (a) Ploughings by disc plough on 5.2.1952 and 2.2.1952, earthing up by tractor on 30.6.1952, hoeing by *kudali* on 25.2.1952 and by cultivator on 18.3.1952, 25.4.1952 and 26.5.1952. (b) Flat planting (c) 1752 buds/plot. (d) N.A. (e) -. (vi) 10.2.1952. (vii) Irrigated. (viii) N.A. (ix) 40°. (x) 10, 11.2.1953.

## 2. TREATMENTS :

1. Control (no manure).
2. 120 lb./ac. of  $P_2O_5$  broadcast before planting.
3. 120 lb./ac. of  $P_2O_5$  applied 3"—4" deep.  
 $P_2O_5$  as Super before planting.

## 3. DESIGN :

(i) and (ii) R.B.D with 6 replications. (iii) (a) 73'×28'. (b) 66'×21'. (iv) N.A.

## 4. GENERAL :

(i) N.A. (ii) N.A. (iii) Germination % and sugarcane yield. (iv) (a) No. (b) N.A. (c) N.A. (v) N.A. (vi) Nil. (vii) The experiment was conducted by D.S.R. (S) on cultivators' field.

## 5. RESULTS :

- (i) 25.84 ton/ac.
- (ii) 2.813 ton/ac.
- (iii) Treatment differences are not significant.
- (iv) Av. yield of sugarcane in ton/ac.

Treatment	Av. yield
1.	26.91
2.	26.46
3.	24.16
S.E./mean	= 1.148 ton/ac.

Crop :- Sugarcane.

Zone :- Gola (Kheri).

Ref :- U.P. 49(149).

Type :- 'M'.

Object :- To study the response of Sugarcane to Super.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) *Sanai* as G.M. (c) No. (ii) Light loam. (iii) A/S at 2 md. 5 seers on 24.4.1949. (iv) CO. 453 (early) improved. (v) (a) Ploughings by harrow plough on 17.2.1949. By disc harrow on 18 and 25.2.1949. Hoeings by *kudali* on 7,8,19 and 24.4.1949; 12,14 and 23.5.1949 and 16 to 19.6.1949. Earthing up on 2 and 3.7.1949. (b) Flat sowing. (c) 1752 buds/plot. (d) Rows 3' apart. (e) —. (vi) 1 and 2.3.1949. (vii) Irrigated. (viii) N.A. (ix) 45.91°. (x) 1 to 8.3.1950.

## 2. TREATMENTS :

1. No  $P_2O_5$ .
2. 60 lb./ac. of  $P_2O_5$  as broadcast at planting time.
3. 60 lb./ac. of  $P_2O_5$ , 3"—4" deep in furrows at the time of planting.

## 3. DESIGN :

(i) and (ii) R.B.D. 6 replications. (iii) (a) 73'×24'. (b) 67'×18'. (iv) N.A.

## 4. GENERAL :

(i) and (ii) N.A. (iii) Germination and sugarcane yield. (iv) (a) No. (b) and (c) N.A. (v) N.A. (vi) Nil. (vii) The experiment was conducted by D.S.R. (S) on cultivators' field.

## 5. RESULTS :

- (i) 12.02 ton/ac.
- (ii) 4.022 ton/ac.
- (iii) Treatment differences are not significant.
- (iv) Av. yield of sugarcane in ton/ac.

Treatment	Av. yield
1.	11.53
2.	12.99
3.	11.53
S.E./mean	= 1.642 ton/ac.

Crop :- Sugarcane.  
Zone :- Gola (Kheri).

Ref :- U.P. 51(148).  
Type :- 'M'.

Object :- To study the response of Sugarcane to Super in combination with green manures.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) *Sanai* as G.M. (c) As per treatments. (ii) Loam. (ii) Super as per treatments and *mohwa* cake at 10 md./ac. on 3.5.1951. (iv) CO.527 (early) improved. (v) (a) 4 hoeings by *kudali* on 10.11.1950, 8.12.1950, 15.7.1951 and 2.4.1951. Earthing up on 20.6.1951 by spade. (b) Flat sowing. (c) 1215 buds/plot. (d) Rows 3' apart. (e) —. (vi) 6.10.1950. (vii) Irrigated. (viii) N.A. (ix) 47". (x) 31.12.1951.

2. TREATMENTS :

1. *Sanai* green manure (control).
2. Super at 60 lb./ac. of  $P_2O_5$  broadcast at the time of sowing *sanai*.
3. Super at 60 lb./ac. of  $P_2O_5$  applied at the the time of ploughing in of *sanai*.  
Application of  $P_2O_5$  in (2) on 25.6.1950 and in (3) on 10.11.1950.

3. DESIGN :

(i) and (ii) R.B.D. 6 replications. (iii) (a) 81' × 15'. (b) 75' × 9'. (iv) N.A.

4. GENERAL :

(i) and (ii) N.A. (iii) Germination and sugarcane yield. (iv) (a) No. (b) and (c) N.A. (v) N.A. (vi) One replication has been rejected due to poor yield and missing value. Hence only 5 replications have been taken for analysis. (vii) The experiment was conducted by D.S.R. (S) on cultivators' field.

5. RESULTS :

- (i) 30.48 ton/ac.
- (ii) 4.218 ton/ac.
- (iii) Treatment differences are not significant.
- (iv) Av. yield of sugarcane in ton/ac.

Treatment	Av. yield
1.	31.41
2.	30.28
3.	29.75
S.E./mean	= 1.886 ton/ac.

Crop :- Sugarcane.  
Zone :- Gola (Kheri).

Ref :- U.P. 49(147).  
Type :- 'M'.

Object :- To study the response of Sugarcane to Super.

1. BASAL CONDITIONS :

(i) (a) N.A., (b) Fallow. (c) Nil. (ii) Clay loam. (iii) No. (iv) (a) CO. 421. (v) (a) Ploughings by mould board in June 1948, ploughings by Athens in October, 1948 by disc plough in December, 1948, ransum harrowing on 25.2.1949, planking on 27.2.1949, 5 hoeings by bullock cultivator on 17.4.1949 followed by hand *kassi* on 17.4.1949, and hoeing by hand *kassi* on 7, and 28.5.1949 and 5.7.1949. (b) Flat planting by bamboo ridger with T.D. 18 tractor. (c) 1458 buds/plot. (d) N.A. (e) —. (vi) 6.3.1949. (vii) N.A. (viii) N.A. (ix) 60". (x) 14.3.1950.

2. TREATMENTS :

1. No manure (control):
2. 60 lb /ac. of  $P_2O_5$  as Super broadcast.
3. 60 lb /ac. of  $P_2O_5$  as Super applied in furrows.

3. DESIGN :

(i) and (ii) R.B.D., 6 replications. (iii) (a) and (b) 81' × 21'. (iv) N.A.

4. GENERAL :

(i) N.A. (ii) N.A. (iii) Germination counts and yield of sugarcane. (iv) (a) No. (b) to (c) N.A. (v) N.A. (vi) Nil. (vii) The experiment was conducted by D.S.R. on cultivator's field.



## 5. RESULTS :

- (i) 16.42 ton/ac.
- (ii) 1.00 ton/ac.
- (iii) Treatment differences are not significant.
- (iv) Av. yield of sugarcane in ton/ac.

Treatment	Av. yield
1.	17.03
2.	16.66
3.	15.57
S.E./mean	=0.408 ton/ac. *

Crop :- Sugarcane.

Zone :- Modinagar (Meerut).

Ref :- U.P. 48(85).

Type :- 'M'.

Object :- To study the response of Sugarcane to Super.

## 1. BASAL CONDITIONS :

- (i) (a) to (c) N.A. (ii) N.A. (iii) N.A. (iv) N.A. (v) (a) to (e) N.A. (vi) N.A. (vii) N.A. (viii) N.A. (ix) N.A. (x) N.A.

## 2. TREATMENTS :

- 1. Control.
- 2. Super at 40 lb./ac. of  $P_2O_5$  in furrows 3"-4" deep.
- 3. Super at 80 lb./ac. of  $P_2O_5$  in furrows 3"-4" deep.

$P_2O_5$  in the form of Super applied at tillering time, as Super could not be made available at planting time.

## 3. DESIGN :

- (i) and (ii) R.B.D. with 6 replications. (iii) (a) N.A. (b) 73'x24'. (iv) N.A.

## 4. GENERAL :

- (i) N.A. (ii) N.A. (iii) Sugarcane yield. (iv) (a) No. (b) and (c) N.A. (v) N.A. (vi) Nil. (vii) The experiment was conducted by D.S.R.(M) on cultivator's field.

## 5. RESULTS :

- (i) 25.62 ton/ac.
- (ii) 1.235 ton/ac.
- (iii) Treatment differences are significant.
- (iv) Av. yield of sugarcane in ton/ac.

Treatment	Av. yield
1.	22.54
2.	25.76
3.	28.57
S.E./mean	= 0.618 ton/ac.

Crop :- Sugarcane.

Zone :- Simbhaoli (Meerut).

Ref :- U.P. 48(83).

Type :- 'M'.

Object :- To study the response of Sugarcane to Super.

## 1. BASAL CONDITIONS :

- (i) (a) to (c) N.A. (ii) to (iv) N.A. (v) (a) to (e) N.A. (vi) to (x) N.A.

## 2. TREATMENTS :

- 1. No Super.
  - 2. 40 lb./ac. of  $P_2O_5$  in furrows 3"-4" deep.
  - 3. 80 lb./ac. of  $P_2O_5$  in furrows 3"-4" deep.
- $P_2O_5$  applied as Super.

## 3. DESIGN :

(i) and (ii) R.B.D. with 6 replications. (iii) (a) 64'×27'. (b) 58'×21'. (iv) N.A.

## 4. GENERAL :

(i) and (ii) N.A. (iii) Sugarcane yield. (iv) (a) No. (b) and (c) N.A. (v) N.A. (vi) Nil. (vii) The experiment was conducted by D.S.R.(M) on cultivators' field.

## 5. RESULTS :

- (i) 30.61 ton/ac.  
 (ii) 1.883 ton/ac.  
 (iii) Treatment differences are highly significant.  
 (iv) Av. yield of sugarcane in ton/ac.

Treatment	Av. yield
1.	28.12
2.	31.09
3.	32.62
S.E./mean	=0.769 ton/ac.

Crop :- Sugarcane.

Ref :- U.P. 49(174).

Zone :- Simbhaoli (Meerut).

Type :- 'M'.

Object :- To study the response of Sugarcane to Super.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) *Guar*. (c) N.A. (ii) Loam. (iii) Applied 100 lb./ac. of N on 11.6.1949. (iv) Improved. (v) (a) Ploughing by *puja* plough on 23 and 25.10.1948 ; 15.11.1948. Ploughing by *desi* plough on 25.11.1948, 20.12.1948 and 25.1.1949. Cultivation by *desi* plough on 25.2.1949. Cultivation on 26.2.1949 ; cultivation by *desi* plough on 2.3.1949. Applied cultivator on 25.4.1949, cultivation by M.C. cultivator on 18.5.1949 and 16.6.1949. Digging by *kassi* on 26.4.1949. (b) to (c) N.A. (vi) 3.3.1949. (vii) Irrigated. (viii) to (x) N.A.

## 2. TREATMENTS :

- Control.
- 60 lb./ac. of  $P_2O_5$  by broadcast.
- 60 lb./ac. of  $P_2O_5$  applied in furrows 4" deep.  
Manuring by double Super on 18.5.1949.

## 3. DESIGN :

(i) and (ii) R.B.D. with 6 replications. (iii) (a) 64'×27'. (b) 58'×21'. (iv) N.A.

## 4. GENERAL :

(i) and (ii) N.A. (iii) Germination, tillers and sugarcane yield. (iv) (a) No. (b) and (c) N.A. (v) N.A. (vi) Nil. (vii) The experiment was conducted by D.S.R.(M) on cultivators' field.

## 5. RESULTS :

- (i) 30.24 ton/ac.  
 (ii) 2.630 ton/ac.  
 (iii) Treatment differences are not significant.  
 (iv) Av. yield of sugarcane in ton/ac.

Treatment	Av. yield
1.	30.18
2.	29.78
3.	30.76
S.E./mean	=1.074 ton/ac.

Crop :- Sugarcane.  
Zone :- Daurala (Meerut).

Ref :-U.P. 49(173).

Type :- 'M'.

Object :-To study the response of Sugarcane to Super.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) *Sanai*. (c) Nil. (ii) Sandy loam. (iii) G.N.C. applied at 15 md./ac. on 8.2.1949. (iv) Improved. (v) (a) Ploughing on 8.1.1949 and ploughing by *desi* plough on 24.1.1949. (b) to (c) N.A. (vi) 14.3.1949. (vii) Irrigated. (viii) N.A. (ix) N.A. (x) N.A.

2. TREATMENTS :

1. Control.
  2. 60 lb./ac. of  $P_2O_5$  broadcast.
  3. 60 lb./ac. of  $P_2O_5$  applied in furrows 4" deep.
- Super was applied at tillering time.

3. DESIGN :

(i), (ii) R.B.D. with 6 replications (iii) (a) 73' x 24'. (b) 67' x 18'. (iv) N.A.

4. GENERAL :

(i) N.A. (ii) N.A. (iii) Germination, tillers and yield of sugarcane. (iv) (a) No. (b) N.A. (c) N.A. (v) N.A. (vi) Nil. (vii) The experiment was conducted by D.S.R.(M) on cultivator's field.

5. RESULTS :

- (i) 18.11 ton/ac.
- (ii) 1.833 ton/ac.
- (iii) Treatment differences are not significant.
- (iv) Av. yield of sugarcane in ton/ac.

Treatment	Av. yield
1.	19.46
2.	18.00
3.	16.86
S.E./mean	=0.748 ton/ac.

Crop :- Sugarcane.  
Zone :- Daurala (Meerut).

Ref :-U.P. 50(220).

Type :- 'M'.

Object :-To study the response of Sugarcane to Super.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) Maize. (c) N.A. (ii) Loam. (iii) Nil. (iv) CO-453 (improved). (v) (a) and (b) N.A. (c) 67 setts/row. (d) N.A. (e) —. (vi) 12.3.1950. (vii) N.A. (viii) N.A. (ix) N.A. (x) N.A.

2. TREATMENTS :

All combinations of (1) and (2)+a control (no manure).

- (1) 2 methods of application of  $P_2O_5$  :  $M_1$ =broadcast and  $M_2$ =applied in furrows 3"—4" deep.
- (2) 2 levels of Super :  $S_1$ =60 and  $S_2$ =120 lb./ac. of  $P_2O_5$ .

3. DESIGN :

(i), (ii) R.B.D. with 4 replications. (iii) (a) 65' x 30'. (b) 59' x 24'. (iv) N.A.

4. GENERAL :

(i) N.A. (ii) N.A. (iii) Germination, tillers and sugarcane yield. (iv) (a) 1950-1952. (b) N.A. (c) N.A. (v) N.A. (vi) Nil. (vii) The experiment was conducted by D.S.R.(M) on cultivator's field.

5. RESULTS :

- (i) 29.68 ton/ac.
- (ii) 2.115 ton/ac.
- (iii) Only main effect of S is significant. All other effects are not significant.

(iv) Av. yield of sugarcane in ton/ac.

Control = 27.72 ton/ac.

	M <sub>1</sub>	M <sub>2</sub>	Mean
S <sub>1</sub>	30.36	26.94	28.65
S <sub>2</sub>	31.40	31.99	31.70
Mean	30.88	29.46	30.17

S.E. of any marginal mean = 0.748 ton/ac.  
 S.E. of body of table = 1.058 ton/ac.

Crop :- Sugarcane.

Ref :- U.P. 51(196)/50(220).

Zone :- Daurala (Meerut).

Type :- 'M'.

Object :- To study the response of Sugarcane to Super.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) *Metha*. (c) N.A. (ii) Loam. (iii) N.A. (iv) CO-453 (improved). (v) (a) N.A. (b) Flat system of planting. (c) 63, three budded setts/row; 1512 buds/plot. (d) N.A. (e) —. (vi) 21.2.1951. (vii) N.A. (viii) N.A. (ix) N.A. (x) N.A.

## 2. TREATMENTS :

All combinations of (1) and (2) + a control (no manure).

- (1) 2 methods of application of P<sub>2</sub>O<sub>5</sub> : M<sub>1</sub>=Broadcast and M<sub>2</sub>=applied in furrows 3"-4" deep.  
 (2) 2 levels of Super : S<sub>1</sub>=60 and S<sub>2</sub>=120 lb./ac. of P<sub>2</sub>O<sub>5</sub>.

## 3. DESIGN :

(i), (ii) R.B.D. with 5 replications. (iii) (a) 61'×24'. (b) 55'×18'. (iv) N.A.

## 4. GENERAL :

(i) N.A. (ii) N.A. (iii) Germination, tillers and sugarcane yield. (iv) (a) 1950-1952. (b) N.A. (c) N.A. (v) N.A. (vi) Nil. (vii) The experiment was conducted by D.S.R.(M) on cultivator's field.

## 5. RESULTS :

- (i) 35.04 ton/ac.  
 (ii) 0.996 ton/ac.  
 (iii) Only main effect of M is significant.  
 (iv) Av. yield of sugarcane in ton/ac.

Control = 35.28 ton/ac.

	M <sub>1</sub>	M <sub>2</sub>	Mean
S <sub>1</sub>	34.34	35.27	34.80
S <sub>2</sub>	34.67	35.64	35.16
Mean	34.50	35.46	34.98

S.E. of any marginal mean = 0.315 ton/ac.  
 S.E. of body of table = 0.446 ton/ac.

Crop :- Sugarcane.  
Zone :- Daurala (Meerut).

Ref :- U.P. 52(268)/51(196)/50(220).  
Type :- 'M'.

Object :- To study the response of Sugarcane to Super.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) Fallow. (c) Nil. (ii) Loam. (iii) Manuring with Okhla *S'adge* 93-75 md. on 29.2.1952. Manuring of A/S at 1 md. 5 seers 5 chh on 7.6.1952. (iv) Improved. (v) (a) Ploughing by *desi* plough on 11.4.1952 and hoeing by spade on 28.4.1952, 26.5.1952 and hoeing by *desi* plough on 14.6.1952. Hoeing by *phawra* on 4.7.1952 and earthing by *phawra* on 25.7.1952. (b) Flat planting. (c) N.A. (d) Rows 3' apart. (e) —. (vi) 9.3.1952. (vii) Irrigated. (viii) N.A. (ix) N.A. (x) 29.1.1953.

2. TREATMENTS :

All combinations of (1) and (2) + a control (no manure).

(1) 2 methods of application of  $P_2O_5$  :  $M_1$  = broadcast and  $M_2$  = applied in furrows 3"-4" deep.

(2) 2 levels of Super :  $S_1$  = 60 and  $S_2$  = 120 lb./ac. of  $P_2O_5$ .

3. DESIGN :

(i), (ii) R.B.D. with 5 replications (iii) (a) and (b) 66' x 15'. (iv) N.A.

4. GENERAL :

(i) N.A. (ii) N.A. (iii) Tillers, millable cane and yield of sugarcane. (iv) (a) 1950-1952. (b) N.A. (c) N.A. (v) N.A. (vi) Nil. (vii) The experiment was conducted by D.S.R.(M) on cultivator's field.

5. RESULTS :

(i) 10.02 ton/ac.

(ii) 0.748 ton/ac.

(iii) None of the effects is significant.

(iv) Av. yield of sugarcane in ton/ac.

Control = 10.41 ton/ac.

	$M_1$	$M_2$	Mean
$S_1$	9.89	9.32	9.60
$S_2$	9.32	11.15	10.24
Mean	9.60	10.24	9.92

S.E. of any marginal mean

= 0.529 ton/ac.

S.E. of body of table

= 0.748 ton/ac.

Crop :- Sugarcane.  
Zone :- Simbhaoli (Meerut).

Ref :- U.P. 50(219).  
Type :- 'M'.

Object :- To study the response of Sugarcane to Super.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) Sugarcane. (c) N.A. (ii) Clay loam. (iii) N.A. (iv) CO-421 (improved). (v) (a) and (b) N.A. (c) 66, three budded/sets row. (d) N.A. (e) —. (vi) 7.3.1950. (vii) N.A. (viii) N.A. (ix) N.A. (x) N.A.

2. TREATMENTS :

All combinations of (1) and (2) + a control (no manure).

(1) 2 methods of application of  $P_2O_5$  :  $M_1$  = broadcast and  $M_2$  = applied in furrows 3"-4" deep.

(2) 2 levels of Super :  $S_1$  = 60 and  $S_2$  = 120 lb./ac. of  $P_2O_5$ .

3. DESIGN :

(i) and (ii) R.B.D. with 4 replications (iii) (a) 64' x 27'. (b) 58' x 21'. (iv) N.A.

## 4. GENERAL :

(i) N.A. (ii) N.A. (iii) Germination, tillers and yield of sugarcane. (iv) (a) 1950—1951. (b) N.A. (c) N.A. (v) N.A. (vi) Nil. (vii) The experiment was conducted by D.S.R. (M) on cultivator's field.

## 5. RESULTS :

- (i) 31.77 ton/ac.  
 (ii) 2.00 ton/ac.  
 (iii) None of the effects is significant.  
 (iv) Av. yield of sugarcane in ton/ac.

Control = 30.79 ton/ac.

	M <sub>1</sub>	M <sub>2</sub>	Mean
S <sub>1</sub>	32.02	30.95	31.48
S <sub>2</sub>	33.09	32.02	32.56
Mean	32.56	31.48	32.02

S.E. of any marginal mean  
 S.E. of body of table

=0.707 ton/ac.  
 =1.000 ton/ac.

Crop :-Sugarcane.

Ref:-U.P. 51(197)/50(219).

Zone :-Simbhaoli (Meerut).

Type :-'M'.

Object :-To study the response of Sugarcane to Super.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) Fallow. (c) No. (ii) Loam. (iii) N.A. (iv) CO.421 (improved). (v) (a) Ploughing by Punjab plough on 3.8.1950., by *Prasa* plough on 16.9.1950., 9 by *desi* plough and 1 *para*. 3 hoeings by cultivator. (b) Planting behind the plough by flat system of planting. (c) 49 setts/row or 1323 buds/plot. (d) N.A. (e) —. (vi) 25.2.1951. (vii) Irrigated. (viii) N.A. (ix) N.A. (x) 21 to 29.2.1952.

## 2. TREATMENTS :

All combinations of (1) and (2)+a control (no manure).

(1) 2 methods of application of P<sub>2</sub>O<sub>5</sub> : M<sub>1</sub>=broadcast and M<sub>2</sub>=applied in furrows 3"—4" deep.

(2) 2 levels of Super : S<sub>1</sub>=60 and S<sub>2</sub>=120 lb./ac. of P<sub>2</sub>O<sub>5</sub>.

## 3. DESIGN :

(i) and (ii) R.B.D. with 4 replications. (iii) (a) 47'×27'. (b) 41'×21'. (iv) N.A.

## 4. GENERAL :

(i) N.A. (ii) N.A. (iii) Germination, tillers and sugarcane yield. (iv) (a) 1950—1951. (b) N.A. (c) N.A. (v) N.A. (vi) Nil. (vii) The experiment was conducted by D.S.R. (M) on cultivators' field.

## 5. RESULTS :

- (i) 29.50 ton/ac.  
 (ii) 1.176 ton/ac.  
 (iii) Main effect of M and 'control vs treated' are significant while interaction M×S is highly significant.  
 (iv) Av. yield of sugarcane in ton/ac.

Control = 28.46 ton/ac.

	M <sub>1</sub>	M <sub>2</sub>	Mean
S <sub>1</sub>	28.22	31.94	30.08
S <sub>2</sub>	30.78	30.08	30.43
Mean	29.50	31.01	30.26

S.E. of any marginal mean  
 S.E. of body of table

=0.831 ton/ac.  
 =1.176 ton/ac.

Crop :- Sugarcane.  
Zone :- Hastinapur (Meerut).

Ref :- U.P. 51(198).  
Type :- 'M'.

Object :- To study the response of Sugarcane to Super.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) Paddy. (c) N.A. (ii) Loam. (iii) N.A. (iv) CO. 421. (v) (a) Preparation of layout on 3, 4.3.1951. (b) Flat system of planting. (c) 1728 buds/plot. (d) Rows 3' apart. (e) —. (vi) 5, 6.3.1951. (vii) N.A. (viii) N.A. (ix) N.A. (x) N.A.

2. TREATMENTS :

All combinations of (1) and (2) + a control (no manure)

- (1) 2 methods of application of  $P_2O_5$  :  $M_1$  = broadcast and  $M_2$  = applied in furrows 3"–4" deep.  
(2) 2 levels of Super :  $S_1$  = 60 and  $S_2$  = 120 lb./ac. of  $P_2O_5$ .

3. DESIGN :

(i) and (ii) R.B.D. with 6 replications. (iii) (a) 64' × 27'. (b) 58' × 21'. (iv) N.A.

4. GENERAL :

(i) N.A. (ii) N.A. (iii) Germination, tillers, and sugarcane yield. (iv) (a) No. (b) and (c) N.A. (v) N.A. (vi) Nil. (vii) The experiment was conducted by D.S.R. (M) on cultivator's field.

5. RESULTS :

- (i) 23.91 ton/ac.  
(ii) 2.889 ton/ac.  
(iii) None of the effects is significant.  
(iv) Av. yield of sugarcane in ton/ac.

Control = 24.14 ton/ac.

	$M_1$	$M_2$	Mean
$S_1$	23.87	25.15	24.51
$S_2$	23.70	22.69	23.19
Mean	23.78	23.92	23.85

S.E. of any marginal mean

= 2.043 ton/ac.

S.E. of body of table

= 2.889 ton/ac.

Crop :- Sugarcane.  
Zone :- Modinagar (Meerut).

Ref :- U.P. 52(266).  
Type :- 'M'.

Object :- To study the response of Sugarcane to Super.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) Sandy loam. (iii) N.A. (iv) Improved. (v) (a) Hoeing by cultivator on 2.4.1952, hoeing and weeding by cultivator on 18.4.1952 and hoeing and weeding by spade on 30.4.1952, 16.5.1952, 27.5.1952 and 10.6.1952, hoeing by *lassi* on 15.6.1952 and earthing by spade on 1 and 2.8.1952. (b) Flat system of planting. (c) 75, three budded setts/row ; 600, three budded setts/plot. (d) Rows 3' apart. (e) —. (vi) 23, 24.2.1952. (vii) Irrigated. (viii) N.A. (ix) N.A. (x) 7 to 19.3.1953.

2. TREATMENTS :

All combinations of (1) and (2) + a control (*Sanai* as G.M.)

- (1) 2 methods of application of  $P_2O_5$  :  $M_1$  = broadcast and  $M_2$  = applied in furrows 3"–4" deep.  
(2) 2 levels of Super :  $S_1$  = 60 and  $S_2$  = 120 lb./ac. of  $P_2O_5$ .

3. DESIGN :

(i) and (ii) R.B.D. with 4 replications. (iii) (a) 73' × 24'. (b) 67' × 18'. (iv) N.A.

## 4. GENERAL :

(i) N.A. (ii) Striping from 9 to 10.8.1952 to remove pyrilla affected leaves. (iii) Germination, tillers, millable cane and yield of sugarcane. (iv) (a) No. (b) and (c) N.A. (v) N.A. (vi) Nil. (vii) The experiment was conducted by D.S.R. (M) on cultivator's field.

## 5. RESULTS :

- (i) 26.99 ton/ac.  
 (ii) 2.961 ton/ac.  
 (iii) None of the effects is significant.  
 (iv) Av. yield of sugarcane in ton/ac.

	Control = 25.51 ton/ac.		Mean
	M <sub>1</sub>	M <sub>2</sub>	
S <sub>1</sub>	23.20	28.65	25.92
S <sub>2</sub>	29.52	23.56	26.54
Mean	26.36	26.10	26.23

S.E. of any marginal mean  
 S.E. of body of table

=2.094 ton/ac.  
 =2.961 ton/ac.

Crop :- Sugarcane.

Zone :- Simbhaoli (Meerut).

Ref :- U.P. 51(201).

Type :- 'M'.

Object :- To study the response of Super in combination with green manures.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) *Sanai* as G.M.. (c) As per treatments. (ii) Loam. (iii) As per treatments. (iv) CO. 421 (improved). (v) (a) 11 ploughings by *desi* plough. 3 hoeings by cultivator and 1 hoeing by spade. (b) Flat system of planting. (c) 60, three budded setts/row or 1800 buds/plot. (d) N.A. (e) —. (vi) 25.2.1951. (vii) Irrigated. (viii) N.A. (ix) N.A. (x) 1 to 8.4.1952.

## 2. TREATMENTS :

- Sanai* G.M. (control).
  - Super at 60 lb./ac. of P<sub>2</sub>O<sub>5</sub> broadcast at the time of sowing of *sanai*.
  - Super at 60 lb./ac. of P<sub>2</sub>O<sub>5</sub> applied at the time of ploughing in of *sanai*.
- Sanai* sown at 1 md./ac. on 6.7.1950 by *desi* plough. Application of P<sub>2</sub>O<sub>5</sub> and ploughing in of *sanai* on 30.8.1950 by Punjab plough.

## 3. DESIGN :

(i) and (ii) R.B.D. with 4 replications. (iii) 58' × 30". (b) 52' × 24'. (iv) N.A.

## 4. GENERAL :

(i) and (ii) N.A. (iii) Germination, tillers, millable cane and sugarcane yield. (iv) (a) No. (b) and (c) N.A. (v) N.A. (vi) Nil. (vii) The experiment was conducted by D.S.R. (M) on cultivator's field.

## 5. RESULTS :

- (i) 31.52 ton/ac.  
 (ii) 1.109 ton/ac.  
 (iii) Treatment effects are not significant.  
 (iv) Av. yield of sugarcane in ton/ac.

Treatment	Av. yield
1.	30.69
2.	32.29
3.	31.57
S.E./mean	= 0.554 ton/ac.



Crop :- Sugarcane.

Ref :- U.P. 53(282).

Zone :- Daurala (Meerut).

Type :- 'M'.

Object :- To study the response of Super with green manures.

1. BASAL CONDITIONS :

(i) (a) No. (b) *Sanai*. (c) As per treatments. (ii) Sandy loam. (iii) Manuring by *Okhala slug* on 8.4.1953 and manuring by G.N.C. on 22.4.1953. (iv) CO-245 (improved). (v) (a) Ploughings by tractor on 10.12.1952, by *desi* plough on 22.1.1953 and 6.2.1953. Harrowing by disc harrow on 11.12.1952, making trenches by tractor on 22.2.1952. Hoeing by spade on 14 and 29.5.1953 and 13.6.1953. Hoeing of trenches on 20.2.1953 by spade. Planting of sugarcane by spade on 21.2.1953. Hoeing by cultivator on 23.4.1953, 15.5.1953 and 1.6.1953. (b) Trench planted. (c) 80, two budded setts/row and 560 two budded setts/plot. (d) Rows 3½' apart. (e) —. (vi) 21.2.1953. (vii) Irrigated. (viii) N.A. (ix) N.A. (x) 19 and 20.2.1954.

2. TREATMENTS :

1. Control (*sanai*).  
2. 60 lb./ac. of P<sub>2</sub>O<sub>5</sub> broadcast at sowing time of *sanai*.  
3. 60 lb./ac. of P<sub>2</sub>O<sub>5</sub> spread at the time of turning of *sanai*.  
Sowing of *sanai* on 5.7.1952 and turning of *sanai* on 6.9.1952.

3. DESIGN:

(i) and (ii) R.B.D. with 6 replications. (iii) (a) 60'×22'. (b) 54'×16'. (iv) N.A.

4. GENERAL :

(i) and (ii) N.A. (iii) Tillers, millable cane and sugarcane yield. (iv) (a) No. (b) and (c) N.A. (v) N.A. (vi) Nil. (vii) The experiment was conducted by D.S.R. (M) on cultivator's field.

5. RESULTS:

(i) 20.90 ton/ac.  
(ii) 3.739 ton/ac.  
(iii) Treatment effects are not significant.  
(iv) Av. yield of sugarcane in ton/ac.

Treatment	Av. yield
1.	21.02
2.	21.58
3.	20.09
S.E./mean	= 1.526 ton/ac.

Crop :- Sugarcane

Ref :- U.P. 48(81).

Zone :- Modinagar (Meerut).

Type :- 'M'.

Object :- To study the comparative effects of different G.M. with different leguminous crops on Sugarcane.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) As per treatments. (c) No. (ii) N.A. (iii) N.A. (iv) N.A. (v) (a) to (e) N.A. (vi) N.A. (vii) N.A. (viii) N.A. (ix) N.A. (x) N.A.

2. TREATMENTS :

1. Fallow (control).  
2. *Guar* as G.M.  
3. *Lobia*.  
4. *Pea*.  
5. *Metha*.  
6. *Sanai*.  
8. *Guar* for fodder.

3. DESIGN:

(i), (ii) R.B.D. with 4 replications. (iii) (a) and (b) 73'×30'. (iv) N.A.

## 4. GENERAL :

(i) N.A. (ii) N.A. (iii) Sugarcane yield. (iv) (a) No. (b) and (c) N.A. (v) N.A. (vi) Nil. (vii) The expt. was conducted by D.S.R(M) on cultivators' field.

## 5. RESULTS :

- (i) 32.25 ton/ac.  
 (ii) 1.277 ton/ac.  
 (iii) Treatment effects are highly significant.  
 (iv) Av. yield of sugarcane in ton/ac.

Treatment	Av. yield
1.	36.01
2.	34.49
3.	28.65
4.	28.25
5.	29.52
6.	37.59
7.	31.26
S.E./mean	=0.639 ton/ac.

Crop :- Sugarcane.

Ref :-U.P. 50(215).

Zone :- Simbhaoli (Meerut.)

Type :- 'M'.

Object :-To study the comparative utility of G. M. to Sugarcane.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) As per treatments. (c) No. (ii) Clay loam. (iii) Nil. (iv) CO. 421. improved. (v) (a) and (b) N.A. (c) 83, three budded setts/rows. (d) N.A. (e) —. (vi) 14.2.1950. (vii) N.A. (viii) N.A. (ix) N.A. (x) N.A.

## 2. TREATMENTS :

- Control (Fallow).
- Guar as fodder.
- Lobia.
- Guar as G.M.
- Dhaincha.
- Sanai.

## 3. DESIGN :

(i), (ii) R.B.D. with 4 replications. (iii) (a) 81'×27'. (b) 75'×21'. (iv) N.A.

## 4. GENERAL :

(i) N.A. (ii) N.A. (iii) Germination, tillers, millable cane and sugarcane yield. (iv) (a) 1950—1952. (b) and (c) N.A. (v) N.A. (vi) Nil. (vii) The expt. was conducted by D.S.R(M) on cultivator's field.

## 5. RESULTS :

- (i) 27.33 ton/ac.  
 (ii) 2.686 ton/ac.  
 (iii) Treatment effects are significant.  
 (v) Av. yield of sugarcane in ton/ac.

Treatment	Av. yield
1.	24.80
2.	28.18
3.	26.03
4.	31.54
5.	26.03
6.	27.37
S.E./mean	=1.343 ton/ac.

Crop :- Sugarcane.

Ref :- U.P. 51(199)/50(215).

Zone :- Simbhaoli (Meerut).

Type :- 'M'.

Object :- To study the comparative utility of different G.M. to Sugarcane.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) As per treatments. (c) No. (ii) Loam. (iii) N.A. (iv) CO-421 (improved). (v) (a) Ploughing of G.M. on 29.8.1950 by *desi* plough. Ploughing by *praja* plough on 15 and 24.9.1950; ploughing by *desi* plough on 1, 10, 27.10.1951, 5, 10, 22.12.1950 and 21.1.1951; ploughing and planking by *desi* plough and *pata* on 15.2.1951; ploughing by *desi* plough on 26.2.1951. Planking and hoeing by *kassi* on 7.3.1951 and cultivator on 5, 19.4.1951 and 21.5.1951. Spade on 20.4.1951 and 22.5.1951. (b) Flat planting. (c) 9 row/plot and 66 three budded setts/row. (d) N.A. (e) —. (vi) 27.2.1951. (vii) Irrigated. (viii) N.A. (ix) N.A. (x) 25.1.1952 to 6.2.1952.

## 2. TREATMENTS :

1. Control (fallow).

2. *Dhaincha*.3. *Sanai*.4. *Guar* as G.M.5. *Lobia*.6. *Guar* as green fodder.Sowing of G.M. on 7.7.1950 by *desi* plough and ploughing in of G.M. on 29.8.1950 by *desi* plough.

## 3. DESIGN :

(i) and (ii) R.B.D. with 4 replications. (iii) (a) 64' x 27'. (b) 58' x 21'. (iv) N.A.

## 4. GENERAL :

(i) and (ii) N.A. (iii) Germination, tillers and sugarcane yield. (iv) (a) 1950—1952. (b) and (c) N.A. (v) N.A. (vi) Nil. (vii) The experiment was conducted by D.S.R.(M) on cultivators' field.

## 5. RESULTS :

(i) 29.20 ton/ac.

(ii) 2.601 ton/ac.

(iii) Treatment effects are highly significant.

(iv) Av. yield of sugarcane in ton/ac.

Treatment	Av. yield
1.	25.29
2.	30.54
3.	33.25
4.	32.27
5.	27.26
6.	26.60
S.E./mean	=1.301 ton/ac.

Crop :- Sugarcane.

Ref :- U.P. 52(261)/51(199)/50(215)

Zone :- Simbhaoli (Meerut).

Type :- 'M'

Object :- To study the comparative utility of G.M.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) As per treatments. (c) N.A. (ii) Loam. (iii) G.N.C. at 45 lb./ac. of N on 9.6.1952 + A/S at 15 lb./ac. of N on 28.6.1952. (iv) Improved. (v) (a) Ploughing by *praja* plough on 13.9.1951. Ploughing by *desi* plough on 20, 28.9.1952, 6, 15, 26.10.1950 and 12.11.1952. Ploughing, planking and hoeing by spade on 6.5.1952, 3 times by *desi* plough and *pata* on 13 to 15.2.1952. Hoeing by *kassi* on 20.3.1952. Hoeing by M.C. cultivator on 17.4.1952. (b) Flat system of planting in furrows. (c) 73 three budded setts/row; 584 setts three budded/plot. (d) 3' apart. (e) —. (vi) 16.2.1952. (vii) Irrigated. (viii) and (ix) N.A. (x) 9 to 11.3.1953.

**2. TREATMENTS :**

1. Control.
2. *Dhaincha*.
3. *Sanai*.
4. *Guar* as G.M.
5. *Lobia*.
6. *Guar* as fodder.

Sown on 4.7.1952 by broadcasting. Date of turning is not available.

**3. DESIGN :**

(i) and (ii) R.B.D. with 4 replications. (iii) (a) 73'×24'. (b) 67'×18'. (iv) N.A.

**4. GENERAL :**

(i) and (ii) N.A. (iii) Germination, tillers, millable cane and sugarcane yield. (iv) (a) 1950—1952. (b) and (c) N.A. (v) N.A. (vi) Nil. (vii) The experiment was conducted by D.S.R. (M) on cultivator's field.

**5. RESULTS :**

- (i) 31.65 ton/ac.
- (ii) 1.05 ton/ac.
- (iii) Treatment effects are highly significant.
- (iv) Av. yield of sugarcane in ton/ac.

Treatment	Av. yield
1.	28.78
2.	30.10
3.	34.50
4.	33.09
5.	31.84
6.	31.60
S.E./mean	=0.525 ton/ac.

Crop :-Sugarcane.  
Zone :-Daurala (Meerut).

Ref :-U.P. 50(216).  
Type :-'M'.

Object :-To study the comparative utility of G.M.

**1. BASAL CONDITIONS :**

(i) (a) N.A. (b) As per treatments. (c) No. (ii) Loam. (iii) Nil. (iv) CO. S. 245 improved. (v) (a) and (b) N.A. (c) 77, three budded setts/row. (d) N.A. (e) —. (vi) 8.3.1950. (vii) N.A. (viii) N.A. (ix) N.A. (x) N.A.

**2. TREATMENTS :**

1. Control (fallow).
2. *Dhaincha* as G.M.
3. *Guar* for G.M.
4. *Guar* for fodder.
5. *Sanai* as G.M.
6. *Lobia* as G.M.

**3. DESIGN :**

(i) and (ii) R.B.D. with 4 replications (iii) (a) 81'×27'. (b) 75'×21'. (iv) N.A.

**4. GENERAL :**

(i) N.A. (ii) N.A. (iii) Germination, tillers and sugarcane yield. (iv) (a) 1950—1952. (b) and (c) N.A. (v) N.A. (vi) Nil. (vii) The expt. was conducted by D.S.R. (M) on cultivator's field.

**5. RESULTS :**

- (i) 14.42 ton/ac.
- (ii) 1.47 ton/ac.
- (iii) Treatment effects are highly significant.

(iv) Av. yield of sugarcane in ton/ac.

Treatment	Av. yield
1.	10.95
2.	15.47
3.	17.11
4.	13.92
5.	16.75
6.	12.33
S.E./mean	=0.735 ton/ac.

Crop :- Sugarcane.

Ref :- U.P. 53(281).

Zone :- Daurala (Meerut).

Type :- 'M'.

Object :- To study the comparative utility of G.M.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) As per treatments. (c) Nil. (ii) Sandy Loam. (iii) Manuring of 100 md. Okhla sluge on 30.3.1953. and manuring 24 md. G.N. on 3.5.1953. (iv) CO.S. 321 Improved. (v) (a) Turning in of G.M. on 17.8.1952 by tractor. Ploughing by tractor on 5.12.1952; ploughing by *desi* plough on 8 and 24.12.1952. Making of trenches on 14 to 18.1.1952 by tractor. Spade hoeing of trenches on 29, 30.1.1953. (b) Trench planted. (c) 77 two budded setts/row or 616 two budded setts/plot. (d) Row 3½' apart. (e) —. (vi) 4.2.1952. (vii) Irrigated. (viii) N.A. (ix) N.A. (x) N.A.

## 2. TREATMENTS :

1. Fallow.
2. Guar as G.M.
3. Guar for seed.
4. *Sanal*.
5. *Dhaincha*.
6. *Lobia*.

## 3. DESIGN :

(i), (ii) L. Sq. with 6 replications. (iii) (a) 55' × 26.4'. (b) 49' × 20.4'. (iv) N.A.

## 4. GENERAL :

(i) N.A. (ii) N.A. (iii) Tillers, millable cane and sugarcane yield. (iv) (a) 1950—1953. (b) and (c) N.A. (v) N.A. (vi) Experiment in 1951 vitiated and in 1952 it was not conducted. (vii) The expt. was conducted by D.S.R.(M) on cultivator's field.

## 5. RESULTS ;

- (i) 25.85 ton/ac.
- (ii) 2.728 ton/ac.
- (iii) Treatment effects are highly significant.
- (iv) Av. yield of sugarcane in ton/ac.

Treatment	Av. yield
1.	29.46
2.	23.29
3.	24.61
4.	27.90
5.	24.56
6.	25.27
S.E./mean	=1.114 ton/ac.

Crop :- Sugarcane.  
Zone :- Bilari (Moradabad).

Ref :- U.P. 49(165).  
Type :- 'M'.

Object :- To study the response of Sugarcane to Super.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) *Sanai* as G.M. (c) No. (ii) Loam. (b) *Sanai* as G.M. top dressing of A/S 2 md. on 14.7.1949. (iv) CO-527 (early) (improved). (v) (a) Ploughings by victory plough on 17.8.1949; four ploughings by Athens harrow (tractor) and one by M.C. cultivator on 4.3.1949. (b) Flat planting. (c) 1752 buds/plot. (d) 3' distance in lines. (e) —. (vi) 3.3.1949. (vii) Irrigated. (viii) Hoings by Cawnpore cultivator and *kassi*. (ix) 39.8°. (x) 9 to 11.1.1950.

2. TREATMENTS :

1. No  $P_2O_5$ .
2. 60 lb./ac. of  $P_2O_5$  broadcast at planting time.
3. 60 lb./ac. of  $P_2O_5$  in furrows 3"-4" deep at planting time.  
 $P_2O_5$  as Super.

3. DESIGN :

(i), (ii) R.B.D. with 6 replications. (iii) (a) 73' x 24'. (b) 67' x 18'. (iv) N.A.

4. GENERAL :

(i) N.A. (ii) N.A. (iii) Germination and yield of sugarcane. (iv) (a) No. (b) N.A. (c) N.A. (v) N.A. (vi) Nil. Yield of treatment 2 missing in replication 5 and was estimated. (vii) The experiment was conducted by D.S.R. (S) on cultivator's field.

5. RESULTS :

- (i) 18.63 ton/ac.
- (ii) 1.143 ton/ac.
- (iii) Treatment effects are highly significant.
- (iv) Av. yield of sugarcane in ton/ac.

Treatment	Av. yield
1.	16.87
2.	20.17
3.	18.84

S.E./mean = 0.467 ton/ac.

S.E. of the difference between the mean of (2) and (1) or (3) = 0.62 ton/ac.

Crop :- Sugarcane.  
Zone :- Bilari (Moradabad).

Ref :- U.P.48(70).  
Type :- 'M'.

Object :- To study the response of Sugarcane to Super.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) Fallow after *Sanai* G.M. (c) No. (ii) Loam. (iii) *Sanai* (G.M.); as per treatments. (iv) CO-527 (early) (improved). (v) (a) Victory plough twice from July to last week of February 1948; ploughings by *Gurjar* plough and *desi* plough (twice) after rains on 12 and 13.2.1948. (b) Flat planted by *desi* plough. (c) 1755 buds/plot. (d) Rows 3' apart (e) —. (vi) 15.3.1948. (vii) Irrigated. (viii) Hoings by M.C. cultivator on 12.4.1948; 15.5.1948; Hoing by *kassi* on 30.6.1948. (ix) 39.80°. (x) N.A.

2. TREATMENTS :

1. No  $P_2O_5$ .
2. 40 lb./ac. of  $P_2O_5$  in furrows 3"-4" deep.
3. 80 lb./ac. of  $P_2O_5$  in furrows 3"-4" deep.  
Treatment applied on 13.8.1948.

3. DESIGN :

(i), (ii) R.B.D., with 6 replications. (iii) (a) 64' x 27'. (b) N.A. (iv) N.A.

## 4. GENERAL :

(i) N.A. (ii) N.A. (iii) Germination and yield of sugarcane. (iv) (a) No. (b) N.A. (c) N.A. (v) N.A. (vi) Nil. Plot wise data was not available. (vii) The experiment was conducted by D.S.R.(S) on cultivator's field.

## 5. RESULTS :

- (i) 21.68 ton/ac.  
 (ii) N.A.  
 (iii) Treatment effects are significant.  
 (iv) Av. yield of sugarcane in ton/ac.
- | Treatment | Av. yield |
|-----------|-----------|
| 1.        | 19.73     |
| 2.        | 22.02     |
| 3.        | 23.28     |
| S.E./mean | =N.A.     |

Crop :- Sugarcane.

Ref :-U.P. 50(218).

Zone :- Shamli (Muzaffarnagar).

Type :-'M'.

Object :-To study the response of Sugarcane to Super.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) *Sanai*. (c) No. (ii) Loam. (iii) *Sanai*. (iv) COS-245 (improved). (v) (a) and (b) N.A. (c) 66, three budded setts/plot. (d) and (e) N.A. (vi) 12.3.1950. (vii) to (ix) N.A. (x) 1 to 6.2.1951.

## 2. TREATMENTS :

All combinations of (1) and (2) + a control (no manure).

(1) 2 methods of application :  $M_1$ =Broadcast and  $M_2$ = applied 3"-4" deep in furrows.

(2) 2 levels of  $P_2O_5$  as Super :  $P_1$ =60 and  $P_2$ =120 lb./ac. of  $P_2O_5$ .

## 3. DESIGN :

(i) and (ii) R.B.D. with 5 replications. (iii) (a) and (b) 64'×27'. (iv) N.A.

## 4. GENERAL :

(i) and (ii) N.A. (iii) Germination, tillers, millable cane and sugarcane yield. (iv) (a) 1950-1952. (b) and (c) N.A. (v) N.A. (vi) Nil. (vii) The experiment was conducted by D.S.R. (M) on cultivator's field.

## 5. RESULTS :

- (i) 20.33 ton/ac.  
 (ii) 0.663 ton/ac.  
 (iii) Main effect of P, interaction M×P, control vs. treated effects are highly significant. Main effect of M is not significant.  
 (iv) Av. yield of sugarcane in ton/ac.

Control = 16.74 ton/ac.

	$M_1$	$M_2$	Mean
$P_1$	17.80	20.70	19.25
$P_2$	24.82	21.58	23.20
Mean	21.31	21.14	21.22

S.E. of any marginal mean =0.210 ton/ac.

S.E. of body of table =0.297 ton/ac.

Crop :- Sugarcane.

Ref :- U.P. 51(195)/50(218).

Zone :- Shamli (Muzaffarnagar).

Type :- 'M'.

Object :- To study the response of Sugarcane to Super.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) *Sanal.* (c) No. (ii) Loam. (iii) *Sanal.* (iv) CO.245 (improved). (v) (a) Ploughing by tractor on 7 to 9.3.1951. Ploughing by *dest* plough on 10.3.1951. Hoeing by *kassl* on 9.3.1951 and 5.4.1951. Hoeing by M.C. cultivator on 27.4.1951 and 1.6.1951. Hoeing by *phawara* on 28.4.1951, 2.6.1951 and 5.8.1951. (b) Flat system of planting. (d) 75, three budded setts/row or 1575 buds/plot. (d) N.A. (e) —. (vi) 10.3.1951. (vii) Irrigated. (viii) N.A. (ix) N.A. (x) 15 to 19.4.1952.

## 2. TREATMENTS :

All combinations of (1) and (2) + a control (no manure)

(1) 2 methods of application :  $M_1$  = broadcast and  $M_2$  = applied 3"–4" deep in furrows.(2) 2 levels of  $P_2O_5$  as Super :  $P_1$  = 60 and  $P_2$  = 120 lb./ac. of  $P_2O_5$ .

## 3. DESIGN :

(i) and (ii) R.B.D. with 6 replications. (iii) (a) 73' × 21'. (b) 67' × 15'. (iv) N.A.

## 4. GENERAL :

(i) and (ii) N.A. (iii) Germination, tillers, millable cane and sugarcane yield. (iv) (a) 1950–1952. (b) and (c) N.A. (v) N.A. (vi) Nil. (vii) The experiment was conducted by D.S.R. (M) on cultivator's field.

## 5. RESULTS :

(i) 24.21 ton/ac.

(ii) 1.123 ton/ac.

(iii) Main effects of P, M and control vs. treated are highly significant, The interaction M × P is not significant.

(iv) Av. yield of sugarcane in ton/ac.

Control = 21.07 ton/ac.

	$M_1$	$M_2$	Mean
$P_1$	25.22	22.82	24.02
$P_2$	26.39	25.57	25.98
Mean	25.80	24.20	25.00

S.E. of any marginal mean = 0.324 ton/ac.

S.E. of body of table = 0.459 ton/ac.

Crop :- Sugarcane

Ref :- U.P. 52(267)/51(195)/50(218).

Zone :- Shamli (Muzaffarnagar).

Type :- 'M'.

Object :- To study the response of Sugarcane to Super.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) *Sanal.* (c) Nil. (ii) Loam. (iii) 75 lb./ac. of N as *Sanal.*, A/S at 25 lb./ac. of N on 21.7.1952 and 20 lb./ac. of N on 19.8.1952. (iv) Improved. (v) (a) 3 ploughings by tractor and 3 by *dest* plough. Hoeing by *kassl* on 3.5.1952, 13.5.1952 and 6.6.1952. Hoeing by M.C. cultivator on 12.5.1952. and 6.6.1952. Hoeing by spade on 4.7.1952 (b) Flat system. (c) 68, three budded/setts row, 584, three budded setts/plot. (d) Rows 3' apart. (vi) 6.4.1952. (vii) Irrigated. (viii) N.A. (ix) N.A. (x) 28.3.1953 to 2.4.1953.



## 2. TREATMENTS :

All combinations of (1) and (2) + a control (no manure).

(1) 2 methods of application :  $M_1$  = manure broadcast and  $M_2$  = manure applied 3'—4' deep in furrows.

(2) 2 levels of  $P_2O_5$  as Super :  $P_1$  = 60 and  $P_2$  = 120 lb./ac. of  $P_2O_5$ .

## 3. DESIGN :

(i) and (ii) R.B.D. with 6 replications. (iii) (a) 66' × 24'. (b) 60' × 18'. (iv) N.A.

## 4. GENERAL :

(i) N.A. (ii) N.A. (iii) Germination, tillers, millable cane and sugarcane yield. (iv) (a) 1950—1952. (b) N.A. (c) N.A. (x) N.A. (vi) Nil. (vii) The experiment was conducted by D.S.R. (M) on cultivator's field.

## 5. RESULTS :

- (i) 25.05 ton/ac.  
 (ii) 0.671 ton/ac.  
 (iii) The interaction  $M \times P$  and control vs. treated are significant. Others are not significant.  
 (iv) Av. yield of sugarcane in ton/ac.

Control = 24.53 ton/ac.

	$M_1$	$M_2$	Mean
$P_1$	24.67	25.56	25.12
$P_2$	25.51	24.98	25.24
Mean	25.09	25.27	25.18

S. E. of any marginal mean  
 S.E. of body of table

= 0.194 ton/ac.  
 = 0.274 ton/ac.

Crop :- Sugarcane.

Ref :- U.P. 52(265).

Zone :- Shamli (Muzaffarnagar).

Type :- 'M'.

Object :- To study the response of Super in combination with green manure (*Sanai*).

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) *Sanai* as G.M. at 75 lb./ac. of N. (c) As per treatments. (ii) Loam. (iii) A/S at 25 lb./ac. of N on 19.7.1952 and A/S at 20 lb./ac. of N on 21.8.1952. (iv) Improved. (v) (a) Ploughings 4 by tractor, 2 by *desi* plough, Sowing by *desi* plough. Hoeing by *kassi* on 2.5.1952, 11.5.1952 and 28.6.1952. Hoeing row by M.C. cultivator on 11.5.1952, 7.6.1952 and 28.6.1952. (b) Flat system of planting. (c) 60 three budded/sets. (d) Rows 3' apart. (e) —. (vi) 2.4.1952. (vii) Irrigated. (viii) N.A. (ix) N.A. (x) 14 and 15.3.1953.

## 2. TREATMENTS :

- Sanai* (control).
- 60 lb./ac. of  $P_2O_5$  broadcast at sowing time of *sanai*.
- 60 lb./ac. of  $P_2O_5$  spread over the crop of *sanai* at the time of ploughing of *sanai*.  $P_2O_5$  as Super.

## 3. DESIGN :

(i) R.B.D. with 4 replications. (ii) N.A. (iii) (a) 58' × 21'. (b) 52' × 15'. (iv) N.A.

## 4. GENERAL :

(i) (a) N.A. (ii) N.A. (iii) Germination, tillers, millable cane and sugarcane yield. (iv) (a) No. (b) N.A. (c) N.A. (v) N.A. (vi) Nil. (vii) The experiment was conducted by D.S.R. (M) on cultivator's field.

## 5. RESULTS :

- (i) 25.54 ton/ac.  
 (ii) 1.064 ton/ac.  
 (iii) Treatment differences are significant.

## (iv) Av. yield of sugarcane in ton/ac.

Treatment	Av. yield
1.	24.05
2.	25.59
3.	26.98
S.E./mean	=0.532 ton/ac.

Crop :- Sugarcane.  
Zone :- Khatauli (Muzaffarnagar).

Ref :- U.P. 48(82).  
Type :- 'M'.

Object :- To study the response of Sugarcane to Super.

## 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) N.A. (iii) N.A. (iv) N.A. (v) (a) to (e) N.A. (vi) N.A. (vii) N.A. (viii) N.A. (ix) N.A. (x) N.A.

## 2. TREATMENTS :

- Control.
- Super at 40 lb./ac. of  $P_2O_5$  in furrows 3"-4" deep.
- Super at 80 lb./ac. of  $P_2O_5$  in furrows 3"-4" deep.  
 $P_2O_5$  applied at tillering time.

## 3. DESIGN :

(i) and (ii) R.B.D., with 6 replications. (iii) (a) N.A. (b) 64' x 27'. (iv) N.A.

## 4. GENERAL :

(i) N.A. (ii) N.A. (iii) Sugarcane yield. (iv) (a) No. (b) and (c) N.A. (v) N.A. (vi) Nil. (vii) The experiment was conducted by D.S.R. (M) on cultivator's field.

## 5. RESULTS :

- 29.53 ton/ac.
- 0.809 ton/ac.
- Treatment differences are highly significant.
- Av. yield of sugarcane in ton/ac.

Treatment	Av. yield
1.	27.86
2.	29.63
3.	31.10
S.E./mean	=0.330 ton/ac.

Crop :- Sugarcane.  
Zone :- Shamli (Muzaffarnagar).

Ref :- U.P. 48(84).  
Type :- 'M'.

Object :- To study the response of Sugarcane to Super.

## 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) N.A. (iii) N.A. (iv) N.A. (v) (a) to (e) N.A. (vi) N.A. (vii) N.A. (viii) N.A. (ix) N.A. (x) N.A.

## 2. TREATMENTS :

- No Super (control).
- 40 lb./ac. of  $P_2O_5$  as Super in furrows 3"-4" deep.
- 80 lb./ac. of  $P_2O_5$  as Super in furrows 3"-4" deep.  
Super applied at tillering time.

## 3. DESIGN :

(i) and (ii) R.B.D., with 6 replications. (iii) (a) N.A. (b) 60' x 24'. (iv) N.A.

## 4. GENERAL :

(i) N.A. (ii) N.A. (iii) Sugarcane yield. (iv) (a) No. (b) and (c) N.A. (v) N.A. (vi) Nil. (vii) The experiment was conducted by D.S.R. (M) on cultivator's field.

## 5. RESULTS :

- (i) 35.57 ton/ac.  
 (ii) 1.277 ton/ac.  
 (iii) Treatment differences are highly significant.  
 (iv) Av. yield of sugarcane in ton/ac.

Treatment	Av. yield
1.	27.55
2.	37.59
3.	41.58
S.E./mean	=0.521 ton/ac.

Crop :- Sugarcane.

Zone :- Mansurpur (Muzaffarnagar).

Ref :- U.P. 53(280).

Type :- 'M'.

Object :- To study the comparative effect of different G. M. on Sugarcane.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) As per treatments. (c) N.A. (ii) Loam. (iii) N.A. (iv) CO. 245 (improved). (v) (a) N.A. (b) Flat system. (c) 32, three budded setts/row or 768, three budded setts/plot. (d) Rows 3' apart. (e). (vi) 8.3.1953. (vii) N.A. (viii) N.A. (ix) N.A. (x) 25.2.1954 to 28.2.1954.

## 2. TREATMENTS :

1. Fallow.
2. *Lobia* green manure.
3. *Guar* green fodder.
4. *Guar* green manure.
5. *Sanai*.
6. *Dhaincha*.

## 3. DESIGN :

(i) and (ii) R.B.D. with 6 replications. (iii) (a) 73' x 30'. (b) 67' x 24'. (iv) N.A.

## 4. GENERAL :

(i) N.A. (ii) N.A. (iii) Germination, tillers, millable cane and sugarcane yield. (iv) (a) No. (b) and (c) N.A. (v) N.A. (vi) Nil. (vii) The experiment was conducted by D.S.R. (M) on cultivator's field.

## 5. RESULTS :

- (i) 31.70 ton/ac.  
 (ii) 4.732 ton/ac.  
 (iii) Treatment differences are not significant.  
 (iv) Av. yield of sugarcane in ton/ac.

Treatment	Av. yield
1.	26.49
2.	30.88
3.	33.24
4.	34.28
5.	35.32
6.	29.97
S.E /mean	= 1.932 ton/ac.

Crop :-Sugarcane.

Ref :-U.P. 49(178).

Zone :-Rohana Kalan (Muzaffarnagar).

Type :-'M'.

Object :-To find out the effect of N and P<sub>2</sub>O<sub>5</sub> alone and in combination on the yield of Sugarcane.

## 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) *Dokar*—heavy clay loam, (type IV) pH for the zone 5.95. (iii) Nil. (iv) Improved. (v) (a) to (e) N.A. (vi) 22.3.1949. (vii) Irrigated. (viii) N.A. (ix) N.A. (x) 16 to 18.2.1950.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 3 levels of N as A/S : N<sub>0</sub>=0, N<sub>1</sub>=60 and N<sub>2</sub>=120 lb./ac. of N.(2) 3 levels of P<sub>2</sub>O<sub>5</sub> as Super : P<sub>0</sub>=0, P<sub>1</sub>=40 and P<sub>2</sub>=80 lb./ac.

## 3. DESIGN :

(i) and (ii) 3×3 Fact. in R.B.D. with 4 replications. (iii) (a) and (b) 50'×18'. (iv) N.A.

## 4. GENERAL :

(i) and (ii) N.A. (iii) Tillers and sugarcane yield. (iv) (a) No. (b) and (c) N.A. (v) N.A. (vi) Nil. (vii) The experiment was conducted by D.S.R.(M) on cultivator's field.

## 5. RESULTS :

(i) 17.84 ton/ac.

(ii) 2.083 ton/ac.

(iii) Only main effect of N is highly significant.

(iv) Av. yield of sugarcane in ton/ac.

	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>	Mean
N <sub>0</sub>	15.56	14.28	15.82	15.22
N <sub>1</sub>	18.78	18.43	18.53	18.58
N <sub>2</sub>	20.06	20.33	18.74	19.71
Mean	18.13	17.68	17.70	17.84

S.E. of any marginal mean =0.491 ton/ac.  
S.E. of body of table =0.850 ton/ac.

Crop :-Sugarcane.

Ref :-U.P. 50(217).

Zone :-Mansurpur (Muzaffarnagar).

Type :-'M'.

Object :-To study the comparative effect of green manures on Sugarcane.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) As per treatments. (c) No. (ii) Loam. (iii) Nil. (iv) CO-421 (improved). (v) (a) and (b) N.A. (c) 92 three budded setts/rcw. (d) and (e) N.A. (vi) 8.3.1950. (vii) to (ix) N.A. (x) N.A.

## 2. TREATMENTS :

1. Fallow (control).

2. *Sanai* as G.M.3. *Guar* as G.M.4. *Dhaincha* as G.M.5. *Lobia* as G.M.6. *Guar* removed for fodder with roots left and supplemented by F.Y.M. at 50 md./ac.

## 3. DESIGN :

(i) and (ii) R.B.D. with 4 replications. (iii) (a) 90'×31½'. (b) 84'×25½'. (iv) N.A.

## 4. GENERAL :

(i) and (ii) N.A. (iii) Germination, tillers and sugarcane yield. (iv) (a) No. (b) and (c) N.A. (v) N.A. (vi) Nil. (vii) The experiment was conducted by D.S.R.(M) on cultivator's field.

## 5. RESULTS :

(i) 15.86 ton/ac.

(ii) 0.127 ton/ac.

(iii) Treatment differences are highly significant.

(iv) Av. yield of sugarcane in ton/ac.

Treatment	Av. yield
1.	13.94
2.	16.97
3.	16.09
4.	16.12
5.	16.90
6.	15.15
S.E./mean	=0.064 ton/ac.

Crop :- Sugarcane.

Ref :- U.P. 51(200)50/(217).

Zone :- Mansurpur (Muzaffarnagar).

Type :- 'M'.

Object :- To study the comparative effect of different green manures on Sugarcane.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) As per treatments. (c) No. (ii) Sandy loam. (iii) N.A. (iv) CO-421 (improved). (v) (a) N.A. (b) Flat system of planting. (c) 55 three budded setts/row or 1155 buds/plot. (d) N.A. (e) —. (vi) 6 and 7.3.1951. (vii) to (x) N.A.

## 2. TREATMENTS :

1. Fallow.
2. Dhaincha.
3. Sanai.
4. Guar for fodder.
5. Guar for G.M.
6. Lobia.

## 3. DESIGN :

(i) and (ii) R.B.D. with 4 replications. (iii) 53' × 24½'. (b) 47' × 18½'. (iv) N.A.

## 4. GENERAL :

(i) and (ii) N.A. (iii) Germination, tillers and sugarcane yield. (iv) (a) 1950—1953. (but experiment not conducted in 1952). (b) and (c) N.A. (v) N.A. (vi) Nil. (vii) The experiment was conducted by D.S.R. (M) on cultivator's field.

## 5. RESULTS :

(i) 12.61 ton/ac.

(ii) 3.615 ton/ac.

(iii) Treatment differences are not significant.

(iv) Av. yield of sugarcane in ton/ac.

Treatment	Av. yield
1.	9.66
2.	10.90
3.	13.86
4.	13.12
5.	13.17
6.	14.95
S.E./mean	=1.808 ton/ac.

Crop :- Sugarcane.  
Zone :- Mansurpur (Muzaffarnagar).

Ref :- U.P.49(177).  
Type :- 'M'.

Object :- To find out the effect of N and  $P_2O_5$  alone and in combinations on the yield of Sugarcane.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) *Damat*—Loamy soil (type IV) medium in texture, light grey to yellowish grey in colour. Average pH=6.61. (iii) Nil. (iv) Improved. (v) (a) to (e) N.A. (vi) 20.3.1949. (vii) Irrigated. (viii) N.A. (ix) N.A. (x) 26.2.1950 to 8.3.1950.

2. TREATMENTS :

All combinations of (1) and (2)

(1) 3 levels of N as A/S :  $N_0=0$ ,  $N_1=60$  and  $N_2=120$  lb./ac. of N.

(2) 3 levels of  $P_2O_5$  as Super :  $P_0=0$ ,  $P_1=40$  and  $P_2=80$  lb./ac. of  $P_2O_5$ .

A/S applied before sowing on 20.3.1949. Super applied on 10.8.1949 with earthing.

3. DESIGN :

(i), (ii)  $3 \times 3$  Fact. in R.B.D. with 6 replications. (iii) (a) and (b)  $51' \times 21'$ . (iv) N.A.

4. GENERAL :

(i) N.A. (ii) N.A. (iii) Tillers and sugarcane yield. (iv) (a) No. (b) and (c) N.A. (v) N.A. (vi) Nil. (vii) The expt. was conducted by D.S.R. (M) on cultivator's field.

5. RESULTS :

- (i) 31.07 ton/ac.  
(ii) 5.476 ton/ac.  
(iii) Only main effect N is highly significant.  
(iv) Av. yield of sugarcane in ton/ac.

	$P_0$	$P_1$	$P_2$	Mean
$N_0$	24.40	24.23	24.97	24.53
$N_1$	29.05	30.43	31.84	30.44
$N_2$	35.21	35.28	44.27	38.25
Mean	29.55	29.98	33.69	31.07

S.E. of any marginal mean = 1.291 ton/ac.  
S.E. of body of table = 2.236 ton/ac.

Crop :- Sugarcane.  
Zone :- Shamly (Muzaffarnagar)

Ref :- U.P. 49(176).  
Type :- 'M'.

Object :- To find out the effect of N and  $P_2O_5$  alone and in combinations on the yield of Sugarcane.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) *Rasili*—Sandy loam (type IV) pH=7.4, moisture=0.85%, coarse sand=0.87%, fine sand=54.41%, silt=27.08% and clay=14.21%. (iii) Nil. (iv) Improved. (v) (a) to (e) N.A. (vi) 23.3.1949. (vii) Irrigated. (viii) N.A. (ix) N.A. (x) N.A.

2. TREATMENTS :

All combinations of (1) and (2)

(1) 3 levels of N as A/S :  $N_0=0$ ,  $N_1=60$  and  $N_2=120$  lb./ac. of N,

(2) 3 levels of  $P_2O_5$  as Super :  $P_0=0$ ,  $P_1=40$  and  $P_2=80$  lb./ac. of  $P_2O_5$ .

A/S applied on 23.3.1949. before planting. Single Super applied on 12.8.1949. with earthing

3. DESIGN :

(i), (ii)  $3 \times 3$  Fact. in R.B.D. 3 replications. (iii) (a) and (b)  $50' \times 18'$ . (iv) N.A.

## 4. GENERAL :

(i) N.A. (ii) N.A. (iii) Tillers and sugarcane yield. (iv) (a) No. (b) and (c) N.A. (v) N.A. (vi) Nil. (vii) The expt. was conducted by D.S.R. (M) on cultivator's field.

## 5. RESULTS :

- (i) 32.40 ton/ac.  
 (ii) 5.406 ton/ac.  
 (iii) Only N effect is highly significant.  
 (iv) Av. yield of sugarcane in ton/ac.

	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>	Mean
N <sub>0</sub>	28.44	24.29	30.56	27.76
N <sub>1</sub>	30.29	32.79	31.97	31.68
N <sub>2</sub>	33.78	38.18	41.33	37.76
Mean	30.84	31.75	34.62	32.40

S.E. of any marginal mean = 1.274 ton/ac.  
 S.E. of body of table = 2.207 ton/ac.

Crop :- Sugarcane.

Ref :- U.P 49(175).

Zone :- Khatuali (Muzaffarnagar),

Type :- 'M'.

Object :- To find out the effect of N and P<sub>2</sub>O<sub>5</sub> alone and in combination on the yield of Sugarcane.

## 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) *Rausri* clay loam, (type IV). (iii) Nil. (iv) Improved. (v) (a) to (c) N.A. (vi) 19.3.1949. (vii) to (x) N.A.

## 2. TREATMENTS :

All combinations of (1) and (2).

(1) 3 levels of N as A/S : N<sub>0</sub>=0, N<sub>1</sub>=60 and N<sub>2</sub>=120 lb./ac. of N.

(2) 3 levels of P<sub>2</sub>O<sub>5</sub> as Super : P<sub>0</sub>=0, P<sub>1</sub>=40 and P<sub>2</sub>=80 lb./ac. of P<sub>2</sub>O<sub>5</sub>.

A/S applied on 19.3.1949 before planting. Single Super on 13.7.1949 with earthing.

## 3. DESIGN :

(i) and (ii) 3×3 Fact. in R.B.D. with 6 replications. (iii) (a) and (b) 51'×21'. (iv) N.A.

## 4. GENERAL :

(i) and (ii) N.A. (iii) Tillers and sugarcane yield. (iv) (a) No. (b) and (c) N.A. (v) N.A. (vi) Nil. (vii) The experiment was conducted by D.S.R. (M) on cultivator's field.

## 5. RESULTS :

- (i) 36.60 ton/ac.  
 (ii) 4.517 ton/ac.  
 (iii) Only N effect is highly significant.  
 (iv) Av. yield of sugarcane in ton/ac.

	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>	Mean
N <sub>0</sub>	30.55	32.80	32.37	31.91
N <sub>1</sub>	36.87	36.81	37.03	36.90
N <sub>2</sub>	41.79	39.67	41.54	41.00
Mean	36.40	36.43	36.98	36.60

S.E. of any marginal mean = 1.065 ton/ac.  
 S.E. of body of table = 1.844 ton/ac.

Crop :- Sugarcane.  
Zone :-Kichha (Nainital).

Ref :-U.P. 50(165).  
Type :-'M'.

Object—To study the response of Sugarcane to Super.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) *Sanai* as G.M. (c) Nil. (ii) Clay loam. (iii) Nil. (iv) CO.453. (v) (a) Ploughing by disc plough on 12.1950, Turning in of *sanai* on 31.8.1949, ploughing by harrow plough on 13.10.1949, and on 17.10.1949. Hoeing by *kassi* on 7 and 8.2.1950 and 4 and 5.6.1950 and *pata* 5 and 6.6.1950. (b) Flat sowing. (c) 1440 budds./plot. (d) N.A. (e) —. (vi) 25.3.1950. (vii) Irrigated. (viii) N.A. (ix) 60°. (x) 20.3.1951.

2. TREATMENTS :

1. Control (no manure).
2. 60 lb./ac. of  $P_2O_5$  broadcast before planting.
3. 60 lb./ac. of  $P_2O_5$  drilled 3"—4" deep in furrows before planting.  
Manuring on 25.3.1950.

3. DESIGN :

(i) and (ii) R.B.,D. with 6 replications. (iii) (a) 60' × 24'. (b) 54' × 18'. (iv) N.A.

4. GENERAL :

(i) and (ii) N.A. (iii) Germination % and sugarcane yield. (iv) (a) 1950—1951. (b) and (c) N.A. (v) N.A. (vi) Nil. (vii) The experiment was conducted by D.S.R. (S). on cultivators' field.

5. RESULTS :

- (i) 29.26 ton/ac.
- (ii) 2.28 ton/ac.
- (iii) Treatments differ highly significantly.
- (iv) Av. yield of sugarcane in ton/ac.

Treatment	Av. yield
1.	26.34
2.	31.04
3.	30.39
S.E./mean	= 0.93 ton/ac.

Crop :-Sugarcane.  
Zone :-Kichha (Nainital).

Ref :- U.P. 51(154)/50(165).  
Type :- 'M'.

Object :—To study the response of Sugarcane to Super.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) *Sanai* as G.M. (c) N.A. (ii) Clay loam. (iii) F.Y.M. at 50 lb./ac. of N on 11.1.1951. (iv) CO. 453. (v) (a) Ploughing by *desi* plough on 26, 27.12.1950. Ploughing by harrow on 25.2.1951, and 26.2.1951. (twice). Ploughing on 1.3.1951 and one by *pata* on 28.3.1951. 4 hoeing by *kassi* on 10.4.1951, 30.4.1951, and 1.5.1951 and 25.5.1951. by cultivator on 17.5.1951. (b) Flat planting. (c) 1752 budds/plot. (d) N.A. (e) —. (vi) 13.3.1951. (vii) Irrigated. (viii) N.A. (ix) 50°. (x) 6, 7.4.1952.

2. TREATMENTS :

1. Control (no manure).
2. 60 lb./ac. of  $P_2O_5$  broadcast before planting.
3. 60 lb./ac.  $P_2O_5$  applied 3"—4" deep in furrows before planting.  
Manure applied on 13.3.1951.

3. DESIGN :

(i) and (ii) R.B.D., with 6 replications (iii) (a) 73' × 24'. (b) 67' × 18'. (iv) N.A.



## 4. GENERAL :

- (i) N.A. (ii) N.A. (iii) Germination % and sugarcane yield. (iv) (a) 1950-1951. (b) N.A. (c) N.A. (v) N.A. (vi) Nil. (vii) The experiment was conducted by D.S.R. (S) on cultivator's field.

## 5. RESULTS :

- (i) 35.75 ton/ac.  
 (ii) 8.62 ton/ac.  
 (iii) Treatments do not differ significantly.  
 (iv) Av. yield of sugarcane in ton/ac.

Treatment	Av. yield
1.	34.40
2.	36.65
3.	36.19
S.E./mean	=3.51 ton/ac.

Crop :- Sugarcane.  
 Zone :- (Nainital).

Ref :- U.P. 52(204).  
 Type :- 'M'.

Object :- To study the response of Sugarcane to Super.

## 1. BASAL CONDITIONS :

- (i) (a) N.A. (b) *Dhaincha* as G.M. (c) No. (ii) Clay loam. (iii) G.N.C. at 40 lb./ac. of N on 9.2.1952. A/S top dressing at 45 lb./ac. of N *Dhaincha* turned in on 14.6.1952 and G.N.C. at 40 lb./ac. on 21.5.1952. (iv) CO 453 (improved). (v) (a) Ploughings by Athens' plough on 20, 21.7.1951, Sowing of *Dhaincha* on 28.7.1951. *Dhaincha* turned in on 23 to 25.1.1951. by disc plough, ploughing by Athen's plough on 19.2.1951. by disc plough on 6, 7.1.1952, Disc harrow on 22.1.1952, *pata* on 20.12.1951, 23.1.1952. Picking of grass on 12.1.1952. Hoeing by *kassi* on 6 to 9.3.1952, by cultivator on 5.4.1952, and on 26.5.1952. (b) Flat sowing. (c) 73 three-budded setts/line. (d) N.A. (e) —. (vi) 12.2.1252. (vii) Irrigated. (viii) N.A. (ix) 50". (x) 31.3.1953 to 2.4.1953.

## 2. TREATMENTS :

1. Control (no manure).  
 2. 120 lb./ac. of  $P_2O_5$  broadcast before planting.  
 3. 120 lb./ac. of  $P_2O_5$  applied at 3"-4" deep before planting.  
 Manure applied on 21.5.1952.

## 3. DESIGN :

- (i) and (ii) R.B.D. with 6 replications. (iii) (a) 90' x 18'. (b) 84' x 12'. (iv) N.A.

## 4. GENERAL :

- (i) N.A. (ii) N.A. (iii) Germination % and sugarcane yield. (iv) (a) No. (b) N.A. (c) N.A. (v) N.A. (vi) Nil. (vii) The experiment was conducted by D.S.R. (S) on cultivator's field.

## 5. RESULTS :

- (i) 27.65 ton/ac.  
 (ii) 3.412 ton/ac.  
 (iii) Treatment differences are not significant.  
 (iv) Av. yield of sugarcane in ton/ac.

Treatment	Av. yield
1.	28.66
2.	27.60
3.	26.70
S.E./mean	=1.393 ton/ac.

Crop :- Sugarcane.

Zone :- Kichha (Nainital).

Ref :-U.P. 53(236).

Type :-'M'.

Object :-To study the response of Sugarcane to Super.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) *Sanai* as G.M. (c) *Sanai* as G.M. at 60 lb./ac. of N. (ii) Clayey loam. (iii) Spreading G.N.C.+A/S at 30 lb./ac. of N on 12.2.1953. (iv) CO-453. (v) (a) 3 hoeings by cultivator on 10.4.1953, by *kassl* on 4.5.1953 by cultivator on 25.5.1953 ; turning in of *Sanai* on 8.9.1952, ploughing by Athens plough on 10.5.1952, 5 to 7.2.1952, ploughing by 19-B harrow on 20.10.1952 and 8.2.1953, ploughing by *dest* plough on 12, 13.12.1952 and 27 to 29.1.1953. (b) Flat sowing, ridge drawn by tractor. (c) and (d) N.A. (e) —. (vi) 13.2.1953. (vii) Irrigated. (viii) N.A. (ix) 35". (x) 17 to 18.1.1954.

## 2. TREATMENTS :

1. No manure.
  2. P<sub>2</sub>O<sub>5</sub> at 120 lb./ac. broadcast in the field before planting.
  3. P<sub>2</sub>O<sub>5</sub> at 120 lb./ac. applied 3"-4" deep before planting.
- Super applied on 12.2. 1953.

## 3. DESIGN :

(i), (ii) R.B.D. with 6 replications. (iii) (a) and (b) 64'×21'. (iv) N.A.

## 4. GENERAL :

(i) N.A. (ii) N.A. (iii) Germination %, tillers count and yield of sugarcane. (iv) (a) 1953—1954. (b) N.A. (c) N.A. (v) N.A. (vi) Nil. (vii) The experiment was conducted by D.S.R.(S) on cultivator's field.

## 5. RESULTS :

- (i) 23.19 ton/ac.
- (ii) 3.09 ton/ac.
- (iii) Treatments do not differ significantly.
- (iv) Av. yield of sugarcane in ton/ac.

Treatment	Av. yield
1.	22.90
2.	23.42
3.	23.25
S.E./mean	=1.26 ton/ac.

Crop :-Sugarcane.

Zone :- Kichha (Nainital).

Ref :-U.P. 53(231).

Type :-'M'.

Object :-To study the response of Sugarcane to applications of Super in combination with green manure.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) *Sanai* for G.M. (c) No. (ii) Clayey loam. (iii) Press mud at 20 lb./ac. of N on 9, 13.9.1952 spreading of groundnut cake and A/S at 30 lb./ac. of N on 10.2.1953. (iv) CO.453. (v) (a) 3hoeings with cultivator on 8.4.1953 and 24.5.1953 *kassl* on 10.5.1953. *Sanai* turned in by Athens plough on 8.9.1952 7 ploughings by Athens plough 19-B harrow and disc plough. (b) Flat sowing, ridges drawn by tractor. (c) and (d) N.A. (e) —. (vi) 10.3.1953. (vii) Irrigated. (viii) N.A. (ix) 50". (x) 13 to 15.1.1954.

## 2. TREATMENTS :

1. *Sanai* green manure (control).
2. Super at 60 lb./ac. of P<sub>2</sub>O<sub>5</sub> broadcast at the time of sowing *Sanai*.
3. Super at 60 lb./ac. of P<sub>2</sub>O<sub>5</sub> applied at the time of ploughing in of *Sanai*.

## 3. DESIGN :

(i), (ii) R.B.D. with 6 replications. (iii) (a) 90'×18'. (b) 90'×18'. (iv) N.A.

## 4. GENERAL :

(i) N.A. (ii) N.A. (iii) Germination %, tillers and sugarcane yield. (iv) (a) 1953—1956 (not in 1954). (b) N.A. (c) N.A. (v) N.A. (vi) Nil. (vii) The experiment was conducted by D.S.R.(S) on cultivator's field.

## 5. RESULTS :

- (i) 37.82 ton/ac.  
 (ii) 2.04 ton/ac.  
 (iii) The treatments do not differ significantly.  
 (iv) Av. yield of sugarcane in ton/ac.

Treatment	Av. yield
1.	36.05
2.	38.42
3.	39.00
S.E./mean	= 0.83 ton/ac.

Crop :- Sugarcane.

Ref :- U.P. 50(162).

Zone :- Kichha (Nainital).

Type :- 'M'.

Object :--To study the comparative effect of different green manures on Sugarcane.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) As per treatments. (c) Nil. (ii) Loam (medium). (iii) Nil. (iv) CO. 453. (v) (a) 3 hoeings by *kassi* on 12.3.1950, 29, 30.3.1950 and 12.6.1950, ploughing by *desi* plough on 12, 13.5.1949, ploughing by cultivator on 30, 31.5.1949, sowing of G.M. (*kharif*) on 29.6.1949, ploughing by bullock cultivator on 30.6.1949, and turning of G.M. on 31.8.1949 and 14.9.1949, ploughing by harrow plough on 13.10.1949, ploughing by cultivator Athens (twice on 10.4.1949), sowing of G.M. (*rabi*), mixing and harrow twice on 7.2.1950, *pata* on 18.2.1950 and harrow and *pata* on 10.11.1949, turning in of *rabi* green manure on 22.1.1950. (b) Flat planting with ridger. (c) 1440 buds/plot. (d) N.A. (e) —. (v) 13.2.1950. (vii) Irrigated. (viii) N.A. (ix) 60°. (x) 18.3.1951.

## 2. TREATMENTS :

1. *Sanai*.
2. *Dhaincha*.
3. Pea.
4. Pea root+100 lb./ac. of  $P_2O_5$ .
5. Pea+100 lb./ac. of  $P_2O_5$ .
6. Mustard.
7. Fallow.

## 3. DESIGN :

(i) and (ii) R.B.D. with 4 replications. (iii) (a) 64' × 26'. (b) 60' × 26'. (iv) N.A.

## 4. GENERAL :

(i) N.A. (ii) N.A. (iii) Germination % and sugarcane yield. (iv) (a) No. (b) and (c) N.A. (v) N.A. (vi) Nil. (vii) The experiment was conducted by D.S.R. (S) on cultivator's field.

## 5. RESULTS :

- (i) 21.90 ton/ac.  
 (ii) 2.31 ton/ac.  
 (iii) The treatments do not differ significantly.  
 (iv) Av. yield of sugarcane in ton/ac.

Treatment	Av. yield
1.	23.43
2.	23.82
3.	21.38
4.	21.61
5.	22.86
6.	19.36
7.	20.84
S.E./mean	= 1.16 ton/ac.

Crop :- Sugarcane.

Ref :- U.P. 49(150).

Zone :- Hargaon (Sitapur).

Type :- 'M'.

Object :- To study the response of Sugarcane to Super.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) *Jowar* for fodder. (c) N.A. (ii) Loam. (iii) 250 mds./ac. press mud. applied from 6 to 10.2.1949. (iv) CO. 186 (medium) (improved). (v) (a) Ploughings by plough and Meston on 10, 16, 17.3.1949, 16 and 19.4.1949, 4 hoeings by *kudali* and cultivator after planting. (b) Flat planted with ridge making plough. (c) 1752 buds/plot. (d) N.A. (e) —. (vi) 26.4.1949. (vii) Irrigated. (viii) N.A. (ix) 40". (x) 12 and 15.12.1949.

## 2. TREATMENTS :

1. 0 lb./ac. of  $P_2O_5$ .
2. 60 lb./ac. of  $P_2O_5$  as broadcast at the time of planting.
3. 60 lb./ac. of  $P_2O_5$  in furrows 3"—4" deep at the time of planting.

## 3. DESIGN :

(i) and (ii) R.B.D. with 6 replications. (iii) (a) 73'×24'. (b) 67'×18'. (iv) N.A.

## 4. GENERAL :

(i) N.A. (ii) N.A. (iii) Germination and sugarcane yield. (iv) (a) 1949—1951. (b) and (c) N.A. (v) N.A. (vi) Nil. (vii) The experiment was conducted by D.S.R. (S) on cultivator's field.

## 5. RESULTS :

- (i) 10.54 ton/ac.
- (ii) 2.511 ton/ac.
- (iii) Treatment differences are not significant.
- (iv) Av. yield of sugarcane in ton/ac.

Treatment	Av. yield
1.	10.64
2.	10.84
3.	10.14
S.E./mean	=1.025 ton/ac.

Crop :- Sugarcane.

Ref :- U.P. 50(164)/49(150).

Zone :- Hargaon (Sitapur).

Type :- 'M'.

Object :- To study the response of Sugarcane to Super.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) Sugarcane. (c) Nil. (ii) Loam. (iii) Top dressing mixture of *Mahua* cake and A/S at 10 mds. per acre on 29.5.1950. (iv) CO. 453. (v) (a) Ploughings by Meston plough on 28.1.1950, by *Zamindar* plough on 1, 2 and 23.2.1950. *Pata* by bullock on 4 and 13.3.1950. 6 hoeings by *kudali* cultivator on 4, 12 and 31.3.1950, 18.4.1950, 5.5.1950 and 5 to 8.6.1950 (b) N.A. (c) 1728 buds/plot. (d) N.A. (e) —. (vi) 24.2.1950. (vii) Irrigated. (viii) N.A. (ix) N.A. (x) 21.1.1951.

## 2. TREATMENTS :

1. Control (no manure).
2. 60 lb./ac. of  $P_2O_5$  applied broadcast before planting.
3. 60 lb./ac. of  $P_2O_5$  drilled 3"—4" deep in furrows before planting.

## 3. DESIGN :

(i),(ii) R.B.D. with 4. replications. (iii) (a) 64'×37'. (b) 58'×21'. (iv) N.A.

## 4. GENERAL :

(i) N.A. (ii) N.A. (iii) Germination % and sugarcane yield. (iv) (a) 1949—1951. (b) and (c) N.A. (v) N.A. (vi) Nil. (vii) The expt. was conducted by D.S.R.(S) on cultivator's field.

## 5. RESULTS :

- (i) 40.04 ton/ac.
- (ii) 4.40 ton/ac.
- (iii) The treatments do not differ significantly.

## (iv) Av. yield of sugarcane in ton/ac.

Treatment	Av. yield
1.	38.80
2.	41.30
3.	40.03
S.E./mean	=2.20 ton/ac.

Crop :- Sugarcane.

Ref :- U.P. 48(67).

Zone :- Maholi (Sitapur),

Type :- 'M'.

Object :- To study the response of Sugarcane to Super.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) *Urd.* (c) N.A. (ii) Loam. (iii) Groundnut at 9 mds. 15 srs. on 18.3.1948. Top dressing of A/S at 2 mds. 22 srs. on 17.5.1948. (iv) CO. 453 (late). (v) (a) *Gurjar* plough, twice on 1.2.1948, *desi* plough twice on 5.3.1948. twice on 27.3.1948, once on 31.3.1948 and once on 1.4.1948. 6 hoeings on 11 and 23.4.1948, 17 and 20.5.1948, 24.6.1948 and 3.7.1948. Earthing up on 5.7.1948. (b) Flat sowing behind the *desi* plough. (c) 1680 buds/plot. (d) Rows 3' apart (e) —. (vi) 1.4.1948. (vii) Irrigated. (viii) N.A. (ix) 30°. (x) 20.3.1949 to 15.4.1949.

## 2. TREATMENTS :

- No manure.
  - 40 lb./ac. of  $P_2O_5$  in furrows 3"—4" deep.
  - 80 lb./ac. of  $P_2O_5$  in furrows 3"—4" deep.
- Super applied on 1.4.1948.

## 3. DESIGN :

(i) and (ii) R.B.D. with 6 replications. (iii) (a) and (b) 73' x 24'. (iv) N.A.

## 4. GENERAL:

(i) N.A. (ii) N.A. (iii) Germination and sugarcane yield. (iv) No. (b) and (c) N.A. (v) N.A. (vi) Nil. (vii) The expt. was conducted by D.S.R(S) on cultivator's field.

## 5. RESULTS :

- 45.86 ton/ac.
- 2.586 ton/ac.
- Treatment differences are highly significant.
- Av. yield of sugarcane in ton/ac.

Treatment	Av. yield
1.	41.09
2.	45.66
3.	50.84
S.E./mean	=1.056 ton/ac.

Crop :- Sugarcane.

Ref :- U.P. 48(66).

Zone :- Hargaon (Sitapur).

Type :- 'M'.

Object :- To study the response of Sugarcane to Super.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) *Sanai* for green manuring. (c) No. (ii) Loam. (iii) *Sanai* and mixture of castor cake and A/S at 20 lb./ac. of N. (iv) CO-421 (medium). Improved. (v) (a) *Desi* plough on 29.4.1947, *gurjar* plough on 31.8.1947, *Zamindar* on 9.11.1947; *desi* plough on 10.11.1947. Mecomic cultivator applied 3 times, hand hoeings 4 times. (b) Flat sowing by spade. (c) 2880 buds/plot. (d) N.A. (e) —. (vi) 12.11.1947. (vii) Irrigated. (viii) N.A. (ix) 40°. (x) 14 and 15.3.1949.

**2. TREATMENTS :**

1. 0 lb./ac. of  $P_2O_5$ .
  2. 40 lb./ac. of  $P_2O_5$  in furrows 3"—4" deep.
  3. 80 lb./ac. of  $P_2O_5$  in furrows 3"—4" deep.
- $P_2O_5$  as Ammo. Phos. applied on 11.7.1948 by top dressing.

**3. DESIGN :**

- (i) and (ii) R.B.D. with 4 replications. (iii) (a) 73'×24'. (b) 67'×18'. (iv) N.A.

**4. GENERAL :**

- (i) and (ii) N.A. (iii) Sugarcane yield. (iv) (a) No. (b) and (c) N.A. (v) N.A. (vi) Nil. (vii) The experiment was conducted by D.S.R.(S) on cultivator's field.

**5. RESULTS :**

- (i) 24.63 ton/ac.  
 (ii) 1.777 ton/ac.  
 (iii) Treatment differences are significant.  
 (iv) Av. yield of sugarcane in ton/ac.

Treatment	Av. yield
1.	27.74
2.	23.68
3.	22.47
S.E./mean	=0.889 ton/ac.

**Crop :- Sugarcane.**

**Zone :- Hargaon (Sitapur).**

**Ref :- U.P. 51(152).**

**Type :- 'M'.**

**Object :-**To study the response of Sugarcane to Super.

**1. BASAL CONDITIONS :**

- (i) (a) N.A. (b) *Sanai* as G.M. (c) N.A. (ii) Loam. (iii) N.A. (iv) CO-527. (v) (a) 5 hoeings by cultivator and *kudali* on 21.10.1950, 20, 26.11.1950, 27.2.1951 and 29.4.1951. (b) Sown flat behind the ridge maker. (c) 1752 buds/plot. (d) Rows 3' apart. (e) —. (vi) 15.10.1950. (vii) Irrigated. (viii) and (ix) N.A. (x) 20.1.1952.

**2. TREATMENTS :**

1. Control (no manure).
2. 60 lb./ac. of  $P_2O_5$  broadcast before planting.
3. 60 lb./ac. of  $P_2O_5$  in furrows 3"—4" deep before planting.

**3. DESIGN :**

- (i) and (ii) R.B.D. with 6 replications, (iii) (a) 73'×24'. (b) 67'×18'. (iv) N.A.

**4. GENERAL :**

- (i) and (ii) N.A. (iii) Germination percentage and sugarcane yield. (iv) (a) 1949—1951. (b) and (c) N.A. (v) N.A. (vi) Nil. (vii) The experiment was conducted by D.S.R.(S) on cultivator's field.

**5. RESULTS :**

- (i) 13.18 ton/ac.  
 (ii) 2.30 ton/ac.  
 (iii) Treatment differences are not significant.  
 (iv) Av. yield of sugarcane in ton/ac.

Treatment	Av. yield
1.	12.83
2.	13.60
3.	13.11
S.E./mean	=0.93 ton/ac.

Crop :- Sugarcane.  
Zone :- Hargaon (Sitapur).

Ref :- U.P. 52(242).  
Type :- 'M'.

Object :- To find out the effect of different doses of N on Sugarcane.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) Fallow. (c) N.A. (ii) *Domat* (type IV loam). (iii) N.A. (iv) CO-527 (improved).  
(v) (a) to (e) N.A. (vi) 30.3.1952. (vii) Irrigated. (viii) to (x) N.A.

2. TREATMENTS :

1. 0 lb./ac. of N.
  2. 40 lb./ac. of N.
  3. 80 lb./ac. of N.
  4. 120 lb./ac. of N.
  5. 160 lb./ac. of N.
  6. 200 lb./ac. of N.
- N as A/S,  $\frac{1}{3}$ rd dose applied on 30.3.1950.

3. DESIGN :

(i) and (ii) R.B.D. with 4 replications. (iii) (a) 81' x 18'. (b) 75' x 12'. (iv) N.A.

4. GENERAL :

(i) and (ii) N.A. (iii) Sugarcane yield. (iv) (a) No. (b) and (c) N.A. (v) N.A. (vi) Yield of two plots containing treatments 40 lb./ac. of N and 160 lb./ac. of N were missing and therefore analysis was done by applying missing plot technique. (vii) The experiment conducted by D.S.R. (S) on cultivator's field.

5. RESULTS :

- (i) 7.92 ton/ac.  
(ii) 2.602 ton/ac.  
(iii) Treatment differences are not significant.  
(iv) Av. yield of sugarcane in ton/ac.

Treatment	Av. yield
1.	8.50
2.	9.03
3.	7.91
4.	6.47
5.	6.94
6.	8.66
S.E./mean not containing missing treatment	= 1.301 ton/ac.
S.E./mean containing missing treatment	= 1.539 ton/ac.

Crop :- Sugarcane.  
Zone :- Hargaon (Sitapur).

Ref :- U.P. 52(243).  
Type :- 'M'.

Object :- To find out the effect of different doses of N on Sugarcane.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) Fallow. (c) No. (ii) *Domat* (type II loam). (iii) 9 C.L. of compost. (iv) CO-527 (improved). (v) (a) to (e) N.A. (vi) 21.3.1952. (vii) Irrigated. (viii) and (ix) N.A. (x) 7.2.1953.

2. TREATMENTS :

1. 0 lb./ac. of N.
  2. 40 lb./ac. of N.
  3. 80 lb./ac. of N.
  4. 120 lb./ac. of N.
  5. 160 lb./ac. of N.
  6. 200 lb./ac. of N.
- N as A/S,  $\frac{1}{3}$ rd of N applied on 21.3.1952.

3. DESIGN :

(i) and (ii) R.B.D. with 4 replications. (iii) (a) 81' x 18'. (b) 75' x 12'. (iv) N.A.

**4. GENERAL ;**

(i) and (ii) N.A. (iii) Sugarcane yield. (iv) (a) No. (b) and (c) N.A. (v) N.A. (vi) Nil. (vii) The experiment was conducted by D.S.R. (S) on cultivator's field.

**5. RESULTS :**

- (i) 34.50 ton/ac.  
 (ii) 8.547 ton/ac.  
 (iii) Treatment differences are significant.  
 (iv) Av. yield of sugarcane in ton/ac.

Treatment	Av. yield
1.	19.74
2.	32.98
3.	36.39
4.	37.27
5.	41.15
6.	39.50
S.E./mean	= 4.274 ton/ac.

Crop :- Sugarcane.

Zone :- Hargaon (Sitapur).

Ref. -U.P.52(210).

Type :- 'M'.

Object :- To find out the effect of different doses of N on Sugarcane.

**1. BASAL CONDITIONS :**

(i) (a) N.A. (b) Fallow. (c) Nil. (ii) *Matya* type IV loam. (iii) Nil. (iv) CO. 527. (v) (a) to (e) N.A. (vi) 28.3.1952. (vii) Irrigated. (viii) N.A. (ix) N.A. (x) N.A.

**2. TREATMENTS :**

- 0 lb./ac. of N.
  - 40 lb./ac. of N.
  - 80 lb./ac. of N.
  - 120 lb./ac. of N.
  - 160 lb./ac. of N.
  - 200 lb./ac. of N.
- ‡ of the total N<sub>2</sub> applied on 28.3.1952.

**3. DESIGN :**

(i) and (ii) R.B.D. with 6 replications. (iii) (a) 70'×18' (b) 64'×12'. (iv) N.A.

**4. GENERAL :**

(i) N.A. (ii) N.A. (iii) Sugarcane yield. (iv) (a) No. (b) N.A. (c) N.A. (v) N.A. (vi) Nil. (vii) The experiment was conducted by D.S.R. (S) on cultivator's field.

**5. RESULTS :**

- (i) 11.00 ton/ac.  
 (ii) 2.69 ton/ac.  
 (iii) Treatments differ highly significantly.  
 (iv) Av. yield of sugarcane in ton/ac.

Treatment	Av. yield
1.	5.46
2.	9.40
3.	12.90
4.	12.82
5.	14.04
6.	11.38
S.E./mean	= 1.35 ton/ac.



Crop :- Sugarcane.  
Zone :- Hargaon (Sitapur).

Ref :- U.P. 52(209).  
Type :- 'M'.

Object : To find out the effect of different doses of N on Sugarcane.

1. BASAL CONDITIONS :

(i) N.A. (b) Fallow. (c) Nil. (ii) *Domat* type IV (loam). (iv) Co 527. (v) (a) to (e) N.A. (vi) 26.3.1952. (vii) Irrigated. (viii) N.A. (ix) N.A. (x) 10, 11.2.1953.

2. TREATMENTS .

1. 0 lb./ac. of  $N_2$ .
  2. 40 lb./ac. of  $N_2$ .
  3. 80 lb./ac. of  $N_2$ .
  4. 120 lb./ac. of  $N_2$ .
  5. 160 lb./ac. of  $N_2$ .
  6. 200 lb./ac. of  $N_2$ .
- Manuring on 26.3.1952.

3. DESIGN :

(i) and (ii) R.B.D. with 4 replications. (iii) (a) 70' x 21'. (b) 64' x 15'. (iv) N.A.

4. GENERAL :

(i) N.A. (ii) N.A. (iii) Sugarcane yield. (iv) (a) No. (b) N.A. (c) N.A. (v) N.A. (vi) Nil. (vii) The experiment was conducted by D.S.R. (S) on cultivator's field.

5. RESULTS :

- (i) 34.72 ton/ac.
- (ii) 5.01 ton/ac.
- (iii) Treatments differ highly significantly.
- (iv) Av. yield of sugarcane in ton/ac.

Treatment	Av. yield.
1.	27.13
2.	28.09
3.	33.03
4.	40.53
5.	35.68
6.	43.89
S.E./mean	=2.50 ton/ac.

Crop :- Sugarcane.  
Zone :- Hargaon (Sitapur).

Ref :- U.P. 52(208).  
Type :- 'M'.

Object :- To find out the effect of different doses of N on Sugarcane.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) Paddy. (c) Nil. (ii) *Domat* II (type loam). (iii) Nil. (iv) CO. 527. (v) (a) to (c) N.A. (vi) 25.3.1952. (vii) Irrigated. (viii) N.A. (ix) N.A. (x) 16, 17 and 18.2.1953.

2. TREATMENTS :

1. No manure.
  2. 40 lb./ac. of N.
  3. 80 lb./ac. of N.
  4. 120 lb./ac. of N.
  5. 160 lb./ac. of N.
  6. 200 lb./ac. of N.
- $\frac{1}{3}$  of the total N applied on 25.3.1952.

3. DESIGN :

(i) R.B.D. (ii) 4 replications laid out but some plots harvested by the cultivator, so 2 replications are taken for analysis. (iii) (a) 70' x 21'. (b) 64' x 15'. (iv) N.A.

## 4. GENERAL :

(i) N.A. (ii) N.A. (iii) Sugarcane yield. (iv) (a) No. (b) and (c) N.A. (v) N.A. (vi) Nil. (vii) The expt. was conducted by D.S.R(S) on cultivator's field.

## 5. RESULTS :

- (i) 56.59 ton/ac.  
 (ii) 20.95 ton/ac.  
 (iii) Treatments do not differ significantly.  
 (iv) Av. yield of sugarcane in ton/ac.

Treatment	Av. yield
1.	26.48
2.	35.48
3.	49.04
4.	60.53
5.	70.03
6.	97.97
S.E./mean	=14.82 ton/ac.

Crop :- Sugarcane.  
 Zone :- Hargaon (Sitapur).

Ref :- U.P. 52(207).  
 Type :- 'M'.

Object :- To find out the effect of different doses of N on Sugarcane.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) Fallow. (c) Nil. (ii) *Dumat* (type II loam). (iii) Nil. (iv) CO. 527. (v) (a) to (c) N.A. (vi) 24.3.1952. (vii) Irrigated. (viii) N.A. (ix) N.A. (x) 12, 13 and 14.2.1953.

## 2. TREATMENTS :

- No manure.
- 40 lb./ac. of N.
- 80 lb./ac. of N.
- 120 lb./ac. of N.
- 160 lb./ac. of N.
- 200 lb./ac. of N.

Date of manuring 24.3.1952.

## 3. DESIGN :

(i), (ii) R.B.D. with 4 replications. (iii) (a) 81' x 18'. (b) 75' x 12'. (iv) N.A.

## 4. GENERAL :

(i) N.A. (ii) N.A. (iii) Sugarcane yield. (iv) (a) No. (b) and (c) N.A. (v) N.A. (vi) Nil. (vii) The expt. was conducted by D.S.R. (S) on cultivator's field.

## 5. RESULTS :

- (i) 49.08 ton/ac.  
 (ii) 4.29 ton/ac.  
 (iii) The treatments do not differ significantly.  
 (iv) Av. yield of sugarcane in ton/ac.

Treatment	Av. yield
1.	44.17
2.	49.51
3.	45.28
4.	51.66
5.	51.69
6.	52.14
S.E./mean	=2.14 ton/ac.

Crop :- Sugarcane.  
Zone :- Hargaon (Sitapur).

Ref:- U.P. 51(149).  
Type :- 'M'.

Object :- To study the response of Sugarcane to Super in combination with manures.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) *Sanai* as G.M. (c) As per treatments. (iii) As per treatments. (iv) CO. 453 (late), (improved). (v) (a) Ploughings by meston plough (four times) on 29.9.1950, and 8.10.1950, hoeings by *kudali* and cultivator on 15.10.1950, 7.11.1950, 26.11.1950, 12.2.1951, 14.5.1951 and 26.1.1951. (b) Flat sowing behind ridge. (c) 1215 buds/plot. (d) N.A. (e) —. (vi) 9.10.1950. (vii) Irrigated. (viii) N.A. (ix) N.A. (x) 27.11.1951.

2. TREATMENTS :

1. *Sanai* green manure (control).  
2. Super at 60 lb./ac. of  $P_2O_5$  broadcast at the time of sowing *sanai*.  
3. Super at 60 lb./ac. of  $P_2O_5$  applied at the time of ploughing in of *sanai*.  
Application of  $P_2O_5$  to treatment 2 on 28.6.1950 and treatment 3 on 13.8.1950.

3. DESIGN :

(i) and (ii) R.B.D. with 6 replications. (iii) (a) 81' x 15'. (b) 75' x 9'. (iv) N.A.

4. GENERAL :

(i) N.A. (ii) N.A. (iii) Germination % and sugarcane yield. (iv) (a) No. (b) and (c) N.A. (v) N.A. (vi) Nil. (vii) The experiment was conducted by D.S.R. (S) on cultivators' fields.

5. RESULTS :

(i) 22.96 ton/ac.  
(ii) 5.051 ton/ac.  
(iii) Treatment differences are not significant.  
(iv) Av. yield of sugarcane in ton/ac.

Treatment	Av. yield
1.	23.36
2.	24.94
3.	20.59
S.E./mean	= 2.062 ton/ac.

Crop :- Sugarcane.  
Zone :- Hargaon (Sitapur).

Ref :- U.P. 51(150).  
Type :- 'M'.

Object :- To study the response of Sugarcane to Super in combination with green manures.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) *Sanai* as G.M. (c) As per treatments. (ii) Loam. (iii) As per treatments. (iv) CO. 527 (early, improved). (v) (a) N.A. (b) Flat sowing behind ridge. (c) 1206 buds/plot. (d) N.A. (e) —. (vi) 10.10.1950. (vii) Irrigated. (viii) N.A. (ix) N.A. (x) 19.2.1952.

2. TREATMENTS :

1. *Sanai* green manure (control).  
2. Super at 60 lb./ac. of  $P_2O_5$  broadcast at the time of sowing of *sanai*.  
3. Super at 60 lb./ac. of  $P_2O_5$  applied at the time of ploughing in of *sanai*.

3. DESIGN :

(i) and (ii) R.B.D. with 6 replications. (iii) (a) 67' x 18'. (b) 61' x 12'. (iv) N.A.

4. GENERAL :

(i) N.A. (ii) N.A. (iii) Sugarcane yield. (iv) (a) No. (b) and (c) N.A. (v) N.A. (vi) Nil. (vii) The experiment was conducted by D.S.R. (S) on cultivators' fields.

5. RESULTS :

(i) 15.07 ton/ac.  
(ii) 3.87 ton/ac.  
(iii) Treatment differences are not significant.

(iv) Av. yield of sugarcane in ton/ac.

Treatment	Av. yield
1.	15.21
2.	15.79
3.	14.22
S.E./mean	=1.58 ton/ac.

Crop :- Sugarcane.

Ref :- U.P. 51(283).

Site :- Allahabad Agricultural Institute, Allahabad. Type :- 'MV'.

Object :- To test three types of manures on two varieties of Sugarcane.

### 1. BASAL CONDITIONS :

(i) (a) N.A. (b) *Juar*. (c) N.A. (ii) (a) Deep loam soils. (b) Refer soil analysis, Allahabad. (iii) 12 to 14.2.1951. (iv) (a) N.A. (b) N.A. (c) N.A. (d) Rows 3' apart. (e) N.A. (v) N.A. (vi) As per treatments. (vii) N.A. (viii) N.A. (ix) 36.78". (x) N.A.

### 2. TREATMENTS :

Main-plot treatments :

2 varieties :  $V_1 = \text{CO-331}$ ,  $V_2 = \text{CO-453}$ .

Sub-plot treatments :

4 manures :  $M_0 = \text{No manure (control)}$ ,  $M_1 = 100 \text{ lb./ac. of N as A/S}$ ,  $M_2 = 100 \text{ lb./ac. of N as castor cake}$ ,  $M_3 = 100 \text{ lb./ac. of N as farm compost}$ .

Farm compost applied on 31.1.1951, castor cake on 2.2.1951 and A/S on 3.2.1951.

### 3. DESIGN :

(i) Split-plot. (ii) (a) 2 main-plots/replication and 4 sub-plots/main-plot. (b)  $100' \times 144'$ . (iii) 3. (iv) (a)  $100' \times 18'$ . (b)  $100' \times 12'$ . (v) One row on either side of the net plot left as non-experimental area. (vi) Yes.

### 4. GENERAL :

(i) N.A. (ii) N.A. (iii) Sugarcane yield. (iv) (a) No. (b) No. (c) Nil. (v) (a) and (b) Nil. (vi) Nil. (vii) Field record register and the "Allahabad Farmer" were consulted. Experiment conducted by the Head, Agronomy Department, Allahabad Agricultural Institute, Allahabad.

### 5. RESULTS :

(i) 25.64 ton/ac.

(ii) (a) 5.387 ton/ac.

(b) 2.653 ton/ac.

(iii) Control vs. manures differs significantly. Interaction between varieties and control vs. manures is highly significant. Main effects of varieties and source of N are not significant.

(iv) Av. yield of sugarcane in ton/ac.

	$M_0$	$M_1$	$M_2$	$M_3$	Mean
$V_1$	25.39	26.68	24.01	24.09	25.04
$V_2$	20.44	28.84	29.76	25.90	26.24
Mean	22.92	27.76	26.88	25.00	25.64

S.E. of difference of two

- |                            |                |
|----------------------------|----------------|
| 1. marginal means of V     | =2.199 ton/ac. |
| 2. marginal means of M     | =1.532 ton/ac. |
| 3. M means at a level of V | =2.166 ton/ac. |
| 4. V means at a level of M | =2.891 ton/ac. |

Crop :- Sugarcane (*Ratoon*).

Ref :- U.P. 52(326).

Site :- Allahabad Agricultural Institute, Allahabad. Type :- 'MV'.

Object :- To test three types of manures on two varieties of Sugarcane.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) Sugarcane (plant cane). (c) 100 lb./ac. of N as A/S, Castorcake and F.Y.M. there being also one control plot in each main-plot. (ii) (a) Deep loam soils. (b) Refer soil analysis, Allahabad. (iii) N.A. (iv) (a) N.A. (b) N.A. (c) N.A. (d) Rows 3' apart. (e) N.A. (v) N.A. (vi) As per treatments. (vii) N.A. (viii) N.A. (ix) 30.08°. (x) 12.10.1952.

## 2. TREATMENTS :

Main-plot treatments :

2 varieties :  $V_1 = \text{CO.331}$  and  $V_2 = \text{CO.453}$ .

Sub-plot treatments :

4 manures :  $M_0 = \text{No manure (control)}$ ,  $M_1 = 100 \text{ lb./ac. of N as A/S}$ ,  $M_2 = 100 \text{ lb./ac. of N as G.N.C.}$  and  $M_3 = 100 \text{ lb./ac. of N as F.Y.M.}$ 

Manures applied as top dressing from 6 to 8.8.1952.

## 3. DESIGN :

(i) Split-plot. (ii) (a) 2 main-plots/replication and 4 sub-plots/main-plot. (b) 144' x 100'. (iii) 3. (iv) (a) 100' x 18'. (b) 94' x 12'. (v) One row on either side and 3' at each end. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) N.A. (iii) Sugarcane yield. (iv) (a) No. (b) No. (c) Nil. (v) (a) and (b) Nil. (vi) Nil. (vii) Field Record Register and the "Allahabad Farm" were consulted. Experiment conducted by the Head, Agronomy Department, Allahabad Agricultural Institute, Allahabad.

## 5. RESULTS :

(i) 13.58 ton/ac.

(ii) (a) 5.753 ton/ac.

(b) 3.193 ton/ac.

(iii) None of the effects is significant.

(iv) Av. yield of sugarcane in ton/ac.

	$M_0$	$M_1$	$M_2$	$M_3$	Mean
$V_1$	15.55	13.35	14.41	14.24	14.39
$V_2$	9.87	16.25	13.25	11.73	12.78
Mean	12.71	14.80	13.83	12.98	13.58

S.E. of difference of two

- |                            |                |
|----------------------------|----------------|
| 1. marginal means of V     | =2.349 ton/ac. |
| 2. marginal means of M     | =1.844 ton/ac. |
| 3. M means at a level of V | =2.607 ton/ac. |
| 4. V means at a level of M | =3.258 ton/ac. |

Crop :- Sugarcane.

Ref :- U.P. 53(269).

Zone :- Begumabad (Meerut)..

Type :- 'MV'.

Object :- To find the optimum manurial combination of N and P for different varieties of Sugarcane.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) *Methi*. (c) N.A. (ii) N.A. (iii) F.Y.M. at 150 mds./ac. applied on 2.2.1953. (iv) *Dakar* - heavy loam type IV/II. (v) (a) and (b) N.A. (c) 72, 3 budded setts/line. (d) and (e) N.A. (vi) 9.3.1953. (vii) to (ix) N.A. (x) 21 and 22.2.1954.

## 2. TREATMENTS :

All combinations of (1), (2) and (3)

(1) 3 varieties :  $V_1=CO.421$ ,  $V_2=CO.245$  and  $V_3=CO.321$ .

(2) 3 levels of N :  $N_0=0$ ,  $N_1=60$  and  $N_2=120$  lb./ac. of N.

(3) 3 levels of  $P_2O_5$  :  $P_0=0$ ,  $P_1=40$  and  $P_2=80$  lb./ac. of  $P_2O_5$ .

N as A/S,  $\frac{1}{2}$  dose on 9.3.1953 and  $\frac{3}{4}$  dose on 17.6.1953.  $P_2O_5$  as Super (full dose) on 9.3.1953.

## 3. DESIGN :

(i) and (ii)  $3^3$  confounded experiment in single replication in which X component of VNP<sub>1</sub> interaction is confounded. (iii) (a) 72'×21'. (b) 66'×15'. (iv) N.A.

## 4. GENERAL :

(i) and (ii) N.A. (iii) Sugarcane yield. (iv) (a) No. (b) and (c) N.A. (v) N.A. (vi) Analytical results of the soil are :

Depth	0"-8"	8"-23"	23"-43"	43"-73"
C/N	11.7	5.5	6.7	7.8
pH	7.8	7.6	7.3	7.8

(vii) The experiment was conducted by D.S.R.(M) on cultivator's field.

## 5. RESULTS :

(i) 42.14 ton/ac.

(ii) 3.422 ton/ac.

(iii) Main effects and interactions are not significant.

(iv) Av. yield of sugarcane in ton/ac.

	$N_0$	$N_1$	$N_2$	Mean	$P_0$	$P_1$	$P_2$
$V_1$	36.18	40.25	41.39	39.27	39.61	39.49	38.72
$V_2$	41.19	41.45	47.01	43.22	41.17	45.37	43.10
$V_3$	41.26	45.54	45.03	43.94	43.59	44.08	44.16
Mean	39.54	42.41	44.48	42.14	41.46	42.98	41.99
$P_0$	36.28	41.93	46.17				
$P_1$	41.97	42.93	44.04				
$P_2$	40.37	42.39	43.21				

S.E. of any marginal mean  
S.E. of body of any table

=1.141 ton/ac.  
=1.976 ton/ac.

Crop :- Sugarcane.

Zone :- Begumabad (Meerut).

Ref :- U.P. 53(270).

Type :- 'MV'.

Object :- To find the optimum manurial combination of N and P for different varieties of Sugarcane.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) Pea. (c) N.A. (ii) *Sewia* loam type IV. (iii) N.A. (iv) Improved. (v) (a) and (b) N.A. (c) 60 3-budded setts/line. (d) and (e) N.A. (vi) 5.5.1953. (vii) N.A. (viii) N.A. (ix) N.A. (x) N.A.

## 2. TREATMENTS :

All combinations of (1), (2) and (3)

(1) 3 varieties :  $V_1=CO.421$ ,  $V_2=CO.245$  and  $V_3=CO.321$ .

(2) 3 levels of N :  $N_0=0$ ,  $N_1=60$  and  $N_2=120$  lb./ac. of N.

(3) 3 levels of  $P_2O_5$  :  $P_0=0$ ,  $P_1=40$  and  $P_2=80$  lb./ac. of  $P_2O_5$ .

N as A/S,  $\frac{1}{2}$  dose on 5.3.1953 and  $\frac{3}{4}$  dose on 16.6.1953.  $P_2O_5$  as Super (full dose) on 5.3.1953.

## 3. DESIGN :

(i) and (ii)  $3^3$  confounded experiment in single replication. in which Y component of VNP interaction is confounded. (iii) (a) 60'×30'. (b) 54'×24'. (i) N.A.

## 4. GENERAL :

(i) and (ii) N.A. (iii) Sugarcane yield. (iv) (a) No. (b) and (c) N.A. (v) N.A. (vi) Analytical results of the soil are :

Depth	0"—8"	8"—20"	20"—32"	32"—42"	42"—56"	56"—72"
C/N	5.6	6.42	6.50	5.50	5.55	5.0
pH	6.8	6.5	6.5	6.5	6.6	6.7

(vii) The experiment was conducted by D.S.R.(M) on cultivator's field. The cultivators have been reported to have been secretly applying heavy doses of A/S to experimental plots for getting bumper yield.

## 5. RESULTS :

- (i) 37.34 ton/ac.  
(ii) 4.652 ton/ac.  
(iii) Main effects and interactions are not significant.  
(iv) Av. yield of sugarcane in ton/ac.

	N <sub>0</sub>	N <sub>1</sub>	N <sub>2</sub>	Mean	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>
V <sub>1</sub>	35.67	35.91	37.55	36.38	37.91	35.09	36.14
V <sub>2</sub>	34.79	38.06	37.34	36.73	36.16	36.30	37.73
V <sub>3</sub>	36.87	40.62	39.23	38.91	38.76	40.01	37.94
Mean	35.78	38.20	38.04	37.34	37.61	37.13	37.27
P <sub>0</sub>	35.24	39.80	37.78				
P <sub>1</sub>	37.15	35.47	38.78				
P <sub>2</sub>	34.93	39.33	37.55				

S.E. of any marginal mean

=1.551 ton/ac.

S.E. of body of any table

=2.686 ton/ac.

Crop :- Sugarcane.

Ref :- U.P. 53(271).

Zone :- Begumabad (Meerut).

Type :- 'MV'.

Object :- To find the optimum manurial combination of N and P for different varieties of Sugarcane.

## 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) Sandy loam (type IV). (iii) N.A. (iv) Improved. (v) (a) to (c) N.A. (vi) to (x) N.A.

## 2. TREATMENTS :

All combinations of (1), (2) and (3)

(1) 3 varieties : V<sub>1</sub>=CO.421, V<sub>2</sub>=CO.245 and V<sub>3</sub>=CO.321.

(2) 3 levels of N : N<sub>0</sub>=0, N<sub>1</sub>=60 and N<sub>2</sub>=120 lb./ac.

(3) 3 levels of P<sub>2</sub>O<sub>5</sub> : P<sub>0</sub>=0, P<sub>1</sub>=40 and P<sub>2</sub>=80 lb./ac.

N as A/S  $\frac{1}{2}$  dose just at planting and  $\frac{1}{2}$  dose in June and full dose of P<sub>2</sub>O<sub>5</sub> as Super in March. No details regarding actual date of application is available.

## 3. DESIGN :

(i) and (ii) 3<sup>3</sup> confounded experiment in single replication. Z<sub>4</sub> component of VNP interaction is totally confounded. (iii) (a) N.A. (b) 1/45.38 ac. (iv) N.A.

## 4. GENERAL :

(i) and (ii) N.A. (iii) Sugarcane yield. (iv) (a) No. (b) and (c) N.A. (v) N.A. (vi) Analytical results of the soil are :

Depth	0"—7"	7"—16"	16"—30"	30"—43"	43"—58"	52"—72"
C/N	8.2	5.4	5.6	4.4	5.7	5.0
pH	7.0	7.8	6.6	6.7	7.5	6.9

(vii) The experiment was conducted by D.S.R. (M) on cultivator's fields.

## 5. RESULTS :

- (i) 37.69 ton/ac.  
(ii) 3.012 ton/ac.  
(iii) Main effects of V and N are significant. Others are not significant.  
(iv) Av. yield of sugarcane in ton/ac.

	N <sub>0</sub>	N <sub>1</sub>	N <sub>2</sub>	Mean	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>
V <sub>1</sub>	35.50	37.84	38.75	37.36	36.70	37.63	37.77
V <sub>2</sub>	37.01	42.85	43.50	41.12	42.66	38.86	41.84
V <sub>3</sub>	32.45	34.89	36.41	34.58	34.47	33.83	35.45
Mean	34.99	38.53	39.55	37.69	37.94	36.77	38.35
P <sub>0</sub>	34.19	38.91	40.73				
P <sub>1</sub>	34.25	37.43	38.63				
P <sub>2</sub>	36.52	39.25	39.30				

S.E. of any marginal mean = 1.004 ton/ac.  
S.E. of body of any table = 1.739 ton/ac.

Crop :- Sugarcane.

Ref :- U.P. 53(272).

Zone :- Beguambad (Meerut).

Type :- 'MV'.

Object :- To find the optimum manurial combination of N and P for different varieties of Sugarcane.

## 1. BASAL CONDITIONS :

- (i) (a) N.A. (b) *Urid*. (c) N.A. (ii) *Domat* (sandy loam to loam soil). (iii) 225 mds./ac. of F.Y.M. on 8.2.1953. (iv) Improved varieties. (v) (a) Hoeing by *kassi-1* and hoeings by spade-4. No actual date available. (b) N.A. (c) 60 3-budded setts/line. (d) and (e) N.A. (vi) 8.3.1953. (vii) Irrigated. (viii) N.A. (ix) N.A. (x) 18 and 25.2.1954.

## 2. TREATMENTS :

All combinations of (1), (2) and (3)

(1) 3 varieties : V<sub>1</sub>=CO.421, V<sub>2</sub>=CO.245 and V<sub>3</sub>=CO.321.

(2) 3 levels of N : N<sub>0</sub>=0, N<sub>1</sub>=60 and N<sub>2</sub>=120 lb./ac.

(3) 3 levels of P<sub>2</sub>O<sub>5</sub> : P<sub>0</sub>=0, P<sub>1</sub>=40 and P<sub>2</sub>=80 lb./ac.

N as A/S  $\frac{1}{2}$  dose on 8.3.1953 and  $\frac{2}{3}$  dose on 17.6.1953 and full dose of P<sub>2</sub>O<sub>5</sub> as Super on 8.5.1953.

## 3. DESIGN :

- (i) and (ii) 3<sup>3</sup> confounded experiment in one replication. Z component of VNP interaction is confounded.  
(iii) (a) 60' x 27'. (b) 54' x 21'. (iv) N.A.

## 4. GENERAL :

- (i) Very good. (ii) Nil. (iii) Sugarcane yield. (iv) (a) No. (b) and (c) N.A. (v) N.A. (vi) Analytical results of the soil are :

Depth	0°—18°	18°—19°	19°—35°	35°—49°	49°—72°
C/N	11.4	5.3	5.3	9.1	8.1
pH	6.9	6.9	6.9	6.8	6.8

- (vii) The experiment was conducted by D.S.R. (M) on cultivator's fields.

## 5. RESULTS:

- (i) 34.79 ton/ac.  
(ii) 1.795 ton/ac.  
(iii) Main effect of N and interaction V x N are highly significant. Interaction N x P is significant. Other effects and interactions are not significant.



(iv) Av. yield of sugarcane in ton/ac.

	N <sub>0</sub>	N <sub>1</sub>	N <sub>2</sub>	Mean	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>
V <sub>1</sub>	32.40	31.43	36.63	33.49	30.86	35.06	34.54
V <sub>2</sub>	28.51	39.35	35.76	34.54	34.85	34.10	34.68
V <sub>3</sub>	31.49	38.11	39.42	36.34	35.20	37.81	36.00
Mean	30.80	36.30	37.27	34.79	33.64	35.66	35.07
P <sub>0</sub>	29.36	35.67	35.88				
P <sub>1</sub>	34.53	37.21	35.23				
P <sub>2</sub>	28.52	36.01	40.70				

S.E. of any marginal mean = 0.598 ton/ac.  
 S.E. of body of any table = 1.036 ton/ac.

Crop :- Sugarcane.

Ref :- U.P. 53(274).

Zone :- Begumabad (Meerut).

Type :- 'MV'.

Object :—To find the optimum manurial combination of N and P for different varieties of Sugarcane.

**1. BASAL CONDITIONS :**

(i) (a) N.A. (b) Pea. (c) N.A. (ii) Sandy loam to loam (type IV). (iii) 225 mds./ac. of F.Y.M. applied in April 1953. (iv) Improved variety. (v) (a) Preparation of *mendhs* and *barhas* on 23.4.1953. Ploughing by *desi* plough. Howing by *kassi* spade and *desi* plough. (b) to (e) N.A. (vi) 29.3.1953. (vii) *Palewa* on 20.3.1953. Irrigation by canal. (viii) N.A. (ix) N.A. (x) 14.2.1954.

**2. TREATMENTS :**

All combinations of (1), (2) and (3)

(1) 3 varieties : V<sub>1</sub>=CO. 421, V<sub>2</sub>=CO. 245 and V<sub>3</sub>=CO.321.(2) 3 levels of N : N<sub>0</sub>=0, N<sub>1</sub>=60 and N<sub>2</sub>=120 lb./ac.(3) 3 levels of P<sub>2</sub>O<sub>5</sub> : P<sub>0</sub>=0, P<sub>1</sub>=40 and P<sub>2</sub>=80 lb./ac.N as A/S,  $\frac{1}{2}$  dose on 29.3.1953 and  $\frac{2}{3}$  dose on 18.6.1953. Full dose of P<sub>2</sub>O<sub>5</sub> as Super on 23.4.1953.**3. DESIGN :**

(i), (ii) 3<sup>2</sup> confounded experiment in single replication. Z component of VNP interaction is confounded.  
 (iii) (a) N.A. (b) 1/44 ac. (iv) N.A.

**4. GENERAL :**

(i) N.A. (ii) 4 plots were seriously damaged by white ants. (iii) Sugarcane yield. (iv) (a) No. (b) and (c) N.A. (v) N.A. (vi) Analytical results of the soil are :

Depth	0"—8"	8"—22"	22"—59"	59"—72"
C/N	9.20	8.71	6.28	5.62
pH	7.1	6.9	6.8	6.7

(vii) The expt. was conducted by D.S.R(M) on cultivator's fields.

**5. RESULTS :**

(i) 16.81 ton/ac.

(ii) 4.759 ton/ac.

(iii) None of the effects and interactions are significant.

(iv) Av. yield of sugarcane in ton/ac.

	N <sub>0</sub>	N <sub>1</sub>	N <sub>2</sub>	Mean	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>
V <sub>1</sub>	14.81	16.13	15.62	15.52	16.74	14.70	15.11
V <sub>2</sub>	13.59	18.77	23.37	18.58	17.53	16.26	21.93
V <sub>3</sub>	14.47	15.39	19.16	16.34	21.10	7.97	19.96
Mean	14.29	16.76	19.38	16.81	18.46	12.98	19.00
P <sub>0</sub>	15.52	16.98	22.88				
P <sub>1</sub>	10.63	13.06	15.24				
P <sub>2</sub>	16.72	20.25	22.04				

S.E. of any marginal mean = 1.586 ton/oc.  
 S.E. of body of any table = 2.748 ton/ac.

Crop :- Sugarcane.

Ref :-U.P. 53(276).

Zone :-Begumabad (Meerut).

Type :- 'MV'.

Object :-To find the optimum manurial combination of N and P for different varieties of Sugarcane.

**1. BASAL CONDITIONS :**

(i) (a) N.A. (b) Pea. (c) N.A. (ii) *Sewta*—Loam Type IV. (iii) Nil. (iv) Improved variety. (v) (a) Preparation of *mendhs* and *barhas* on 24.4.1953, ploughing by cultivator on 29.4.1953 and 16.5.1953 by *desi* plough on 5.6.1953. (b) N.A. (c) 52 3-budded setts/line. (d) N.A. (e) —. (vi) 31.3.1953. (vii) *Palewa* on 18.3.1953. Irrigated. (viii) N.A. (ix) N.A. (x) 30 and 31.1.1954.

**2. TREATMENTS :**

All combinations of (1), (2) and (3)

(2) 3 varieties : V<sub>1</sub>=CO. 421, V<sub>2</sub>=CO 245. and V<sub>3</sub>=CO. 321.(2) 3 levels of N : N<sub>0</sub>=0, N<sub>1</sub>=60 and N<sub>2</sub>=120 lb./ac.(3) 3 levels of P<sub>2</sub>O<sub>5</sub> : P<sub>0</sub>=0, P<sub>1</sub>=40 and P<sub>2</sub>=80 lb./ac.N as A/S,  $\frac{1}{3}$  dose on 31.3.1953 and  $\frac{2}{3}$  dose on 17.3.1953. Full dose of P<sub>2</sub>O<sub>5</sub> as Super on 31.3.1953.**3. DESIGN :**

(i), (ii) 3<sup>3</sup> confounded experiment in single replication. W component of VNP interaction is confounded  
 (iii) (a) 52'×27'. (b) 46'×21'. (iv) N.A.

**4. GENERAL :**

(i) Condition slightly below average. Crops in plots with V<sub>2</sub>N<sub>0</sub>P<sub>0</sub>, V<sub>2</sub>N<sub>1</sub>P<sub>1</sub>, V<sub>0</sub>N<sub>2</sub>P<sub>0</sub> treatments damaged.  
 (ii) There was a heavy general attack of stem borer. Control measures taken—N.A. (iii) Sugarcane yield. (iv) (a) No. (b) and (c) N.A. (vi) Analytical results of the soil are :

Depth	0"—7"	7"—21"	21"—38"	38"—46"	46"—72"
C/N	10.8	7.5	6.9	7.9	9.3
pH	6.9	6.5	6.7	6.7	6.7

(vii) The expt. was conducted by D.S.R(M). on cultivator's fields.

**5. RESULTS :**

(i) 17.29 ton/ac.

(ii) 2.190 ton/ac.

(iii) Main effect of N is highly significant. Main effect of V is significant. Other effects and interactions are not significant.

(iv) Av. yield of sugarcane in ton/ac.

	N <sub>0</sub>	N <sub>1</sub>	N <sub>2</sub>	Mean	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>
V <sub>1</sub>	11.81	16.23	17.73	15.26	14.24	16.47	15.06
V <sub>2</sub>	16.04	19.04	24.58	19.89	19.38	20.25	20.03
V <sub>3</sub>	14.23	15.73	20.23	16.73	15.76	16.68	17.75
Mean	14.03	17.00	20.85	17.29	16.46	17.80	17.61
P <sub>0</sub>	12.72	18.22	18.43				
P <sub>1</sub>	15.45	15.18	22.77				
P <sub>2</sub>	13.91	17.59	21.34				

S.E. of any marginal mean = 0.730 ton/ac.  
 S.E. of body of any table = 1.264 ton/ac.

Crop :- Sugarcane.  
 Zone :- Begumabad (Meerut).

Ref :- U.P. 53(292).  
 Type :- 'MV'.

Object :- To find the optimum manurial combination of N and P for different varieties of Sugarcane.

#### 1. BASAL CONDITIONS :

(i) (a) N.A. (b) Pea fodder. (c) No. (ii) *Domat*—Sandy loam Type IV. (iii) F.Y.M. at 400 md/ac. in Feb. 1953. (iv) As per treatments. (v) (a) 3 hoeings by spades. Preparation of *mendhs* and *Barhas* on 20.4.1953. Hoeing by *desi* plough on 24.6.1953. (b) N.A. (c) 70 3-budded setts/line. (d) and (e) N.A. (vi) 20.3.1953. (vii) Irrigated. (viii) N.A. (ix) N.A. (x) 11.2.1954.

#### 2. TREATMENTS :

All combinations of (1), (2) and (3)

(1) 3 varieties : V<sub>1</sub>=CO. 421, V<sub>2</sub>=CO. 245 and V<sub>3</sub>=CO. 321.

(2) 3 levels of N : N<sub>0</sub>=0, N<sub>1</sub>=60 and N<sub>2</sub>=120 lb./ac.

(3) 3 levels of P<sub>2</sub>O<sub>5</sub> : P<sub>0</sub>=0, P<sub>1</sub>=40 and P<sub>2</sub>=80 lb./ac.

N as A/S  $\frac{1}{2}$  dose on 20.5.1953 and  $\frac{1}{2}$  dose on 18.5.1953. Full dose of P<sub>2</sub>O<sub>5</sub> as Super on 20.3.1953.

#### 3. DESIGN :

(i) and (ii) 3<sup>3</sup> confounded in one replication. (iii) (a) 70'×21'. (b) 64'×15'. (iv) N.A.

#### 4. GENERAL :

(i) Condition moderate, germination gappy in plots with treatments V<sub>2</sub>N<sub>2</sub>P<sub>1</sub>, V<sub>0</sub>N<sub>0</sub>P<sub>2</sub>, V<sub>2</sub>N<sub>2</sub>P<sub>0</sub> and V<sub>0</sub>N<sub>0</sub>P<sub>1</sub>. (ii) Slight attack of stem borer. (iii) Sugarcane yield. (iv) (a) No. (b) N.A. (c) N.A. (v) N.A. (vi) Analytical results of the soil are :

Depth	0"—7"	7"—11"	11"—29"	29"—48"	48"—72"
C/N	12.6	9.7	7.0	6.5	4.4
pH	7.2	7.0	7.2	7.1	7.7

(vii) The experiment was conducted by D.S.R. (M) on cultivator's fields.

#### 5. RESULTS :

(i) 17.73 ton/ac.

(ii) 1.972 ton/ac.

(iii) Main effects of V and N are highly significant. Others are not significant.

(iv) Av. yield of sugarcane in ton/ac.

	N <sub>0</sub>	N <sub>1</sub>	N <sub>2</sub>	Mean	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>
V <sub>1</sub>	11.41	15.40	18.67	15.16	15.22	14.42	15.84
V <sub>2</sub>	12.40	18.01	19.75	16.72	17.46	16.67	16.03
V <sub>3</sub>	17.46	19.66	26.80	21.31	21.47	19.98	22.47
Mean	13.76	17.69	21.74	17.73	18.05	17.02	18.11
P <sub>0</sub>	15.11	16.97	22.07				
P <sub>1</sub>	14.00	16.29	20.77				
P <sub>2</sub>	12.16	19.81	22.37				

S.E. of any marginal mean

=0.657 ton/ac.

S.E. of body of any table

=1.139 ton/ac.

Crop :- Sugarcane.

Ref :- U.P. 53(293).

Zone :- Begumabad (Meerut).

Type :- 'MV'.

Object :- To find the optimum manurial combination of N and P for different varieties of Sugarcane.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) Pea for fodder. (c) No. (ii) *Dakar* loam to heavy loam. (iii) F.Y.M. at 300 md/ac. applied on 25.5.1953. (iv) As per treatments. (v) (a) Hoeing by spade (blind) on 25.4.1953, hoeing by cultivator on 23.6.1953. Preparation of *mendhs* and *barhas* on 7.3.1953 and repair of *mendhs* and *barhas* on 29.3.1953. (b) N.A. (c) 56 3-budded setts/line. (d) and (e) N.A. (vi) 6.3.1953. (vii) *Palewa* on 22.2.1953. irrigated by canal. (viii) N.A. (ix) N.A. (x) 24, 25.1.1954.

## 2. TREATMENTS ;

All combinations of (1), (2) and (3)

(1) 3 varieties : V<sub>1</sub>=CO 421, V<sub>2</sub>=CO 285 and V<sub>3</sub>=CO 321.(2) 3 levels of N : N<sub>0</sub>=0, N<sub>1</sub>=60 lb./ac. and N<sub>2</sub>=120 lb./ac.(3) 3 levels of P<sub>2</sub>O<sub>5</sub> : P<sub>0</sub>=0, P<sub>1</sub>=40 lb./ac. and P<sub>2</sub>=80 lb./ac.N as A/S,  $\frac{1}{2}$  dose on 6.3.1953. and  $\frac{3}{4}$  dose on 16.6.1953. Full dose of P<sub>2</sub>O<sub>5</sub> as Super on 6.3.1953.

## 3. DESIGN :

(i) and (ii) 3<sup>3</sup> confounded in one replication. (iii) (a) 56' x 27'. (b) 50' x 21'. (iv) N.A.

## 4. GENERAL :

(i) CO. 421 did not germinate uniformly and was poor ; the seed was reported to have been dried two days prior to sowing. General condition was fair in June 1953, moderate at the time of harvesting. (ii) Stem borer attack in CO. 321. (iii) Sugarcane yield. (iv) (a) No. (b) N.A. (c) N.A. (v) N.A. (vi) Nil. (vii) The experiment was conducted by D.S.R. (M) on cultivator's fields.

## 5. RESULTS:

(i) 29.80 ton/ac.

(ii) 2.326 ton/ac.

(iii) Main effects of V and N are highly significant. Other effects and interactions are not significant.

(iv) Av yield of sugarcane in ton/ac.

	N <sub>0</sub>	N <sub>1</sub>	N <sub>2</sub>	Mean.	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>
V <sub>1</sub>	24.34	28.49	28.63	27.15	27.12	26.57	27.77
V <sub>2</sub>	29.27	32.24	35.64	32.38	32.36	32.79	31.99
V <sub>3</sub>	25.86	30.76	32.97	29.86	32.33	28.91	28.35
Mean	26.49	30.49	32.41	29.80	30.60	29.42	29.37
P <sub>0</sub>	27.46	30.01	34.33				
P <sub>1</sub>	25.49	29.93	32.85				
P <sub>2</sub>	26.51	31.54	30.06				

S.E. of any marginal mean  
S.E. of body of any table

=0.775 ton/ac.  
=1.343 ton/ac.

Crop :- Sugarcane.

Zone :- Begumabad (Meerut).

Ref :- U.P. 53(294).

Type :- 'MV'.

Object :- To find the optimum manurial combination of N and P for different varieties of Sugarcane.

**1. BASAL CONDITIONS :**

(i) (a) N.A. (b) *Guar*. (c) No. (ii) *Dakar* heavy loam. (iii) F.Y.M. at 200 mds./ac. (iv) As per treatments. (v) (a) and (b) N.A. (c) 56, three budded setts/line. (d) and (e) N.A. (vi) 25.2.1953. (vii) N.A. (viii) N.A. (ix) N.A. (x) 27.1.1954 and 28.1.1954.

**2. TREATMENTS :**

All combinations of (1), (2) and (3)

(1) 3 varieties : V<sub>1</sub>=CO. 421, V<sub>2</sub>=CO. 245 and V<sub>3</sub>=CO. 321.(2) 3 levels of N : N<sub>0</sub>=0, N<sub>1</sub>=60 and N<sub>2</sub>=120 lb./ac.(3) 3 levels of P<sub>2</sub>O<sub>5</sub> : P<sub>0</sub>=0, P<sub>1</sub>=40 and P<sub>2</sub>=80 lb./ac.N as A/S,  $\frac{1}{2}$  dose on 25.2.1953 and  $\frac{1}{2}$  dose on 14.6.1953. Full dose of P<sub>2</sub>O<sub>5</sub> as Super on 15.4.1953.**3. DESIGN :**(i) and (ii) 3<sup>3</sup> confounded in one replication. (iii) (a) 56' x 30'. (b) 50' x 24'. (iv) N.A.**4. GENERAL :**

(i) N.A. (ii) N.A. (iii) Sugarcane yield. (iv) (a) No. (b) and (c) N.A. (v) N.A. (vi) Analytical results of the soil are :

Depth 0"-6 $\frac{1}{2}$ " 6 $\frac{1}{2}$ "-24" 24"-41" 41"-58" 58"-72"

C/N 12.9 6.2 5.1 — 4.7

pH 7.1 6.7 7.0 7.0 6.9

(vii) The experiment was conducted by D.S.R. (M) on cultivator's fields.

**5. RESULTS :**

- (i) 29.25 ton/ac.  
(ii) 3.615 ton/ac.  
(i) Main effect of V alone is significant.

(iv) Av. yield of sugarcane in ton/ac.

	N <sub>0</sub>	N <sub>1</sub>	N <sub>2</sub>	Mean	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>
V <sub>1</sub>	23.02	25.37	28.21	25.53	25.45	24.89	26.26
V <sub>2</sub>	30.20	29.99	32.65	30.95	29.79	32.92	30.14
V <sub>3</sub>	26.58	32.26	34.96	31.27	29.95	32.76	31.09
Mean	26.60	29.21	31.24	29.25	28.39	30.19	29.16
P <sub>0</sub>	24.69	30.23	30.28				
P <sub>1</sub>	28.07	29.35	33.15				
P <sub>2</sub>	27.06	28.04	32.39				

S.E. of any marginal mean  
S.E. of body of any table

=1.205 ton/ac.  
=2.087 ton/ac.

Crop :- Sugarcane.

Zone :- Begumabad (Meerut).

Ref :- U.P. 53(295),

Type :- 'MV'.

Object :- To find the optimum manurial combination of N and P for different varieties of Sugarcane.

**BASAL CONDITIONS :**

(i) (a) N.A. (b) *Chari* and *guar*. (c) No. (ii) *Sewta*—sandy loam. (iii) F.Y.M. at 350 md./ac. applied in April 1953. (iv) As per treatments. (v) (a) Hoeing by cultivator on 12.4.1953, 30.4.1953, 23.5.1953 and 15.6.1953 and hoeing by spade on 15.4.1953. (b) N.A. (c) 60 three-budded setts/line. (d) and (e) N.A. (vi) 25.2.1953. (vii) Irrigated by canal. (viii) N.A. (ix) N.A. (x) 17th and 18.1.1954.

**TREATMENTS :**

All combinations of (1), (2) and (3)

(1) 3 varieties : V<sub>1</sub>=CO. 421, V<sub>2</sub>=CO. 245 and V<sub>3</sub>=CO. 321.(2) 3 levels of N : N<sub>0</sub>=0, N<sub>1</sub>=60 and N<sub>2</sub>=120 lb./ac.(3) 3 levels of P<sub>2</sub>O<sub>5</sub> : P<sub>0</sub>=0, P<sub>1</sub>=40 and P<sub>2</sub>=80 lb./ac.N as A/S,  $\frac{1}{2}$  dose on 25.2.1953 and  $\frac{3}{4}$  dose on 14.6.1953. Full dose of P<sub>2</sub>O<sub>5</sub> as Super on 15.4.1953.**DESIGN :**(i) and (ii) 3<sup>2</sup> confounded in one replication. (iii) (a) 60'×27'. (b) 54'×21'. (iv) N.A.**GENERAL :**

(i) Good. (ii) No. (iii) Sugarcane yield. (iv) (a) No. (b) and (c) N.A. (v) N.A. (vi) Analytical results of the soil are :

Depth	0"	10"	10"—20 $\frac{1}{2}$ "	20 $\frac{1}{2}$ "	32"	32"—72"
C/N	9.5	3.6	3.3	4.0		
pH	7.8	6.7	6.6	6.6		

(ii) The experiment was conducted by D.S.R. (M) on cultivator's fields. The cultivator secretly applied heavy doses of A/S to experimental plots for getting bumper yield.

**RESULTS :**

- (i) 29.15 ton/ac.  
(ii) 3.618 ton/ac.  
(iii) None of the effects and interactions is significant.

(iv) Av. yield of sugarcane in ton/ac.

	N <sub>0</sub>	N <sub>1</sub>	N <sub>2</sub>	Mean	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>
V <sub>1</sub>	25.73	26.29	32.92	28.32	28.84	28.12	27.99
V <sub>2</sub>	31.04	25.57	29.41	28.67	28.49	26.62	30.91
V <sub>3</sub>	30.34	29.40	31.63	30.46	28.18	29.89	33.29
Mean	29.04	27.08	31.32	29.15	28.50	28.21	30.73
P <sub>0</sub>	27.18	26.78	31.55				
P <sub>1</sub>	28.83	24.60	31.20				
P <sub>2</sub>	31.12	29.86	31.21				

S.E. of any marginal mean

=1.206 ton/ac.

S.E. of body of any table

=2.089 ton/ac.

Crop :- Sugarcane.

Ref :- U.P. 53(296).

Zone :- Begumabad (Meerut).

Type :- 'MV'.

Object :- To find the optimum manurial combination of N and P for three different varieties of Sugarcane.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) Pea. (c) N.A. (ii) Local name *setwa*—lcamy soil type IV. (iii) F.Y.M. at 250 mds./ac. on 4.2.1953. (iv) As per treatments. (v) (a) Preparation of *Mendhs* and *Barhas* on 3, 4.4.1953, Hoeing by cultivator. Hoeing by spade on 25.5.1953. (b) N.A. (c) 54 3-budded setts/line. (d) N.A. (e) N.A. (vi) 4.3.1953. (vii) Irrigated by canal. (viii) N.A. (ix) N.A. (x) 20.1.1954 and 21.1.1954.

## 2. TREATMENTS :

All combinations of (1), (2) and (3)

(1) 3 varieties : V<sub>1</sub>=CO. 421, V<sub>2</sub>=CO. 245 and V<sub>3</sub>=CO. 321.(2) 3 levels of N : N<sub>0</sub>=0, N<sub>1</sub>=60 and N<sub>2</sub>=120 lb./ac.(3) 3 levels of P<sub>2</sub>O<sub>5</sub> : P<sub>0</sub>=0, P<sub>1</sub>=40 and P<sub>2</sub>=80 lb./ac.N as A/S applied  $\frac{1}{2}$  dose on 4.3.1953 and  $\frac{1}{2}$  dose on 17.6.1953. Full dose of Super on 15.4.1953.

## 3. DESIGN :

(i) and (ii) 3<sup>3</sup> confounded in one replication. (iii) (a) 54'×27'. (b) 48'×21'. (iv) N.A.

## 4. GENERAL :

(i) Very good. (ii) There was slight attack of smut in CO. 245 plots (as observed on 30.9.1953). (iii) Sugarcane yield. (iv) (a) No. (b) and (c) No. (v) N.A. (vi) Nil. (vii) The experiment was conducted by D.S.R: (M) on cultivators' fields.

## 5. RESULTS :

(i) 32.75 ton/ac.

(ii) 2.722 ton/ac.

(iii) Main effect of N is highly significant. Other effects and interactions are not significant.

(iv) Av. yield of sugarcane in ton/ac.

	N <sub>0</sub>	N <sub>1</sub>	N <sub>2</sub>	Mean	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>
V <sub>1</sub>	27.46	30.77	33.37	30.53	30.83	28.91	31.86
V <sub>2</sub>	30.70	32.20	37.62	33.51	33.19	33.87	33.46
V <sub>3</sub>	29.17	37.54	35.94	34.20	34.95	35.03	32.66
Mean	29.11	33.50	35.64	32.75	32.99	32.60	32.66
P <sub>0</sub>	28.45	34.97	35.55				
P <sub>1</sub>	29.98	32.63	35.20				
P <sub>2</sub>	28.90	32.91	36.17				

S.E. of any marginal mean  
S.E. of body of table

=0.907 ton/ac.  
=1.572 ton/ac.

Crop :- Sugarcane.

Zone :- Faizabad (Faizabad).

Ref :- U.P. 53(263).

Type :- 'MV'.

Object :- To find the optimum manurial combination of N and P for three different varieties of Sugarcane.

**1. BASAL CONDITIONS :**

(i) (a) to (c) N.A. (ii) *Domat*. (iii) N.A. (iv) N.A. (v) (a) to (c) N.A. (vi) 12.4.1953. (vii) Irrigated by canal. (viii) N.A. (ix) N.A. (x) 24, 25.2.1954

**2. TREATMENTS :**

All combinations of (1), (2) and (3)

(1) 3 varieties : V<sub>1</sub>=CO. 393, V<sub>2</sub>=CO. 397 and V<sub>3</sub>=CO. 617.(2) 3 levels of N : N<sub>0</sub>=0, N<sub>1</sub>=60 and N<sub>2</sub>=120 lb./ac. of N.(3) 3 levels of P<sub>2</sub>O<sub>5</sub> : P<sub>0</sub>=0, P<sub>1</sub>=40 and P<sub>2</sub>=80 lb./ac. of P<sub>2</sub>O<sub>5</sub>.N as A/S and P<sub>2</sub>O<sub>5</sub> as Super.**3. DESIGN :**

(i) and (ii) 3<sup>3</sup> confounded with one replication in which Y component of VNP, interaction is confounded.  
(iii) (a) 63'×18'. (b) 55'×12'. (iv) N.A.

**4. GENERAL :**

(i) N.A. (ii) N.A. (iii) N.A. (iv) (a) No. (b) and (c) N.A. (v) N.A. (vi) Analytical results of the soil are :

Soil Analysis :

Depth	0"–10"	10"–28"	28"–54"	54"–66"
pH	7.9	7.9	7.8	7.7
C/N	6.25	8.18	14.28	19.00
C/P	3.22	3.91	3.57	3.65

(vii) The experiment was conducted by D.S.R. (S) on cultivators' fields.

**5. RESULTS :**

- (i) 12.18 ton/ac.  
(ii) 4.025 ton/ac.  
(iii) Main effects and their interactions are not significant.



(iv) Av. yield of sugarcane in ton/ac.

	N <sub>0</sub>	N <sub>1</sub>	N <sub>2</sub>	Mean	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>
V <sub>1</sub>	9.87	15.76	12.22	12.62	11.62	11.92	14.32
V <sub>2</sub>	9.89	11.70	13.73	11.77	12.76	9.28	13.29
V <sub>3</sub>	15.35	13.13	8.00	12.16	12.91	13.46	10.94
Mean	11.70	13.53	11.32	12.18	12.43	11.55	12.58
P <sub>0</sub>	11.63	12.94	12.71				
P <sub>1</sub>	10.58	13.77	10.30				
P <sub>2</sub>	12.91	13.88	10.94				

S.E. of any marginal mean  
S.E. of body of table

=1.342 ton/ac.  
=2.324 ton/ac.

Crop :- Sugarcane,  
Zone :- Faizabad (Faizabad).

Ref :- 53(264).  
Type :- 'MV'.

Object :- To find the optimum manurial combination of N and P for three different varieties of Sugarcane.

#### 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) Type IV. (iii) N.A. (iv) As per treatments. (v) (a) to (e) N.A. (vi) 27, 28.3.1953.  
(vii) Irrigated. (viii) N.A. (ix) N.A. (x) N.A.

#### 2. TREATMENTS :

All combinations of (1), (2) and (3)

(1) 3 varieties : V<sub>1</sub>=CO. 393, V<sub>2</sub>=CO. 397 and V<sub>3</sub>=CO. 617.

(2) 3 levels of N : N<sub>0</sub>=0, N<sub>1</sub>=30 and N<sub>2</sub>=60 lb./ac. of N.

(3) 3 levels of P<sub>2</sub>O<sub>5</sub> : P<sub>0</sub>=0, P<sub>1</sub>=40 and P<sub>2</sub>=80 lb./ac. of P<sub>2</sub>O<sub>5</sub>.

N as A/S and P<sub>2</sub>O<sub>5</sub> as Super.

#### 3. DESIGN :

(i) and (ii) 3<sup>3</sup> confounded in one replication with Wc omporent of VNP interaction. is confounded,  
(iii) (a) 60.5' x 24'. (b) 52.5' x 18'. (iv) N.A.

#### 4. GENERAL :

(i) N.A. (ii) N.A. (iii) Sugarcane yield. (iv) (a) No. (b) and (c) N.A. (v) N.A. (vi) Analytical results of the soil are :

Depth	0'—10'	10'—32'	32'—52'	52'—72'
pH	7.2	7.0	7.0	7.2
C/N	12.40	8.51	9.20	10.00
C/P	5.51	3.88	3.38	3.20

(vii) The experiment was conducted by D.S.R. (S) on cultivators' fields.

#### 5. RESULTS :

(i) 24.99 ton/ac.

(ii) 0.601 ton/ac.

(iii) Main effects of N, P and V and interaction V x N are highly significant. Interaction N x P is significant.

(iv) Av. yield of sugarcane in ton/ac.

	N <sub>0</sub>	N <sub>1</sub>	N <sub>2</sub>	Mean	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>
V <sub>1</sub>	21.63	29.66	31.33	27.54	26.18	27.97	28.48
V <sub>2</sub>	21.24	22.13	23.33	22.23	19.35	23.44	23.91
V <sub>3</sub>	24.02	25.10	26.46	25.19	23.96	25.63	25.99
Mean	22.30	25.63	27.04	24.99	23.16	25.68	26.13
P <sub>0</sub>	19.18	24.66	25.64				
P <sub>1</sub>	23.47	25.97	27.60				
P <sub>2</sub>	24.24	26.26	27.88				

S.E. of any marginal mean = 0.200 ton/ac.

S.E. of body of table = 0.347 ton/ac.

Crop :- Sugarcane.  
Zone :- Faizabad (Faizabad).

Ref :- U.P. 53(265).  
Type :- 'MV'.

Object :- To find the optimum manurial combination of N and P for three different varieties of Sugarcane.

**1. BASAL CONDITIONS :**

(i) (a) to (c) N.A. (ii) N.A. (iii) N.A. (iv) As per treatments. (v) (a) to (e) N.A. (vi) 28.3.1953. (vii) N.A. (viii) N.A. (ix) N.A. (x) N.A.

**2. TREATMENTS :**

All combinations of (1), (2) and (3)

(1) 3 varieties : V<sub>1</sub>=CO. 593, V<sub>2</sub>=CO. 397 and V<sub>3</sub>=CO. 617.(2) 3 levels of N : N<sub>0</sub>=0, N<sub>1</sub>=60 and N<sub>2</sub>=120 lb./ac.(3) 3 levels of P<sub>2</sub>O<sub>5</sub> : P<sub>0</sub>=0, P<sub>1</sub>=40 and P<sub>2</sub>=80 lb./ac.N as A/S and P<sub>2</sub>O<sub>5</sub> as Super. Manuring on 28.3.1953.**3. DESIGN :**(i) and (ii) 3<sup>3</sup> confounded ; X component of VNP confounded. (iii) (a) 60'×24'. (b) 52'×18'. (iv) N.A.**4. GENERAL :**

(i) N.A. (ii) N.A. (iii) Sugarcane yield. (iv) (a) No. (b) and (c) N.A. (v) N.A. (vi) Analytical results of the soil are :

Depth	0"—12"	12"—30"	30"—46"	46"—72"
pH	7.1	7.1	7.0	6.8
C/N	8.94	5.36	4.70	5.36
C/P	8.69	3.54	3.47	4.75

(vii) The experiment was conducted by D.S.R. (S) on cultivator's fields.

**5. RESULTS :**

- (i) 23.19 ton/ac.  
(ii) 9.139 ton/ac.  
(iii) None of the effects is significant.

(iv) Av. yield of sugarcane in ton/ac.

	N <sub>0</sub>	N <sub>1</sub>	N <sub>2</sub>	Mean	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>
V <sub>1</sub>	19.72	21.79	28.11	23.21	21.06	24.17	24.38
V <sub>2</sub>	22.62	21.43	24.45	22.83	20.64	23.25	23.91
V <sub>3</sub>	22.74	20.57	27.27	23.53	24.17	27.14	19.26
Mean	21.69	21.26	26.61	23.19	21.95	25.09	22.52
P <sub>0</sub>	18.86	21.68	25.32				
P <sub>1</sub>	24.39	24.31	26.57				
P <sub>2</sub>	21.83	17.80	27.92				

S.E. of any marginal mean = 3.046 ton/ac.  
 S.E. of body of table = 5.276 ton/ac.

Crop :- Sugarcane.

Ref :- U.P. 50(222).

Zone :- Rohana Kalan (Muzaffarnagar).

Type :- 'MV'.

Object :- To find the optimum combination of N and P for three different varieties of Sugarcane.

**1. BASAL CONDITIONS :**

(i) (a) N.A. (b) *Chari* and *Jowar*. (c) N.A. (ii) *Rosli*, Sandy loam (Black soil). (iii) Nil. (iv) As per treatments. (v) (a) N.A. (b) N.A. (c) 64, 3-budded setts/row. (d) and (e) N.A. (vi) 13.3.1950. (vii) Irrigated. (viii) N.A. (ix) N.A. (x) 2 and 3.2.1951.

**2. TREATMENTS :**

All combinations of (1), (2) and (3)

(1) 3 varieties : V<sub>1</sub>=CO. 421, V<sub>2</sub>=CO. 453 and V<sub>3</sub>=C.OS. 245.(2) 3 levels of N : N<sub>0</sub>=0, N<sub>1</sub>=60 and N<sub>2</sub>=120 lb./ac.(3) 3 levels of P<sub>2</sub>O<sub>5</sub> : P<sub>0</sub>=0, P<sub>1</sub>=40 and P<sub>2</sub>=80 lb./ac.Manuring on 13.3.1950 in furrows. N applied as A/S and P<sub>2</sub>O<sub>5</sub> as Super.**3. DESIGN :**

(i), (ii) 3<sup>3</sup> confounded experiment in single replication with VN<sup>2</sup>P interaction is confounded. (iii) (a) 64'×21'. (b) 58'×15'. (iv) N.A.

**4. GENERAL :**

(i) N.A. (ii) N.A. (iii) Sugarcane yield. (iv) (a) No. (b) and (c) N.A. (v) N.A. (vi) Analytical results of the soil are :

Depth	0"–7"	7"–25"	25"–38"	38"–52"	52"–68"
pH	7.0	6.5	6.0	6.5	6.0

(vii) The expt. was conducted by D.S.R(M) on cultivators' fields.

**5. RESULTS:**

(i) 30.17 ton/ac.

(ii) 4.282 ton/ac.

(iii) Main effect of N is highly significant. Other effects and interactions are not significant.

(iv) Av. yield of sugarcane in ton/ac.

	N <sub>0</sub>	N <sub>1</sub>	N <sub>2</sub>	Mean	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>
V <sub>1</sub>	27.50	28.48	32.00	29.33	28.86	29.90	29.22
V <sub>2</sub>	27.43	34.37	34.27	32.02	31.95	33.13	30.99
V <sub>3</sub>	24.61	29.87	32.97	29.15	27.15	29.27	31.03
Mean	26.51	30.91	33.08	30.17	29.32	30.77	30.41
P <sub>0</sub>	28.35	29.15	30.45				
P <sub>1</sub>	27.33	31.17	33.80				
P <sub>2</sub>	23.85	32.40	34.98				

S.E. of any marginal mean = 1.427 ton/ac.  
 S.E. of body of table = 2.472 ton/ac.

Crop :- Sugarcane.

Ref :- U.P. 50(223).

Zone :- Rohana Kalan (Muzaffarnagar.)

Type :- 'MV'.

Object :- To find the optimum manurial combination of N and P for three different varieties of Sugarcane.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) Wheat. (c) N.A. (ii) *Damat* Sandy loam (type IV). well determined; (iii) Nil. (iv) As per treatments. (v) (a), (b) N.A. (c) 64 three budded setts/row. (d) and (e) N.A. (vi) 24.2.1950. (vii) Irrigated (viii) N.A. (ix) N.A. (x) N.A.

## 2. TREATMENTS :

All combinations of (1), (2) and (3)

(1) 3 varieties : V<sub>1</sub>=CO. 421, V<sub>2</sub>=CO. 453 and V<sub>3</sub>=CO. 245.(2) 3 levels of N : N<sub>0</sub>=0, N<sub>1</sub>=60 and N<sub>2</sub>=120 lb./ac.(3) 3 levels of P<sub>2</sub>O<sub>5</sub> : P<sub>0</sub>=0, P<sub>1</sub>=40 and P<sub>2</sub>=80 lb./ac.Manuring on 24.2.1950 in furrows. N applied as A/S and P<sub>2</sub>O<sub>5</sub> as Super.

## 3. DESIGN :

(i), (ii) 3×3×3 confounded experiment in single replication with VNP interaction is confounded. (iii) (a) 64'×27'. (b) 58'×21'. (iv) N.A.

## 4. GENERAL :

(i) N.A. (ii) N.A. (iii) Sugarcane yield. (iv) (a) 1950-1951. (b) and (c) N.A. (v) N.A. (vi) Analytical results of the soil are :

Depth	0"-7"	7"-23"	23"-36"	36"-49"	49"-62"	62"-72"
pH	7.0	6.5	6.0	6.0	6.0	5.5

(vii) The expt. was conducted by D.S.R(M). on cultivator's field.

## 5. RESULTS :

(i) 31.86 ton/ac.

(ii) 3.276 ton/ac.

(iii) Main effect of N is highly significant. Other effects and interactions are not significant.

(iv) Av. yield of sugarcane in ton/ac.

	N <sub>0</sub>	N <sub>1</sub>	N <sub>2</sub>	Mean	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>
V <sub>1</sub>	26.11	32.44	34.98	31.18	30.19	34.01	29.33
V <sub>2</sub>	29.27	34.47	36.08	33.27	32.69	31.07	36.06
V <sub>3</sub>	28.18	31.33	33.88	31.13	30.90	28.57	33.92
Mean	27.85	32.75	34.98	31.86	31.26	31.22	33.10
P <sub>0</sub>	25.37	32.39	36.02				
P <sub>1</sub>	27.82	31.97	33.87				
P <sub>2</sub>	30.37	33.89	35.05				

S.E. of any marginal mean = 1.092 ton/ac.  
 S.E. of body of table = 1.891 ton/ac.

Crop :- Sugarcane.

Ref :- U.P. 50(224).

Zone :- Rohana Kalan (Muzaffarnagar).

Type :- 'MV'.

Object :- To find the optimum manurial combination of N and P for three different varieties of Sugarcane.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) Pea. (c) N.A. (ii) *Dakar*, clay loam (type VI) well drained. (iii) F.Y.M. 180 mds. (iv) As per treatments (all improved varieties). (v) (a) 5 ploughings. Hoeings on 24.4.1950, 30.5.1950, 17.6.1950. and 26.6.1950. Binding of sugarcane on 7.9.1950. (b) N.A. (c) 76 three budded setts/row. (d) and (e) N.A. (vi) 29.3.1950. (vii) Irrigated. (viii) N.A. (ix) N.A. (x) 29 and 30.1.1951.

## 2. TREATMENTS :

All combinations of (1), (2) and (3).

(1) 3 varieties : V<sub>1</sub>=CO. 421, V<sub>2</sub>=CO. 453 and V<sub>3</sub>=CO. 245.(2) 3 levels of N : N<sub>0</sub>=0, N<sub>1</sub>=60 and N<sub>2</sub>=120 lb./ac.(3) 3 levels of P<sub>2</sub>O<sub>5</sub> : P<sub>0</sub>=0, P<sub>1</sub>=40 and P<sub>2</sub>=80 lb./ac.N as A/S and P<sub>2</sub>O<sub>5</sub> as Super applied on 29, 39.1.1951. in furrows,

## 3. DESIGN :

(i) and (ii) 3<sup>3</sup> confounded experiment in single replication with VN<sup>2</sup>P interaction is confounded. (iii) (a) 76' x 21'. (b) 70' x 15'. (iv) N.A.

## 4. GENERAL :

(i) N.A. (b) N.A. (iii) Sugarcane yield. (iv) (a) No. (b) N.A. (c) N.A. (v) N.A. (vi) Analytical results of the soil are.

Depth	0"–11"	11"–28"	28"–43"	43"–60"	60"–75"
pH	5.5	6.5	6.5	6.0	6.0

(vii) The experiment was conducted by D.S.R. (M) on cultivators' fields.

## 5. RESULTS :

(i) 23.83 ton/ac.

(ii) 3.001 ton/ac.

(iii) Main effects and their interactions are not significant.

(iv) Av. yield of sugarcane in ton/ac.

	N <sub>0</sub>	N <sub>1</sub>	N <sub>2</sub>	Mean	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>
V <sub>1</sub>	22.91	23.16	23.24	23.10	21.66	23.60	24.05
V <sub>2</sub>	20.86	21.78	23.51	22.05	21.23	21.98	22.94
V <sub>3</sub>	23.69	26.28	29.04	26.34	26.06	24.11	28.84
Mean	22.49	23.74	25.26	23.83	22.98	23.23	25.28
P <sub>0</sub>	21.88	21.55	25.52				
P <sub>1</sub>	22.27	24.72	22.70				
P <sub>2</sub>	23.31	24.96	27.56				

S.E. of any marginal mean

=1.000 ton/ac.

S.E. of body of table

=1.733 ton/ac.

Crop :- Sugarcane.

Ref :- U.P. 50(225).

Zone :- Muzaffarnagar (Muzaffarnagar).

Type :- 'MV'.

Object :- To find the optimum manurial combination of N and P for three different varieties of Sugarcane.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) N.A. (c) N.A. (ii) *Rosli* sandy loam, water logged. (iii) N.A. (iv) As per treatments. (v) (a) and (b) N.A. (c) 64 three budded setts/line. (d) and (e) N.A. (vi) 13, 14.4.1950. (vii) N.A. (viii) N.A. (ix) N.A. (x) N.A.

## 2. TREATMENTS :

All combinations of (1), (2) and (3).

(1) 3 varieties : V<sub>1</sub>=CO.421, V<sub>2</sub>=CO.453 and V<sub>3</sub>=CO .S.245.(2) 3 levels of N : N<sub>0</sub>=0, N<sub>1</sub>=60 and N<sub>2</sub>=120 lb./ac.(3) 3 levels of P<sub>2</sub>O<sub>5</sub> : P<sub>0</sub>=0, P<sub>1</sub>=40 and P<sub>2</sub>=80 lb./ac.N as A/S and P<sub>2</sub>O<sub>5</sub> as Super. Manuring on 13, 14.4.1950 in furrows.

## 3. DESIGN :

(i) and (ii) 3<sup>3</sup> confounded experiment in single replication in which VN<sup>2</sup>P<sup>2</sup> interaction is confounded. (iii) (a) 64'×27'. (b) 58'×21'. (iv) N.A.

## 4. GENERAL :

(i) N.A. (ii) Some of the plots have been greatly effected by white ants. (iii) Sugarcane yield. (iv) (a) 1950-1951. (b) N.A. (c) N.A. (v) N.A. (vi) Analytical results of soil are :

Depth	0"-6"	7"-29"	29"-41"	41"-60"	60"-72"
pH	6.5	6.5	6.5	6.0	6.0

(vii) The experiment was conducted by D.S.R. (M) on cultivators' fields.

## 5. RESULTS :

(i) 19.99 ton/ac.

(ii) 5.769 ton/ac.

(iii) Main effects and their interactions are not significant.

(iv) Av. yield of sugarcane in ton/ac.

	N <sub>0</sub>	N <sub>1</sub>	N <sub>2</sub>	Mean	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>
V <sub>1</sub>	15.46	18.55	20.59	18.20	19.57	23.78	11.25
V <sub>2</sub>	20.39	20.74	27.14	22.76	20.28	22.12	25.88
V <sub>3</sub>	18.71	21.38	16.93	19.01	17.97	22.00	17.05
Mean	18.19	20.22	21.55	19.99	19.27	22.63	18.06
P <sub>0</sub>	24.33	13.77	19.71				
P <sub>1</sub>	16.03	25.75	26.12				
P <sub>2</sub>	14.20	21.15	18.82				

S.E. of any marginal mean  
S.E. of body of table

=1.923 ton/ac.  
=3.331 ton/ac.

Crop :-Sugarcane.

Ref :-U.P. 50(226).

Zone :-Mansurpur (Muzaffarnagar).

Type :-'MV'.

Object :—To find the optimum manurial combination of N and P for three different varieties of Sugarcane.

**1. BASAL CONDITIONS :**

(i) (a) to (c) N.A. (ii) *Dakar* Clay loam (type IV) Low land partially water logged. (iii) Nil. (iv) As per treatments. (v) (a), (b) N.A. (c) 64 three budded setts/row. (d) and (e) N.A. (vi) 4.4.1950. (vii) N.A. (viii) N.A. (ix) N.A. (x) N.A.

**2. TREATMENTS :**

All combinations of (1), (2) and (3)

(1) 3 varieties : V<sub>1</sub>=CO. 421. V<sub>2</sub>=CO. 453 and V<sub>3</sub>=CO.S. 245.(2) 3 levels of N : N<sub>0</sub>=0, N<sub>1</sub>=60 and N<sub>2</sub>=120 lb./ac.(3) 3 levels of P<sub>2</sub>O<sub>5</sub> : P<sub>0</sub>=0, P<sub>1</sub>=40 and P<sub>2</sub>=80 lb./ac.N as A/S and P<sub>2</sub>O<sub>5</sub> as Super. Manuring on 4.4.1950 in furrows.**3. DESIGN :**

(i), (ii) 3<sup>3</sup> confounded experiment in single replication in which VNP<sup>2</sup> interaction is confounded. (iii) (a) 64'×24'. (b) 58'×18'. (iv) N.A.

**6. GENERAL :**

(i) N.A. (ii) N.A. (iii) Sugarcane yield. (iv) (a) 1950—1951. (b) and (c) N.A. (v) N.A. (vi) Analytical results of the soil are :

Depth	0"–9"	9"–26"	26"–48"	48"–63"	63"–72"
pH	6.7	6.5	6.6	6.8	6.6

(vii) The expt. was conducted by D.S.R(M) on cultivators' fields.

**5. RESULTS :**

(i) 19.19 ton/ac.

(ii) 6.798 ton/ac.

(iii) Main effects and their interactions are not significant.

(iv) Av. yield of sugarcane in ton/ac.

	N <sub>0</sub>	N <sub>1</sub>	N <sub>2</sub>	Mean	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>
V <sub>1</sub>	15.05	14.34	19.27	16.22	17.72	14.40	16.54
V <sub>2</sub>	17.42	22.75	28.49	22.89	24.61	24.07	19.99
V <sub>3</sub>	16.39	17.29	21.69	18.46	13.75	19.55	22.07
Mean	16.29	18.13	23.15	19.19	18.69	19.34	19.53
P <sub>0</sub>	15.61	17.93	20.54				
P <sub>1</sub>	18.76	14.99	24.27				
P <sub>2</sub>	14.49	19.46	24.64				

S.E. of any marginal mean = 2.266 ton/ac.  
 S.E. of body of table = 3.925 ton/ac.

Crop :- Sugarcane.

Ref :- U.P. 50(227).

Zone :- Mansurpur (Muzaffarnagar).

Type :- 'MV'.

Object :- To find the optimum manurial combination of N and P for three different varieties of Sugarcane.

**1. BASAL CONDITIONS:**

(i) (a) N.A. (b) *Chart*. (c) No. (ii) *Rosli* Sandy loam (type IV) water logged. The field was selected next to the canal bank and was submerged for 2½ months due to a breach in the bank. (iii) Nil. (iv) As per treatments. (v) (a), (b) N.A. (c) 64. three budded setts/row. (d) and (e) N.A. (vi) 21.2.1950. (vii) irrigated. (viii) N.A. (ix) N.A. (x) N.A.

**2. TREATMENTS:**

All combinations of (1), (2) and (3)

(1) 3 varieties : V<sub>1</sub>=CO. 421, V<sub>2</sub>=CO. 453 and V<sub>3</sub>=CO.S. 245.(2) 3 levels of N : N<sub>0</sub>=0, N<sub>1</sub>=60 and N<sub>2</sub>=120 lb./ac.(3) 3 levels of P<sub>2</sub>O<sub>5</sub> : P<sub>0</sub>=0, P<sub>1</sub>=40 and P<sub>2</sub>=80 lb./ac.N as A/S and P<sub>2</sub>O<sub>5</sub> as Super. Manuring on 21.2.1950 in furrows.**3. DESIGN:**

(i), (ii) 3<sup>3</sup> confounded experiment in single replication in which VNP<sup>3</sup> interaction is confounded. (iii) (a) 64'×27'. (b) 58'×21'. (iv) N.A.

**4. GENERAL**

(i) N.A. (ii) N.A. (iii) Sugarcane yield. (iv) (a) 1950—1951. (b) and (c) N.A. (v) N.A. (vi) Analytical results of soil are :-

Depth	0"—7"	7"—29"	29"—41"	41"—60"	60"—72"
pH	6.5	6.5	6.5	6.0	6.0

(vii) The expt. was conducted by D.S.R(M). on cultivators' fields.

**5. RESULTS:**

(i) 17.02 ton/ac.

(ii) 1.372 ton/ac.

(iii) Main effect of N is highly significant. Other effects and interactions are not significant.



(iv) Av. yield of sugarcane in ton/ac.

	N <sub>0</sub>	N <sub>1</sub>	N <sub>2</sub>	Mean	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>
V <sub>1</sub>	13.55	19.68	20.76	18.00	18.30	17.44	18.25
V <sub>2</sub>	13.23	18.58	20.33	17.38	16.36	17.51	18.28
V <sub>3</sub>	12.41	15.95	18.68	15.68	16.84	15.14	15.05
Mean	13.06	18.07	19.92	17.02	17.17	16.70	17.19
P <sub>0</sub>	12.63	18.78	20.09				
P <sub>1</sub>	13.38	18.09	18.62				
P <sub>2</sub>	13.17	17.34	21.06				

S.E. of any marginal mean = 0.457 ton/ac.  
 S.E. of body of table = 0.792 ton/ac.

Crop :- Sugarcane.

Ref :- U.P. 51(209).

Zone :- Muzaffarnagar.

Type :- 'MV'.

Object :- To find the optimum manurial combination of N and P for three different varieties of Sugarcane.

**1. BASAL CONDITIONS :**

(i) (a) N.A. (b) Cotton. (c) N.A. (ii) Sandy loam (type IV). (iii) F.Y.M. at 300 mds./ac. (iv) As per treatments. (v) (a) Hoeing on 19.3.1951, 21.4.1951, 21.5.1951. and 20.6.1951, (b) N.A. (c) 72 three budded setts/row. (d) and (e) N.A. (vi) 26.2.1951. (vii) Irrigated. (viii) N.A. (ix) N.A. (x) 14 and 15.2.1952.

**2. TREATMENTS :**

All combinations of (1), (2) and (3)

(1) 3 varieties : V<sub>1</sub>=CO. 421. V<sub>2</sub>=CO.S. 245 and V<sub>3</sub>=CO.S. 321.(2) 3 levels of N : N<sub>0</sub>=C, N<sub>1</sub>=60 and N<sub>2</sub>=120 lb./ac.(3) 3 levels of P<sub>2</sub>O<sub>5</sub> : P<sub>0</sub>=0, P<sub>1</sub>=40 and P<sub>2</sub>=80 lb./ac.N as A/S and P<sub>2</sub>O<sub>5</sub> as Super. Manuring on 26.2.1951. in furrows.**3. DESIGN :**

(i) and (ii) 3<sup>3</sup> confounded experiment in single replication with VN<sup>3</sup>P<sup>3</sup> interaction is confounded. (iii) (a) 72'×24'. (b) 66'×18'. (iv) N.A.

**4. GENERAL :**

(i) Good ; gaps in plots with treatments V<sub>2</sub>N<sub>2</sub>P<sub>0</sub> and V<sub>2</sub>N<sub>2</sub>P<sub>2</sub>. (ii) Slight attack of Pyrilla in general throughout the whole experiment. (iii) Sugarcane yield (iv) (a) No. (b) N.A. (c) N.A. (v) N.A. (vi)

Analytical results of soil are :

Depth	0"-7"	7"-16"	16"-26"	26"-46"	46"-64"
pH	7.3	6.7	7.2	7.1	7.0

The experiment was conducted by D.S.R. (M) on cultivators' fields.

**5. RESULTS :**

(i) 23.49 ton/ac.

(ii) 2.238 ton/ac.

(iii) Main effects of N and V are highly significant. Main effect of P is not significant. Interaction N×V is significant. Other interactions are not significant.

(iv) Av. yield of sugarcane in ton/ac.

	N <sub>0</sub>	N <sub>1</sub>	N <sub>2</sub>	Mean	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>
V <sub>1</sub>	19.32	24.18	27.42	23.64	22.89	23.58	24.46
V <sub>2</sub>	15.03	24.50	18.78	19.44	19.96	19.34	19.01
V <sub>3</sub>	19.25	27.91	35.00	27.39	27.84	28.12	26.02
Mean	17.87	25.53	27.07	23.49	23.56	23.68	23.22
P <sub>0</sub>	18.19	24.81	27.68				
P <sub>1</sub>	17.04	26.19	27.82				
P <sub>2</sub>	18.37	25.60	25.70				

S.E. of any marginal mean  
S.E. of body of table

=0.746 ton/ac.  
=1.292 ton/ac.

Crop :- Sugarcane.

Ref :- U.P. 51(208).

Zone :- Khatauli (Muzaffarnagar).

Type :- 'MV'.

Object :- To find the optimum manurial combination of N and P for three different varieties of Sugarcane.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) *Sanai*. (c) No. (ii) Sandy loam (type IV). (iii) *Sanai* green manuring. (iv) As per treatments. (v) (a) Hoeing by spade on 8.4.1951, 28 to 30.4.1951, 9.5.1951, 27 to 29.5.1951. and 1.6.1951. Preparation of *mordhas* and *barhas* on 17 and 18.3.1951. (b) N.A. (c) 71 three budded setts/row. (d) and (e) N.A. (vi) 17 and 18 3.1951. (vii) Irrigated. (viii) N.A. (ix) N.A. (x) 8, 9.2.1952.

## 2. TREATMENTS :

All combinations of (1), (2) and (3)

(1) 3 varieties : V<sub>1</sub>=CO.421, V<sub>2</sub>=CO.245 and V<sub>3</sub>=CO.S.321.(2) 3 levels of N : N<sub>0</sub>=0, N<sub>1</sub>=60 and N<sub>2</sub>=120 lb./ac.(3) 3 levels of P<sub>2</sub>O : P<sub>0</sub>=0, P<sub>1</sub>=40 and P<sub>2</sub>=80 lb./ac.N as A/S and P<sub>2</sub>O<sub>5</sub> as Super. Manuring on 17, 18.3.1951 in furrows.

## 3. DESIGN :

(i) and (ii) 3<sup>3</sup> confounded experiment in single replication with VN<sup>2</sup>P interaction is confounded. (iii) (a) 71'×24'. (b) 65'×18'. (iv) N.A.

## 4. GENERAL :

(i) The condition of the crop was slightly below normal because of only two pre-monsoon irrigations. In treatments V<sub>2</sub>N<sub>1</sub>P<sub>2</sub> and V<sub>2</sub>N<sub>2</sub>P<sub>0</sub>—poor germination. Slight attack of pyrilla in general. (iii) Sugarcane yield.

(iv) (a) N.A. (b) and (c) N.A. (v) N.A. (vi) Analytical results of soil are :

Depth 0"–7" 7"–11" 11"–22" 22"–40" 40"–56" 56"–64" 64"–72"  
pH 7.3 7.0 7.3 7.4 7.3 7.4 7.1

(vii) The experiment was conducted by D.S.R. (M) on cultivators' fields.

## 5. RESULTS :

(i) 15.27 ton/ac.

(ii) 2.077 ton/ac.

(iii) Main effect of N is highly significant. Other effects and interactions are not significant.

(iv) Av. yield of sugarcane in ton/ac.

	N <sub>0</sub>	N <sub>1</sub>	N <sub>2</sub>	Mean	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>
V <sub>1</sub>	10.96	16.57	18.13	15.22	16.49	14.33	14.84
V <sub>2</sub>	14.32	15.57	16.65	15.51	17.15	13.64	15.75
V <sub>3</sub>	11.95	15.63	17.67	15.08	16.18	14.31	14.76
Mean	12.41	15.92	17.48	15.27	16.61	14.09	15.11
P <sub>0</sub>	12.93	18.39	18.51				
P <sub>1</sub>	11.50	15.22	15.56				
P <sub>2</sub>	12.80	14.16	18.38				

S.E. of any marginal mean

=0.692 ton/ac.

S.E. of body of table

=1.199 ton/ac.

Crop :-Sugarcane.

Ref :-U.P. 51(207).

Zone :-Khatauli (Muzaffarnagar)-

Type :-'MV'.

Object :-To find the optimum manurial combination of N and P for three different varieties of Sugarcane.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) *Sanai+Guar* for seed. (c) N.A. (ii) Sandy loam to loam (type IV). (iii) 300 mds./ac. of F.Y.M. (iv) As per treatments. (v) (a) Hoeing by *kassi* on 21.3.1951. by cultivator on 26.4.1951, 4.6.1951 and 1.7.1951 and by spade on 30.4.1951, 17.6.1951 and 3.7.1951. (b) N.A. (c) 61 three budded setts/row. (d) and (e) N.A. (vi) 15.3.1951. (vii) Irrigated. (viii) N.A. (ix) N.A. (x) 18 to 21.2.1952.

## 2. TREATMENTS :

All combinations of (1), (2) and (3)

(1) 3 varieties : V<sub>1</sub>=CO. 421, V<sub>2</sub>=CO. 245 and V<sub>3</sub>=CO.S. 321.(2) 3 levels of N : N<sub>0</sub>=0, N<sub>1</sub>=60 and N<sub>2</sub>=120 lb./ac.(3) 3 levels of P<sub>2</sub>O<sub>5</sub> : P<sub>0</sub>=0, P<sub>1</sub>=40 and P<sub>2</sub>=80 lb./ac.N as A/S and P<sub>2</sub>O<sub>5</sub> as Super. Manuring on 15.3.1951 in furrows.

## 3. DESIGN :

(i), (ii) 3<sup>3</sup> confounded experiment in single replication with VNP<sup>3</sup> interaction is confounded. (iii) (a) 61' x 27'. (b) 55' x 21'. (iv) N.A.

## 4. GENERAL :

(i) Very good at harvesting time. (ii) Slight attack of *Pyrilla*. (iii) Sugarcane yield. (iv) (a) No. (b, and (c) N.A. (v) N.A. (vi) Analytical results of soil are :

Depth	0"-6"	6"-12"	12"-24"	24"-39"	39"-50"	50"-72"
pH	7.2	7.2	7.2	7.0	7.2	7.3

(vii) The experiment was conducted by D.S.R(M) on cultivators' fields.

## 5. RESULTS :

(i) 31.80 ton/ac.

(ii) 4.195 ton/ac.

(iii) Main effect of N is significant. Other effects and interactions are not significant.

(iv) Av. yield of sugarcane in ton/ac.

	N <sub>0</sub>	N <sub>1</sub>	N <sub>2</sub>	Mean	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>
V <sub>1</sub>	28.49	32.88	37.91	33.09	34.40	32.56	32.31
V <sub>2</sub>	23.99	31.99	35.01	30.33	29.19	33.41	28.38
V <sub>3</sub>	30.82	30.56	34.55	31.98	30.82	30.85	34.26
Mean	27.77	31.81	35.82	31.80	31.47	32.27	31.65
P <sub>0</sub>	27.92	32.13	34.37				
P <sub>1</sub>	29.12	31.84	35.86				
P <sub>2</sub>	26.27	31.45	37.23				

S.E. of any marginal mean = 1.398 ton/ac.

S.E. of body of table = 2.422 ton/ac.

Crop :- Sugarcane.

Ref :- U.P. 51(206).

Zone :- Khatauli (Muzaffarnagar).

Type :- 'MV'.

Object :- To find the optimum manurial combination of N and P for three different varieties of Sugarcane.

**1. BASAL CONDITIONS :**

(i) (a) N.A. (b) Sugarcane *Ratoon*. (c) N.A. (ii) Sandy loam (type IV). (iii) 300 mds./ac. of F.Y.M. applied. (iv) As per treatments. (v) (a) Hoeing on 10 and 21.3.1951, 1 and 15.4.1951, 8.6.1951 and 10.7.1951 (b) N.A. (c) 72 three budded setts/row. (d) and (e) N.A. (vi) 2.3.1951. (vii) Irrigated. (viii) N.A. (ix) N.A. (x) 11 and 12.2.1952.

**2. TREATMENTS :**

All combinations of (1), (2) and (3)

(1) 3 varieties ; V<sub>1</sub>=CO. 421, V<sub>2</sub>=CO. 245 and V<sub>3</sub>=CO. 321.(2) 3 levels of N: N<sub>0</sub>=0, N<sub>1</sub>=60 and N<sub>2</sub>=120 lb./ac.(3) 3 levels of P<sub>2</sub>O<sub>5</sub> : P<sub>0</sub>=0, P<sub>1</sub>=40 and P<sub>2</sub>=80 lb./ac.N as A/S and P<sub>2</sub>O<sub>5</sub> as Super and date of manuring 2.3.1951 in furrows.**3. DESIGN :**(i), (ii) 3<sup>3</sup> confounded experiment in single replication with VNP interaction is confounded. (iii) (a) 72'×21'. (b) 66'×15'. (iv) N.A.**4. GENERAL :**(i) Satisfactory. (ii) Slight attack of *Pyrilla*. (iii) Sugarcane yield. (iv) (a) No. (b) and (c) N.A. (v) N.A. (vi) Analytical results of soil are :

Depth	0"–7"	7"–27"	27"–40"	40"–54"	54"–72"
pH	6.8	7.0	6.8	6.9	7.1

(vii) Experiment was conducted by D.S.R(M) on cultivators' fields.

**5. RESULTS :**

(i) 20.60 ton/ac.

(ii) 2.082 ton/ac.

(iii) Main effect of N is highly significant. main effect of V is significant. Main effect of P and other interactions are not significant.

(iv) Av. yield of sugarcane in ton/ac.

	N <sub>0</sub>	N <sub>1</sub>	N <sub>2</sub>	Mean	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>
V <sub>1</sub>	13.23	22.05	26.47	20.58	20.38	20.16	21.21
V <sub>2</sub>	13.66	19.62	22.60	18.63	17.67	18.80	19.43
V <sub>3</sub>	16.50	24.12	27.12	22.58	23.50	22.62	21.62
Mean	14.46	21.93	25.40	20.60	20.51	20.53	20.75
P <sub>0</sub>	13.99	22.35	25.20				
P <sub>1</sub>	13.93	22.20	25.45				
P <sub>2</sub>	15.47	21.25	25.54				

S.E. of any marginal mean = 0.694 ton/ac.  
 S.E. of body of table = 1.202 ton/ac.

Crop :- Sugarcane  
 Zone :- Khatauli (Muzaffarnagar).

Ref :- U.P. 51(211).  
 Type :- 'MV'.

Object :- To find the optimum manurial combination of N and P for three different varieties of Sugarcane.

#### 1. BASAL CONDITIONS :

(i) (a) N.A. (b) *Urd* and *guar*. (c) N.A. (ii) Sandy loam to loam (type IV). (iii) 300 mds./ac. of F.Y.M. (iv) As per treatments. (v) (a) 2 hoeings by spade and 6 hoeings by cultivator. (b) N.A. (c) 64 three budded setts/row. (d) and (e) N.A. (vi) 15.2.1951. (vii) Irrigated (viii) N.A. (ix) N.A. (x) 22 to 24.2.1952.

#### 2. TREATMENTS :

All combinations of (1), (2) and (3)

(1) 3 varieties : V<sub>1</sub>=CO. 421, V<sub>2</sub>=CO.S. 245 and V<sub>3</sub>=CO.S. 321.

(2) 3 levels of N : N<sub>0</sub>=0, N<sub>1</sub>=60 and N<sub>2</sub>=120 lb./ac.

(3) 3 levels of P<sub>2</sub>O<sub>5</sub> : P<sub>0</sub>=0, P<sub>1</sub>=40 and P<sub>2</sub>=80 lb./ac.

N applied as A/S and P<sub>2</sub>O<sub>5</sub> as Super. Manuring on 26.2.1951 in furrows.

#### 3. DESIGN :

(i) and (ii) 3<sup>3</sup> confounded experiment single replication with VN<sup>2</sup>P interaction is confounded. (iii) (a) 64'×27'. (b) 58'×21'. (iv) N.A.

#### 4. GENERAL :

(i) Good. (ii) Slight attack of pyrilla in general. (iii) Sugarcane yield. (iv) (a) No. (b) and (c) N.A. (v) N.A. (vi) The analytical results of soil are :

Depth	0"-7"	7"-18"	18"-34"	34"-60"	60"-72"
pH	7.1	7.3	6.9	6.7	7.2

(vii) The experiment was conducted by D.S.R. (M) on cultivators' fields.

#### 5. RESULTS :

(i) 22.68 ton/ac.  
 (ii) 1.694 ton/ac.  
 (iii) Main effect of N is highly significant. Interaction N×P is significant. Other effects and interactions are not significant.

(iv) Av. yield of sugarcane in ton/ac.

	N <sub>0</sub>	N <sub>1</sub>	N <sub>2</sub>	Mean	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>
V <sub>1</sub>	16.31	24.62	28.73	23.22	21.53	22.20	25.93
V <sub>2</sub>	15.68	22.93	25.97	21.53	21.71	21.67	21.21
V <sub>3</sub>	18.24	22.54	29.10	23.29	22.51	22.08	25.29
Mean	16.74	23.36	27.93	22.68	21.92	21.98	24.14
P <sub>0</sub>	13.55	24.52	18.69				
P <sub>1</sub>	16.80	22.66	26.48				
P <sub>2</sub>	19.88	22.91	29.62				

S.E. of any marginal mean  
S.E. of body of table

=0.565 ton/ac.  
=0.978 ton/ac.

Crop :- Sugarcane.

Ref :- U.P. 51(210).

Zone :- Khatauli (Muzaffarnagar).

Type :- 'MV'.

Object :- To find the optimum manurial combination of N and P for three different varieties of Sugarcane.

**1. BASAL CONDITIONS :**

(i) (a) N.A. (b) Cotton. (c) N.A. (ii) Loam (without *kankar*), (type IV). (iii) Cake+F.Y.M. applied (dose—N.A. (iv) As per treatments. (v) (a) Hoeings by *kassi*—twice. by spade—twice and by cultivator—six times. (b) N.A. (c) 57 three budded setts/line. (d) and (e) N.A. (vi) 17.2.1951. (vii) Irrigated. (viii) N.A. (ix) N.A. (x) 26 and 27.2.1952.

**2. TREATMENTS :**

All combinations of (1), (2) and (3)

(1) 3 varieties : V<sub>1</sub>=CO. 421, V<sub>2</sub>=CO.S. 245 and V<sub>3</sub>=CO.S. 321.(2) 3 levels of N : N<sub>0</sub>=0, N<sub>1</sub>=60 and N<sub>2</sub>=120 lb./ac.(3) 3 levels of P<sub>2</sub>O<sub>5</sub> : P<sub>0</sub>=0, P<sub>1</sub>=40 and P<sub>2</sub>=80 lb./ac.N as A/S and P<sub>2</sub>O<sub>5</sub> as Super. Manuring on 17.2.1951 in furrows.**3. DESIGN :**

(i) and (ii) 3<sup>3</sup> confounded experiment in single replication with VN<sup>2</sup>P<sup>3</sup> interaction is confounded. (iii) (a) 57 × 27'. (b) 51 × 21'. (iv) N.A.

**4. GENERAL :**

(i) Good. (ii) Slight attack of pyrrilla in general. (iii) Sugarcane yield. (iv) (a) No. (b) and (c) N.A.

(v) N.A. (vi) Analytical results of soil are :

Depth 0"–6" 6"–12" 12"–28" 28"–36" 36"–53" 53"–74"  
pH 6.4 7.4 7.3 6.7 7.3 7.5

(vii) The experiment was conducted by D.S.R. (M) on cultivators' fields.

**5. RESULTS :**

(i) 29.45 ton/ac.

(ii) 1.329 ton/ac.

(iii) Main effects of N is highly significant. Interaction N × P is significant Other effects and interactions are not significant.

(iv) Av. yield of sugarcane in ton/ac.

	N <sub>0</sub>	N <sub>1</sub>	N <sub>2</sub>	Mean	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>
V <sub>1</sub>	23.74	29.71	34.34	29.26	29.11	29.93	28.74
V <sub>2</sub>	24.81	29.55	35.04	29.80	30.04	28.31	31.05
V <sub>3</sub>	23.93	30.80	33.17	29.30	29.60	28.59	29.71
Mean	24.16	30.02	34.18	29.45	29.58	28.94	29.83
P <sub>0</sub>	23.97	31.31	33.47				
P <sub>1</sub>	25.05	27.28	34.50				
P <sub>2</sub>	23.45	31.47	34.58				

S.E. of any marginal mean  
S.E. of body of table

=0.443 ton/ac.  
=0.768 ton/ac.

Crop :- Sugarcane.

Ref :- U.P. 50(232).

Zone :- Shamli (Muzaffarnagar).

Type :- 'MV'.

Object :- To find the optimum manurial combination of N and P for three different varieties of Sugarcane

**1. BASAL CONDITIONS :**

(i) (a) to (c) N.A. (ii) Clay loam (type IV) Medium land, water logged increases with depth showing impence of drainage. (iii) Nil. (iv) As per teatments. (v) (a) N.A. (b) N.A. (c) 64 three budded setts/line. (d) and (e) N.A. (vi) 4.4.1950. (vii) N.A. (viii) N.A. (ix) N.A. (x) 9, 10.2.1951.

**2. TREATMENTS :**

All combinations of (1), (2) and (3)

(1) 3 varieties : V<sub>1</sub>=CO. 421, V<sub>2</sub>=CO. 453 and V<sub>3</sub>=CO. 245.(2) 3 levels of N : N<sub>0</sub>=0, N<sub>1</sub>=60 and N<sub>2</sub>=120 lb./ac.(3) 3 levels of P<sub>2</sub>O<sub>5</sub> : P<sub>0</sub>=0, P<sub>1</sub>=40 and P<sub>2</sub>=80 lb./ac.N applied as A/S. P<sub>2</sub>O<sub>5</sub> as Super manuring in furrows.**3. DESIGN :**

(i), (ii) 3<sup>3</sup> confounded unreplicated experiment with VN<sup>2</sup>P component of the interaction is confounded. (iii) (a) 64' x 27'. (b) 58' x 21'. (iv) N.A.

**4. GENERAL :**

(i) N.A. (ii) N.A. (iii) Sugarcane yield. (iv) (a) 1950—1951. (b) and (c) N.A. (v) N.A. (vi) Analytical results of soil are :

Depth	0"–8"	8"–20"	20"–34"	34"–52"	52"–73"
pH	6.5	7.0	7.0	7.5	7.5

(vii) The experiment was conducted by D.S.R(M) on cultivators' fields.

**5. RESULTS :**

(i) 26.17 ton/ac.

(ii) 4.587 ton/ac.

(iii) Main effect of V is highly significant. Other effects and interactions are not significant.

(iv) Av. yield of sugarcane in ton/ac.

	N <sub>0</sub>	N <sub>1</sub>	N <sub>2</sub>	Mean	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>
V <sub>1</sub>	14.39	19.04	20.63	18.02	12.12	19.44	22.50
V <sub>2</sub>	30.16	33.53	32.23	31.97	31.17	32.81	41.94
V <sub>3</sub>	27.28	27.33	28.99	28.53	27.10	30.40	28.10
Mean	23.94	27.30	27.28	26.17	23.46	27.55	27.51
P <sub>0</sub>	22.79	24.53	23.07				
P <sub>1</sub>	23.45	31.07	28.12				
P <sub>2</sub>	25.59	26.29	30.66				

S.E. of any marginal mean = 1.529 ton/ac.  
 S.E. of body of table = 2.648 ton/ac.

Crop :- Sugarcane.

Ref :- U.P. 50(233).

Zone :- Shamli (Muzaffarnagar).

Type :- 'MV'.

Object :- To find the optimum manurial combination of N and P for three different varieties of Sugarcane.

**1. BASAL CONDITIONS :**

(i) (a) to (c) N.A. (ii) *Domat* Clay loam ; Low lying, water logged, pH increases with depth showing impendence of drainage. (iii) Nil. (iv) As per treatments. (v) (a) to (c) N.A. (vi) 16.3.1950. (vii) N.A. (viii) N.A. (ix) N.A. (x) 18.1.1951 and 8.2.1951.

**2. TREATMENTS :**

All combinations of (1), (2) and (3)

(1) 3 varieties : V<sub>1</sub>=CO 421, V<sub>2</sub>=CO 453 and V<sub>3</sub>=CO.S. 245.(2) 3 levels of N : N<sub>0</sub>=0, N<sub>1</sub>=60 and N<sub>2</sub>=120 lb./ac.(3) 3 levels of P<sub>2</sub>O<sub>5</sub> : P<sub>0</sub>=0, P<sub>1</sub>=40 and P<sub>2</sub>=80 lb./ac.N applied as A/S and P<sub>2</sub>O<sub>5</sub> as Super. Manuring on 16.3.1950 in furrows.**3. DESIGN :**

(i), (ii) 3<sup>3</sup> confounded unreplicated experiment in which VN<sup>2</sup>P component of the interaction is confounded. (iii) (a) 56'×24'. (b) 50'×18'. (iv) N.A.

**4. GENERAL :**

(i) N.A. (ii) N.A. (iii) Sugarcane yield. (iv) (a) No. (b) and (c) N.A. (v) N.A. (vi) Analytical results of the soil are :

Depth	0'-9"	9'-25"	25'-41"	41'-50"	50'-61"	61'-78"
pH	7.0	6.9	6.8	6.8	6.7	7.6

(vii) Experiment was conducted by D.S.R.(M) on cultivators' fields.

**5. RESULTS :**

(i) 29.47 ton/ac.

(ii) 2.004 ton/ac.

(iii) Main effect of N is highly significant. Other effects and interactions are not significant.



(iv) Av. yield of sugarcane in ton/ac.

	N <sub>0</sub>	N <sub>1</sub>	N <sub>2</sub>	Mean	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>
V <sub>1</sub>	24.78	31.75	32.06	29.53	29.36	27.91	31.32
V <sub>2</sub>	28.64	31.11	32.51	30.75	32.27	28.74	31.24
V <sub>3</sub>	26.38	28.53	29.44	28.12	27.86	29.22	27.28
Mean	26.60	30.46	31.34	29.47	29.83	28.62	29.95
P <sub>0</sub>	26.74	30.78	31.98				
P <sub>1</sub>	26.40	27.41	32.06				
P <sub>2</sub>	26.66	33.20	29.98				

S.E. of any marginal mean = 0.668 ton/ac.  
 S.E. of body of table = 1.157 ton/ac.

Crop :- Sugarcane.

Ref :- U.P. 50(234).

Zone :- Khatauli (Muzaffarnagar).

Type :- 'MV'.

Object :- To find the optimum manurial combination of N and P for three different varieties of Sugarcane.

**1. BASAL CONDITIONS :**

(i) (a) to (c) N.A. (ii) *Domat* (type IV) loam, medium land, partially water logged. (iii) N.A. (iv) As per treatments. (v) (a), (b) N.A. (c) 64 three budded setts/line. (d) and (e) N.A. (vi) 15.2.1950. (vii) N.A. (viii) N.A. (ix) N.A. (x) N.A.

**2. TREATMENTS :**

All combinations of (1), (2) and (3)

(1) 3 varieties : V<sub>1</sub>=CO 421, V<sub>2</sub>=CO 453 and V<sub>3</sub>=COS 245.(2) 3 levels of N : N<sub>0</sub>=0, N<sub>1</sub>=60 and N<sub>2</sub>=120 lb./ac.(3) 3 levels of P<sub>2</sub>O<sub>5</sub> : P<sub>0</sub>=0, P<sub>1</sub>=40 and P<sub>2</sub>=80 lb./ac.N applied as A/S and P<sub>2</sub>O<sub>5</sub> as Super. Manuring on 15.2.1950 in furrows.**3. DESIGN :**

(i), (ii) 3<sup>3</sup> confounded unreplicated experiment with VNP component of the interaction is confounded. (iii) (a) 64'×27'. (b) 58'×21'. (iv) N.A.

**4. GENERAL :**

(i) N.A. (b) N.A. (iii) Sugarcane yield. (iv) (a) No. (b), (c) N.A. (v) N.A. (vi) Analytical results of s are :

Depth	0°-7°	7°-18°	18°-33°	33°-44°	44°-54°
pH	7.0	6.5	6.5	6.5	7.0

(vii) The expt. was conducted by D.S.R(M) on cultivators' fields.

**5. RESULTS :**

(i) 20.51 ton/ac.

(ii) 3.883 ton/ac.

(iii) None of the effects and interaction is significant.

(iv) Av. yield of sugarcane in ton/ac.

	N <sub>0</sub>	N <sub>1</sub>	N <sub>2</sub>	Mean	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>
V <sub>1</sub>	16.91	19.63	25.78	20.77	22.81	19.91	19.60
V <sub>2</sub>	18.82	21.35	21.79	20.65	20.31	22.91	18.74
V <sub>3</sub>	19.94	19.77	20.59	20.10	18.95	19.88	21.48
Mean	18.56	20.25	22.72	20.51	20.69	20.90	19.94
P <sub>0</sub>	18.26	20.39	23.43				
P <sub>1</sub>	19.18	20.79	22.73				
P <sub>2</sub>	18.23	19.58	22.01				

S.E. of any marginal mean = 1.294 ton/ac.

S.E. of body of table = 2.242 ton/ac.

Crop :- Sugarcane.

Ref :- U.P. 51(212).

Zone :- Khatauli (Muzaffarnagar).

Type :- 'MV'.

Object :- To find the optimum manurial combination of N and P for three different varieties of Sugarcane.

## 1. BASAL CONDITIONS:

- (i) (a) N.A. (b) *Urd* and then fallow. (c) No. (ii) Loam (with *kankar*) (type II). (iii) 300 md./ac. of F.Y.M. (iv) As per treatments. (v) (a) Hoeings on 17.3.1951, 25.4.1951, 25.5.1951 and 25.6.1951. (b) N.A. (c) 62 three buddrd setts/row. (d) and (e) N.A. (vi) 8.3.1951. (vii) Canal irrigation. (viii) N.A. (ix) N.A. (x) 6, 8 and 9.3.1952.

## 2. TREATMENTS:

All combinations of (1), (2) and (3)

(1) 3 varieties : V<sub>1</sub>=CO. 421, V<sub>2</sub>=COS. 245 and V<sub>3</sub>=COS. 321.(2) 3 levels of N : N<sub>0</sub>=0, N<sub>1</sub>=60 and N<sub>2</sub>=120 lb./ac.(2) 3 levels of P<sub>2</sub>O<sub>5</sub> : P<sub>0</sub>=0, P<sub>1</sub>=40 and P<sub>2</sub>=80 lb./ac.N applied as A/S and P<sub>2</sub>O<sub>5</sub> as Super. Manuring in furrows on 8.3.1951.

## 3. DESIGN:

- (i), (ii) 3<sup>3</sup> confounded experiment in single replication with VNP interaction is confounded. (iii) (a) 62' × 27'. (b) 56' × 21'. (iv) N.A.

## 4. GENERAL:

- (i) Satisfactory. (ii) Attack of *Pyrilla*. (iii) Sugarcane yield. (iv) (a) No. (b) and (c) N.A. (v) N.A. (vi) Analytical results of soil are:

Depth	0"–5"	5"–14"	14"–27"	27"–43"	43"–53"	53"–66"
pH	6.7	7.0	7.1	6.6	6.7	6.7

- (vii) The experiment was conducted by D.S R.(M) on cultivators' fields.

## 5. RESULTS:

- (i) 23.65 ton/ac.  
(ii) 1.731 ton/ac.  
(iii) Main effect of N is highly significant. Other effects and interactions are not significant.

(iv) Av. yield of sugarcane in ton/ac.

	N <sub>0</sub>	N <sub>1</sub>	N <sub>2</sub>	Mean	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>
V <sub>1</sub>	18.71	24.16	26.41	23.09	22.91	22.79	23.57
V <sub>2</sub>	19.13	24.12	29.17	24.14	21.53	27.01	23.87
V <sub>3</sub>	19.78	23.71	27.65	23.71	24.56	23.01	23.56
Mean	19.21	24.00	27.74	23.65	23.00	24.27	23.67
P <sub>0</sub>	20.67	22.91	25.43				
P <sub>1</sub>	18.13	25.11	29.58				
P <sub>2</sub>	18.82	23.97	28.22				

S.E. of any marginal mean  
S.E. of body of table

=0.577 ton/ac.  
=1.000 ton/ac.

Crop :-Sugarcane.

Ref :-U.P. 52(255).

Zone :-Mansurpur (Muzaffarnagar).

Type :-'MV'.

Object :—To find the optimum manurial combination of N and P for three different varieties of Sugarcane.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) Pea for fodder. (c) No. (ii) Loam (type IV). (iii) 220 md./ac. of compost. (iv) As per treatments. (v) (a) Hoeing by cultivator on 30.4.1952, 22.5.1952, 15.6.1952, 14.7.1952, 15 and 16.8.1952. Dressing of *mendhs* and *berhes* on 24.4.1952 and 8.6.1952. (b) N.A. (c) 64 three budded setts/ac. (d) and (e) N.A. (vi) 23.3.1952. (vii) Irrigated. (viii) and (ix) N.A. (x) 25 and 26.1.1953.

## 2. TREATMENTS :

All combinations of (1), (2) and (3)

(1) 3 varieties : V<sub>1</sub>=CO. 421, V<sub>2</sub>=CO. 245 and V<sub>3</sub>=CO. 321.(2) 3 levels of N : N<sub>0</sub>=0, N<sub>1</sub>=60 and N<sub>2</sub>=120 lb./ac.(3) 3 levels of P<sub>2</sub>O<sub>5</sub> : P<sub>0</sub>=0, P<sub>1</sub>=40 and P<sub>2</sub>=80 lb./ac.N as A/S and P<sub>2</sub>O<sub>5</sub> as Super. Manuring on 23.3.1952 in furrows.

## 3. DESIGN :

(i) and (ii) 3<sup>3</sup> confounded experiment in single replication in which  $\times$  component of VNP interaction is confounded with blocks. (iii) (a) 64'×27'. (b) 58'×21'. (iv) N.A.

## 4. GENERAL :

(i) Good. (ii) Slight attack of top borer and pyrilla—very mild and controlled. (iii) Sugarcane yield.

(iv) (a) No. (b) and (c) N.A. (v) N.A. (vi) Analytical results of the soil are :

Depth	0"–5"	5"–26"	26"–43"	43"–62"	62"–72"
Coarse sand %	5.89	4.87	1.67	5.55	2.84
Final sand %	60.70	52.74	44.16	46.59	65.12
Silt %	17.89	17.36	19.71	17.40	12.93
Clay %	11.93	20.59	28.28	26.26	12.90
pH	7.4	7.2	7.1	6.9	7.0
C/N	13.14	7.00	6.75	8.5	9.00

(vii) The experiment was conducted by D.S.R.(M) on cultivators' fields.

## 5. RESULTS :

(i) 22.75 ton/ac.

(ii) 1.141 ton/ac.

(iii) Main effect of V and interaction V×P and N×P are significant. Main effect of N is highly significant. Other effects and interactions are not significant.

(iv) Av. yield of sugarcane in ton/ac.

	N <sub>0</sub>	N <sub>1</sub>	N <sub>2</sub>	Mean	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>
V <sub>1</sub>	16.62	23.63	24.73	21.66	19.64	23.48	21.86
V <sub>2</sub>	17.90	25.30	26.53	23.24	22.80	23.37	23.57
V <sub>3</sub>	18.65	24.84	26.55	23.35	24.77	21.48	23.79
Mean	17.72	24.59	25.94	22.75	22.40	22.78	23.07
P <sub>0</sub>	16.92	25.22	25.07				
P <sub>1</sub>	19.81	23.33	25.19				
P <sub>2</sub>	16.45	25.22	27.55				

S.E. of any marginal means

=0.380 ton/ac.

S.E. of body of table

=0.659 ton/ac.

Crop :- Sugarcane.

Ref :- U.P. 52(256).

Zone :- Mansurpur (Muzaffarnagar).

Type :- 'MV'.

Object :- To find the optimum manurial combination of N and P for three different varieties of Sugarcane.

**1. BASAL CONDITIONS :**

(i) (a) N.A. (b) Sugarcane (*ratoon*). (c) No. (ii) Heavy loam (type IV) highly oxidised. (iii) Nil. (iv) Improved variety. (v) (a) Hoeing by *kassi* on 15.4.1952. Hoeing by cultivator and spade on 8.5.1952 and 2.6.1952. Hoeing by cultivator on 29.6.1952. Preparation and dressing of *mendhs* and *barhas* on 3.5.1952. (b) N.A. (c) 44 3-budded setts/line. (d) and (e) N.A. (vi) 20.3.1952. (vii) Irrigated (viii) and (ix) N.A. (x) 17 to 19.1.1953.

**2. TREATMENTS :**

All combinations of (1), (2) and (3)

(1) 3 varieties : V<sub>1</sub>=CO-421, V<sub>2</sub>=CO-245 and V<sub>3</sub>=CO-321.(2) 3 levels of N : N<sub>0</sub>=0, N<sub>1</sub>=60 and N<sub>2</sub>=120 lb./ac.(3) 3 levels of P<sub>2</sub>O<sub>5</sub> : P<sub>0</sub>=0, P<sub>1</sub>=40 and P<sub>2</sub>=80 lb./ac.N as A/S and P<sub>2</sub>O<sub>5</sub> as Super. Manuring in furrows on 20.3.1952.**3. DESIGN :**

(i) and (ii) 3<sup>3</sup> confounded experiment in single replication in which W component of VNP interaction is confounded with blocks. (iii) (a) 36'×44'. (b) 30'×38'. (iv) N.A.

**4. GENERAL :**

(i) Condition in general is good. Slight cattle damage in plots with treatments V<sub>1</sub>N<sub>1</sub>P<sub>0</sub> and V<sub>3</sub>N<sub>1</sub>P<sub>2</sub> (ii) A very mild attack of *Pyrilla*. (iii) Sugarcane yield. (iv) (a) No. (b) and (c) N.A. (v) N.A. (vi)

Analytical results of the soil are :

Depth	0"-6"	6"-14"	14"-34"	34"-52"	52"+below
Coarse sand %	3.77	3.59	2.15	1.66	1.60
Fine sand %	56.50	51.33	39.75	34.16	34.25
Silt %	25.95	24.90	29.10	30.41	30.41
Clay %	12.30	16.73	26.18	29.18	27.94
pH	7.3	7.3	7.3	7.3	7.2
C/N	9.29	7.20	5.83	5.40	6.25

(vii) The experiment was conducted by D.S.R.(M) on cultivators' fields.

**5. RESULTS :**

(i) 25.30 ton/ac.

(ii) 3.216 ton/ac.

(iii) Main effects and their interactions are not significant.

(iv) Av. yield of sugarcane in ton/ac.

	N <sub>0</sub>	N <sub>1</sub>	N <sub>2</sub>	Mean	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>
V <sub>1</sub>	20.53	22.55	26.05	33.04	21.33	25.07	22.73
V <sub>2</sub>	24.65	27.18	28.67	26.83	26.24	28.86	25.40
V <sub>3</sub>	23.20	27.08	27.83	26.04	26.43	25.31	26.38
Mean	22.79	25.60	27.52	25.30	24.67	26.41	24.84
P <sub>0</sub>	23.44	23.01	21.94				
P <sub>1</sub>	24.65	27.78	24.37				
P <sub>2</sub>	25.91	28.44	28.21				

S.E. of any marginal mean = 1.072 ton/ac.

S.E. of body of table = 1.857 ton/ac.

Crop :- Sugarcane.

Ref :- U.P. 51(213).

Zone :- Khatauli (Muzaffarnagar).

Type :- 'MV'.

Object :- To find the optimum manurial combination of N and P for three different varieties of Sugarcane.

## BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) Loam (with *kankar*), (type II). (iii) N.A. (iv) As per treatments. (v) (a) and (b) N.A. (c) 54 three budded setts/row. (d) and (e) N.A. (vi) 25.2.1951. (vii) N.A. (viii) N.A. (ix) N.A. (x) 18.2.1952.

## TREATMENTS :

All combinations of (1), (2) and (3)

(1) 3 varieties : V<sub>1</sub>=CO. 421, V<sub>2</sub>=CO.245 and V<sub>3</sub>=CO.321.(2) 3 levels of N : N<sub>0</sub>=0, N<sub>1</sub>=60 and N<sub>2</sub>=120 lb./ac.(3) 3 levels of P<sub>2</sub>O<sub>5</sub> : P<sub>0</sub>=0, P<sub>1</sub>=40 and P<sub>2</sub>=80 lb./ac.N applied as A/S and P<sub>2</sub>O<sub>5</sub> as Super. Manuring on 25.2.1951 in furrows.

## DESIGN :

(i) and (ii) 3<sup>3</sup> confounded experiment in single replication with VNP<sup>2</sup> interaction is confounded. (iii) (a) 54' x 27'. (b) 48' x 21'. (iv) N.A.

## GENERAL :

(i) N.A. (ii) N.A. (iii) Sugarcane yield. (iv) (a) No. (b) and (c) N.A. (v) N.A. (vi) Analytical results of soil are :

Depth	0"-6"	6"-14"	14"-28"	28"-40"	40"-58"	58"-below
pH	7.0	7.9	6.9	6.9	7.4	6.8

(vii) The experiment was conducted by D.S.R. (M) on cultivators' fields.

## RESULTS :

(i) 26.10 ton/ac.

(ii) 2.349 ton/ac.

(iii) Main effect of N is highly significant. Other effects and interactions are not significant.

(iv) Av. yield of sugarcane in ton/ac.

	N <sub>0</sub>	N <sub>1</sub>	N <sub>2</sub>	Mean	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>
V <sub>1</sub>	17.94	29.58	32.52	26.68	26.68	27.31	26.05
V <sub>2</sub>	19.19	25.71	29.02	24.64	25.12	24.50	24.31
V <sub>3</sub>	19.71	29.38	31.82	26.97	26.36	28.98	25.58
Mean	18.95	28.22	31.12	26.10	26.36	26.93	25.31
P <sub>0</sub>	18.23	28.82	31.09				
P <sub>1</sub>	19.52	29.74	31.53				
P <sub>2</sub>	19.10	26.09	30.75				

S.E. of any marginal mean

=0.783 ton/ac.

S.E. of body of table

=1.356 ton/ac.

Crop :- Sugarcane.

Ref :- U.P. 51(222).

Zone :- Khatauli (Muzaffarnagar).

Type :- 'MV'.

Object :- To find the optimum manurial combination of N and P for three different varieties of Sugarcane.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) Pea. (c) No. (ii) Heavy loam (type II). (iii) 260 mds. of F.Y.M.+G.M. (pea). (iv) As per treatments. (v) (a) Hoeings on 15.3.1951, 10.4.1951, 26.4.1951, 9.5.1951, 22.5.1951 and 21.6.1951. (b) N.A. (c) 41 three budded setts/line. (d) and (e) N.A. (vi) 7.3.1951. (vii) Irrigated. (viii) N.A. (ix) N.A. (x) 29.2.1952.

## 2. TREATMENTS :

All combinations of (1), (2) and (3)

(1) 3 varieties : V<sub>1</sub>=CO. 421, V<sub>2</sub>=CO. 245 and V<sub>3</sub>=CO-321.(2) 3 levels of N : N<sub>0</sub>=0, N<sub>1</sub>=60 and N<sub>2</sub>=120 lb./ac.(3) 3 levels of P<sub>2</sub>O<sub>5</sub> : P<sub>0</sub>=0, P<sub>1</sub>=40 and P<sub>2</sub>=80 lb./ac.N applied as A/S and P<sub>2</sub>O<sub>5</sub> as Super. Manuring in furrows on 7.3.1951.

## 3. DESIGN :

(i) and (ii) 3<sup>3</sup> confounded unreplicated experiment with VNP<sup>3</sup> component of interaction confounded. (iii) (a) 41'×39'. (b) 35'×33'. (iv) N.A.

## 4. GENERAL :

(i) N.A. (ii) N.A. (iii) Sugarcane yield. (iv) (a) No. (b) and (c) N.A. (v) N.A. (vi) Analytical results of soil are :

Depth	0"-8"	8"-13"	13"-19"	19"-29"	29"-47"	47"-58"	58"-71"	71"-below
pH	7.5	7.3	7.3	7.2	7.2	7.2	7.4	7.6

(vii) The experiment was conducted by D.S.R. (M) on cultivators' fields.

## 5. RESULTS :

(i) 25.65 ton/ac.

(ii) 0.730 ton/ac.

(iii) Main effects of N and V are highly significant, interaction N×V is significant. Others are not significant.

(iv) Av. yield of sugarcane in ton/ac.

	N <sub>0</sub>	N <sub>1</sub>	N <sub>2</sub>	Mean	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>
V <sub>1</sub>	23.82	22.93	25.87	24.21	25.80	23.67	23.15
V <sub>2</sub>	26.93	25.43	27.44	26.62	26.73	26.52	26.60
V <sub>3</sub>	24.32	26.57	27.50	26.13	25.82	26.29	26.28
Mean	25.02	24.99	26.94	25.65	26.12	25.49	25.34
P <sub>0</sub>	25.43	25.80	27.13				
P <sub>1</sub>	24.85	24.37	27.26				
P <sub>2</sub>	24.79	24.81	26.43				

S.E. of any marginal mean

=0.243 ton/ac.

S.E. of body of any table

=0.422 ton/ac.

Crop :-Sugarcane.

Ref :-U.P. 53(275).

Zone :-Mansurpur (Muzaffarnagar).

Type :-'MV'.

Object :-To find the optimum manurial combination of N and P for three different varieties of Sugarcane.

**1. BASAL CONDITIONS :**

(i) (a) to (c) N.A. (ii) Loam sand. (type III). (iii) N.A. (iv) Improved. (v) (a) N.A. (b) N.A. (c) 51 three budded setts/line. (d) and (e) N.A. (vi) 15.3.1953. (vii) N.A. (viii) N.A. (ix) N.A. (x) 3 and 7.3.1954.

**2. TREATMENTS :**

All combinations of (1), (2) and (3)

(1) 3 varieties : V<sub>1</sub>=CO. 421, V<sub>2</sub>=CO. 245 and V<sub>3</sub>=CO. 321.(2) 3 levels of N : N<sub>0</sub>=0, N<sub>1</sub>=60 and N<sub>2</sub>=120 lb./ac.(3) 3 levels of P<sub>2</sub>O<sub>5</sub> : P<sub>0</sub>=0, P<sub>1</sub>=40 and P<sub>2</sub>=80 lb./ac.N as A/S,  $\frac{1}{2}$  dose on 15.3.1953 and  $\frac{3}{4}$  dose on 11.6.1953. P<sub>2</sub>O<sub>5</sub> as Super full dose on 15.3.1953.**3. DESIGN :**

(i), (ii) 3<sup>3</sup> confounded experiment in single replication. Z component of VNP interaction is confounded. (iii) (a) 51' x 33'. (b) 45' x 27'. (iv) N.A.

**4. GENERAL :**

(i) Slightly gappy germination in plots with treatments V<sub>3</sub>N<sub>2</sub>P<sub>2</sub>, V<sub>1</sub>N<sub>2</sub>P<sub>2</sub>, and V<sub>1</sub>N<sub>1</sub>P<sub>2</sub> one border line in treatments : V<sub>1</sub>N<sub>0</sub>P<sub>2</sub>, V<sub>2</sub>N<sub>2</sub>P<sub>0</sub> and V<sub>1</sub>N<sub>1</sub>P<sub>0</sub> did not germinate at all. (ii) Nil. (iii) Sugarcane yield. (iv)

(a) No. (b) and (c) N.A. (v) N.A. (vi) Analytical results of the soil are :

Depth	0"-9"	9"-28"	28"-50"	50"-72"
C/N	10.7	—	9.3	9.0
pH	6.9	6.7	6.6	6.6

(vii) The experiment was conducted by D.S.R.(M). on cultivators' fields.

**5. RESULTS :**

(i) 21.80 ton/ac.

(ii) 7.081 ton/ac.

(iii) Main effects and their interactions are not significant.

(iv) Av. yield of sugarcane in ton/ac.

	N <sub>0</sub>	N <sub>1</sub>	N <sub>2</sub>	Mean	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>
V <sub>1</sub>	16.82	16.69	25.75	19.75	22.85	21.75	14.67
V <sub>2</sub>	19.31	25.86	22.62	22.60	21.93	26.67	19.20
V <sub>3</sub>	15.96	24.51	28.70	23.06	29.36	23.09	16.72
Mean	17.36	22.35	25.69	21.80	24.71	23.84	16.86
P <sub>0</sub>	23.81	22.47	27.85				
P <sub>1</sub>	15.14	26.83	29.54				
P <sub>2</sub>	13.14	17.77	19.68				

S.E. of any marginal mean =2.360 ton/ac.

S.E. of body of any table =4.088 ton/ac.

Crop :-Sugarcane.

Ref :-U.P. 53(273).

Zone :-Mansurpur (Muzaffarnagar).

Type :-'MV'.

Object :-To find the optimum manurial combination of N and P for three different varieties of Sugarcane.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) Pea for fodder. (c) No. (ii) *Domat*—Loam type IV. (iii) Compost at 200 md /ac. applied on 10.1.1953. (iv) Improved variety. (v) (a) Hoeing by spade on 8.4.1953 to 10.4.1953 ; 25.6.1953. Hoeing by cultivator on 23.4.1953, 15.5.1953 and 5.6.1953. *Palewa* on 2.3.1953. (b) N.A. (c) 51 three budded setts/line. (d) and (e) N.A. (vi) 11.3.1953. (vii) Irrigated (viii) N.A. (ix) N.A. (x) 5, 8 and 9.3.1954.

## 2. TREATMENTS :

All combinations of (1), (2) and (3)

(1) 3 varieties : V<sub>1</sub>=CO. 421, V<sub>2</sub>=CO. 245 and V<sub>3</sub>=CO. 321.(2) 3 levels of N : N<sub>0</sub>=0, N<sub>1</sub>=60 and N<sub>2</sub>=120 lb./ac.(3) 3 levels of P<sub>2</sub>O<sub>5</sub> : P<sub>0</sub>=0, P<sub>1</sub>=40 and P<sub>2</sub>=80 lb./ac.N applied as A/S,  $\frac{1}{3}$  dose on 11.3.1953 and  $\frac{2}{3}$  dose on 10.6.1953 and full dose of Super on 11.3.1953.

## 3. DESIGN :

(i) 3<sup>3</sup> confounded experiment in single replication. Y component of VNP interaction is confounded.

(ii) N.A. (iii) (a) 51'×33'. (b) 45'×27'. (iv) N.A.

## 4. GENERAL :

(i) General condition good. The germination was uniform throughout except in treatment V<sub>3</sub>N<sub>0</sub>P<sub>1</sub> where and slight gappiness in one of the lines was observed. (ii) Slight attack of stem borer. (iii) Sugarcane yield.

(iv) (a) 1953—1954. (b) and (c) N.A. (v) N.A. (vi) Analytical results of soil are —

Depth	0"—6"	6"—20"	20"—37"	37"—54"	54"—72"
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C/N	15.5	8.0	9.5	7.6	7.2
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pH	7.2	6.6	6.5	6.6	6.7
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(vii) The experiment was conducted by D.S.R.(M). on cultivators' fields.

## 5. RESULTS :

(i) 21.64 ton/ac.

(ii) 1.455 ton/ac.

(iii) Main effect of N is highly significant. Main effect of V and interactions N×P and P×V significant. Others are not significant.



(iv) Av. yield of sugarcane in ton/ac.

	N <sub>0</sub>	N <sub>1</sub>	N <sub>2</sub>	Mean	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>
V <sub>1</sub>	16.24	22.52	24.15	20.97	21.38	20.40	20.13
V <sub>2</sub>	19.76	23.78	25.61	23.05	20.66	23.92	24.57
V <sub>3</sub>	16.90	22.23	23.58	20.90	20.64	18.15	23.91
Mean	17.63	22.84	24.45	21.64	20.89	21.16	22.87
P <sub>0</sub>	19.49	20.38	22.81				
P <sub>1</sub>	15.34	23.40	24.74				
P <sub>2</sub>	18.07	24.75	25.79				

S.E. of any marginal mean = 0.485 ton/ac.

S.E. of body of any table = 0.840 ton/ac.

Crop :- Sugarcane.

Ref :- U.P. 52(254).

Zone :- Mansurpur (Muzaffarnagar).

Type :- 'MV'.

Object :- To find the optimum manurial combination of N and P for three different varieties of Sugarcane.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) No. (c) Nil. (ii) Heavy loam (type IV). (iii) Nil. (iv) As per treatments. (v) (a) Hoeing by *kassi* on 8.4.1952 and hoeing by cultivator on 8.4.1952. (b) N.A. (c) 61 three budded setts/line. (d) and (e) NA. (vi) 5, 6.3.1953. (vii) Irrigated. (viii) N.A. (ix) N.A. (x) 1, 2.2.1953.

## 2. TREATMENTS :

All combinations of (1), (2) and (3)

(1) 3 varieties : V<sub>1</sub>=CO. 421, V<sub>2</sub>=CO. 245 and V<sub>3</sub>=CO. 321(2) 3 levels of N : N<sub>0</sub>=0, N<sub>1</sub>=60 and N<sub>2</sub>=120 lb./ac.(3) 3 levels of P<sub>2</sub>O<sub>5</sub> : P<sub>0</sub>=0, P<sub>1</sub>=40 and P<sub>2</sub>=80 lb./ac.N applied as A/S and P<sub>2</sub>O<sub>5</sub> as Super. Manuring on 5, 6.3.1952 in furrows.

## 3. DESIGN :

(i) and (ii) 3<sup>3</sup> confounded experiment in single replication in which W component of VNP interaction is confounded. (iii) (a) 61'×27'. (b) 55'×21'. (iv) N.A.

## 4. GENERAL :

(i) Good. (ii) There was some attack of borer and pyrilla, but the damage was very mild and uniform. (iii) Sugarcane yield. (iv) (a) No. (b) and (c) N.A. (v) N.A. (vi) Analytical results of soil are :

Depth	0"-6"	6"-16"	16"-32"	32"-50"	50"-72"
Coarse sand %	2.16	0.98	2.68	2.88	2.10
Fine sand %	38.79	47.41	41.63	39.46	43.50
Silt %	33.97	27.26	23.93	20.36	1.96
Clay %	18.08	20.05	27.00	31.24	30.30
pH	7.3	7.2	6.8	6.8	6.8
C/N	10.38	7.00	7.50	5.75	5.50

(vii) The experiment was conducted by D.S.R. (M) on cultivators' fields.

## 5. RESULTS :

(i) 22.01 ton/ac.

(ii) 1.331 ton/ac.

(iii) Main effect of N and interactions N×P and P×V are significant. Other effects and interactions are not significant.

(iv) Av. yield of sugarcane in ton/ac.

	N <sub>0</sub>	N <sub>1</sub>	N <sub>2</sub>	Mean	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>
V <sub>1</sub>	18.77	22.58	22.86	21.40	21.90	22.36	19.95
V <sub>2</sub>	23.33	21.41	24.37	23.04	22.12	23.44	23.55
V <sub>3</sub>	19.64	21.63	23.52	21.60	19.20	21.27	24.32
Mean	20.58	21.87	23.59	22.01	21.07	22.36	22.61
P <sub>0</sub>	17.93	22.21	23.09				
P <sub>1</sub>	19.52	23.04	24.51				
P <sub>2</sub>	24.29	20.36	23.17				

S.E. of any marginal mean

=0.444 ton/ac.

S.E. of body of any table

=0.768 ton/ac.

Crop :- Sugarcane.

Ref :- U.P. 52(253).

Zone :- Mansurpur (Muzaffarnagar).

Type :- 'MV'.

Object :- To find the optimum manurial combination of N and P for three different varieties of Sugarcane.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) Gram. (c) Nil. (ii) Sandy loam. (iii) Nil. (iv) As per treatments. (v) (a) Hoeing by cultivator on 21.4.1952, 22.5.1952 and hoeing by spade on 22.4.1952 and 24.5.1952. (b) N.A. (c) 58 three budded setts/line. (d) and (e) N.A. (vi) 15.3.1952. (vii) Irrigated (viii) N.A. (ix) N.A. (x) 21, 22 and 23.1.1953.

## 2. TREATMENTS :

All combinations of (1), (2) and (3)

(1) 3 varieties : V<sub>1</sub>=CO. 421, V<sub>2</sub>=CO.S 245 and V<sub>3</sub>=CO.S. 321(2) 3 levels of N : N<sub>0</sub>=0, N<sub>1</sub>=60 and N<sub>2</sub>=120 lb./ac.(3) 3 levels of P<sub>2</sub>O<sub>5</sub> : P<sub>0</sub>=0, P<sub>1</sub>=40 and P<sub>2</sub>=80 lb./ac.N applied as A/S and P<sub>2</sub>O<sub>5</sub> as Super. Manuring in furrows on 15.3.1962.

## 3. DESIGN :

(i) and (ii) 3<sup>3</sup> confounded experiment in single replication in which Y component of VNP interaction is confounded with blocks. (iii) (a) 58'×24'. (b) 52'×18'. (iv) N.A.

## 4. GENERAL :

(i) The germination was slightly less than the average crop nearly and the condition of the crop was poor. Attack of white ants. (ii) N.A. (iii) Sugarcane yield. (iv) (a) No. (b) and (c) N.A. (v) N.A. (vi) Analytical results of soil are :

Depth	0"-6"	6"-16"	16"-33"	33"-54"	54"-70"
C/N	10.50	5.0	7.0	5.33	6.50
pH	6.9	6.9	6.8	6.9	7.0

(vii) The experiment was conducted by D.S.R. (M) on cultivators' fields

## 5. RESULTS :

(i) 15.50 ton/ac.

(ii) 1.995 ton/ac.

(iii) Main effect of N is highly significant. Other effects and interactions are not significant.

(iv) Av. yield of sugarcane in ton/ac.

	N <sub>0</sub>	N <sub>1</sub>	N <sub>2</sub>	Mean	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>
V <sub>1</sub>	9.33	14.14	23.05	15.51	15.61	15.86	15.04
V <sub>2</sub>	10.60	19.42	20.85	16.96	15.21	17.81	17.85
V <sub>3</sub>	9.46	14.75	17.85	14.02	14.21	12.97	14.89
Mean	9.80	16.10	20.58	15.50	15.01	15.55	15.93
P <sub>0</sub>	8.16	15.48	21.39				
P <sub>1</sub>	10.71	14.85	21.09				
P <sub>2</sub>	10.52	17.98	19.28				

S.E. of marginal mean = 0.662 ton/ac.  
 S.E. of body of any table = 1.152 ton/ac.

Crop :- Sugarcane.

Ref :- U.P. 52(252).

Zone :- Mansurpur (Muzaffarnagar).

Type :- 'MV'.

Object :- To find the optimum manurial combination of N and P for three different varieties of Sugarcane.

**1. BASAL CONDITIONS :**

(i) (a) to (c) N.A. (ii) Loam (type IV). (iii) N.A. (iv) As per treatments. (v) (a) Hoeing by *kasal* (blind) on 20.3.1952. Hoeings were done after every irrigation at an interval of 5 to 6 days but no dates were recorded. (b) N.A. (c) 46 three budded setts/line. (d) and (e) N.A. (vi) 7.3.1952. (vii) Irrigated. (viii) N.A. (ix) N.A. (x) 28 to 30.1.1953.

**2. TREATMENTS :**

All combinations of (1), (2) and (3)

(1) 3 varieties : V<sub>1</sub>=CO. 421, V<sub>2</sub>=CO.S. 245 and V<sub>3</sub>=CO.S. 321.(2) 3 levels of N : N<sub>0</sub>=0, N<sub>1</sub>=60 and N<sub>2</sub>=120 lb./ac.(3) 3 levels of P<sub>2</sub>O<sub>5</sub> : P<sub>0</sub>=0, P<sub>1</sub>=40 and P<sub>2</sub>=80 lb./ac.N applied as A/S and P<sub>2</sub>O<sub>5</sub> as Super. Manuring in furrows on 7.3.1952.**3. DESIGN :**

(i), (ii) 3<sup>2</sup> confounded experiment in single replication in which X component of VNP interaction is confounded with blocks. (iii) (a) 46'×36'. (b) 40'×30'. (iv) N.A.

**4. GENERAL :**

(i) Crop quite satisfactory. (ii) The top borer and pyrilla attack on CO. 421 and CO.S. 321, while variety CO.S. 245 was resistant to a good extent. (iii) Sugarcane yield. (iv) (a) No. (b) and (c) N.A. (v) N.A.

(vi) Analytical results of soil are :

Depth	0"-7"	7"-20"	20"-33"	33"-49"	49"-70"
C/N	12.25	9.33	8.33	6.67	6.50
pH	7.1	7.0	6.9	7.0	7.0

(vii) The expt. was conducted by D.S.R(M). on cultivators' fields.

**5. RESULTS :**

(i) 18 64 ton/ac.

(ii) 2.172 ton/ac.

(iii) Main effect of N is highly significant. Other effects and interactions are not significant.

(iv) Av. yield of sugarcane in ton/ac.

	N <sub>0</sub>	N <sub>1</sub>	N <sub>2</sub>	Mean	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>
V <sub>1</sub>	13.30	19.93	20.44	17.89	17.21	17.51	18.94
V <sub>2</sub>	14.31	20.24	20.86	18.47	16.22	20.35	18.84
V <sub>3</sub>	15.68	19.54	23.47	19.56	18.52	19.17	20.99
Mean	14.43	19.90	21.59	18.64	17.32	19.01	19.59
P <sub>0</sub>	13.47	18.59	19.89				
P <sub>1</sub>	14.70	19.76	22.57				
P <sub>2</sub>	15.11	21.36	22.30				

S.E. of any marginal mean = 0.724 ton/ac.

S.E. of body of table = 1.254 ton/ac.

Crop :- Sugarcane.

Ref :- U.P. 52(251).

Zone :- Mansurpur (Muzaffarnagar).

Type :- 'MV'.

Object :- To find the optimum manurial combination of N and P for three different varieties of Sugarcane.

## 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) Sandy loam type IV (highly oxidised). (iii) Nil. (iv) Improved variety. (v) (a) Hoeing by *kassi* on 8.3.1952. Hoeing by cultivator on 13.4.1952. 3, 13, 14 and 25.5.1952 and 9.6.1952. Hoeing by spade on 14.4.1952. Dressing of *Mendhs* and *barhas* on 3 and 26.4.1952. *Palewa* on 17.2.1952. (b) N.A. (c) 40, three budded setts/line. (d) and (e) N.A. (vi) 29.2.1952 and 1.3.1952. (vii) Irrigated (viii) N.A. (ix) N.A. (x) 20, 21 and 22.1.1953.

## 2. TREATMENTS :

All combinations of (1), (2) and (3)

(1) 3 varieties : V<sub>0</sub>=CO. 421, V<sub>1</sub>=CO.S. 245 and V<sub>2</sub>=CO.S. 321.(2) 3 levels of N : N<sub>0</sub>=0, N<sub>1</sub>=60 and N<sub>2</sub>=120 lb./ac.(3) 3 levels of P<sub>2</sub>O<sub>5</sub> : P<sub>0</sub>=0, P<sub>1</sub>=40 and P<sub>2</sub>=80 lb./ac.

Manuring in furrows on 29.2.1952 and 1.3.1952.

## 3. DESIGN :

(i), (ii) 3<sup>3</sup> confounded experiment in single replication. W component of VNP interaction is confounded. N.A. (iii) (a) 40' x 36'. (b) 34' x 30'. (iv) N.A.

## 4. GENERAL :

(i) Good. (ii) Slight attack of top borer and pyrilla in general throughout the experiment. (iii) Sugarcane yield. (iv) (a) No. (b) and (c) N.A. (v) N.A. (vi) Analytical results of soil are :

Depth	0"-5"	5"-15"	15"-32"	32"-46"	46"-66"
C/N	6.67	7.33	7.67	7.33	9.50
pH	6.8	7.1	7.1	7.2	7.1

(vii) The expt. was conducted by D.S.R(M) on cultivators' fields.

## 5. RESULTS :

(i) 20.27 ton/ac.

(ii) 2.912 ton/ac.

(iii) Main effects of N and V are highly significant. Other effects and interactions are not significant.

(iv) Av. yield of sugarcane in ton/ac.

	N <sub>0</sub>	N <sub>1</sub>	N <sub>2</sub>	Mean	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>
V <sub>1</sub>	14.03	19.69	25.46	19.73	18.94	19.19	21.05
V <sub>2</sub>	17.19	24.68	28.40	23.42	24.99	20.28	24.99
V <sub>3</sub>	13.43	16.99	22.62	17.68	19.20	17.10	16.74
Mean	14.88	20.45	25.49	20.27	21.04	18.86	20.92
N <sub>0</sub>	15.69	19.12	28.33				
N <sub>1</sub>	15.87	19.05	21.65				
N <sub>2</sub>	13.09	23.18	26.50				

S.E. of any marginal mean = 0.971 ton/ac.  
 S.E. of body of any table = 1.681 ton/ac.

Crop :- Sugarcane.

Ref :- U.P. 51(215).

Zone :- Khatauli (Muzaffarnagar).

Type :- 'MV'.

Object :- To find the optimum manurial combination of N and P for three different varieties of Sugarcane.

**1. BASAL CONDITIONS :**

(i) (a) N.A. (b) Peas. (c) N.A. (ii) Heavy loam (type IV). (iii) Green manuring by peas. (iv) As per treatments. (v) (a) Hoeings on 10.3.1951, 20.4.1951, 8, 28.5.1951 and 19.6.1951. Earthing on 10.7.1951. (b) N.A. (c) 60 three budded setts/row. (d) and (e) N.A. (vi) 26.2.1951. (vii) Irrigated (viii) and (ix) N.A. (x) 1 and 2.3.1952.

**2. TREATMENTS :**

All combinations of (1), (2) and (3)

(1) 3 varieties: V<sub>1</sub>=CO. 421, V<sub>2</sub>=CO.S. 245 and V<sub>3</sub>=CO.S. 321.(2) 3 levels of N: N<sub>0</sub>=0, N<sub>1</sub>=60 and N<sub>2</sub>=120 lb./ac.(3) 3 levels of P<sub>2</sub>O<sub>5</sub>: P<sub>0</sub>=0, P<sub>1</sub>=40 and P<sub>2</sub>=80 lb./ac.N applied as A/S and P<sub>2</sub>O<sub>5</sub> as Super. Manuring in furrows on 26.2.1951.**3. DESIGN :**

(i) and (ii) 3<sup>3</sup> confounded experiment in single replication with VN<sup>2</sup>P<sup>2</sup> interaction confounded. (iii) (a) 60' x 27'. (b) 54' x 21'. (iv) N.A.

**4. GENERAL :**

(i) Satisfactory. (ii) A slight attack of root borer and top borer in the early stages was reported by the grower. A slight attack of pyrilla was observed at harvesting. (iii) Sugarcane yield. (iv) (a) No. (b) and (c) N.A. (v) N.A. (vi) Analytical results of soil are:

Depth	0"-7"	7"-18"	18"-36"	36"-51"	51"-63"	63"-below
pH	7.1	7.0	6.9	6.8	6.9	7.2

(vii) The experiment was conducted by D.S.R.(M) on cultivators' fields.

**5. RESULTS :**

(i) 27.78 ton/ac.

(ii) 1.431 ton/ac.

(iii) Main effect of N is highly significant. Main effect of V is significant. Others are not significant.

(iv) Av. yield of sugarcane in ton/ac.

	N <sub>0</sub>	N <sub>1</sub>	N <sub>2</sub>	Mean	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>
V <sub>1</sub>	22.66	25.37	31.10	26.38	26.65	25.36	27.12
V <sub>2</sub>	25.09	27.19	33.74	28.67	28.37	27.82	29.83
V <sub>3</sub>	25.69	28.31	30.84	28.28	27.95	28.65	28.24
Mean	24.48	26.96	31.89	27.78	27.66	27.28	28.40
P <sub>0</sub>	24.08	28.11	30.78				
P <sub>1</sub>	24.40	25.82	31.61				
P <sub>2</sub>	24.96	26.94	33.29				

S.E. of any marginal mean = 0.477 ton/ac.

S.E. of body of any table = 0.826 ton/ac.

Crop :- Sugarcane.

Ref :- U.P. 51(214).

Zone :- Khatauli (Muzaffarnagar).

Type :- 'MV'.

Object :- To find the optimum manurial combination of N and P for three different varieties of Sugarcane.

**1. BASAL CONDITIONS :**

(i) (a) N.A. (b) *Chari*. (c) No. (ii) Heavy loam (type IV). (iii) 300 md./ac. of F.Y.M. (iv) As per treatments. (v) (a) 2 hoeings. (b) N.A. (c) 52 three budded setts/ac. (d) and (e) N.A. (vi) 7.3.1951. (vii) Irrigated. (viii) and (ix) N.A. (x) 13 and 16.2.1952.

**2. TREATMENTS:**

All combinations of (1), (2) and (3)

(1) 3 varieties : V<sub>1</sub>=CO. 421, V<sub>2</sub>=CO.S. 245 and V<sub>3</sub>=CO.S. 321.(2) 3 levels of N : N<sub>0</sub>=0, N<sub>1</sub>=60 and N<sub>2</sub>=120 lb./ac.(3) 3 levels of P<sub>2</sub>O<sub>5</sub> : P<sub>0</sub>=0, P<sub>1</sub>=40 and P<sub>2</sub>=80 lb./ac.N applied as A/S and P<sub>2</sub>O<sub>5</sub> as Super. Manuring on 6 and 7.3.1951 in furrows.**3. DESIGN :**

(i) and (ii) 3<sup>3</sup> confounded experiment in single replication with VN<sup>3</sup>P interaction is confounded. (iii) (a) 52' x 33'. (b) 46' x 27'. (iv) N.A.

**4. GENERAL :**

(i) Condition was fair at harvesting. (ii) There was slight attack of pyrilla. The cultivator reported that there was also a slight attack of root borer in the beginning of the experiment. (iii) Sugarcane yield. (iv) (a) No. (b) and (c) N.A. (v) N.A. (vi) Analytical results of soil are :

Depth	0"-5"	5"-18"	18"-30"	30"-41"	41"-56"
pH	6.9	6.5	6.8	7.0	6.8

(vii) The experiment was conducted by D.S.R.(M) on cultivators' field.

**5. RESULTS**

(i) 17.21 ton/ac.

(ii) 1.869 ton/ac.

(iii) Main effects and interactions are not significant.

(iv) Av. yield of sugarcane in ton/ac.

	N <sub>0</sub>	N <sub>1</sub>	N <sub>2</sub>	Mean	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>
V <sub>1</sub>	15.81	18.84	18.08	17.58	17.57	17.61	17.56
V <sub>2</sub>	14.48	17.08	17.81	16.46	15.98	16.38	17.01
V <sub>3</sub>	17.95	16.39	18.40	17.58	17.39	17.57	17.78
Mean	16.08	17.44	18.40	17.21	16.98	17.19	17.45
P <sub>0</sub>	15.87	16.99	18.08				
P <sub>1</sub>	17.16	16.31	18.09				
P <sub>2</sub>	15.21	19.01	18.13				

S.E. of any marginal mean = 0.623 ton/ac.

S.E. of body of any table = 1.079 ton/ac.

Crop :- Sugarcane.

Ref :- U.P. 50(203).

Zone :- Hargaon (Sitapur).

Type :- 'MV'.

Object :- To find the optimum manurial combination of N and P for three different varieties of Sugarcane.

## 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) *Domat*. (iii) Nil. (iv) As per treatments. (v) (a) 3 Hoings. (b) to (e) N.A. (vi) 20.3.1950. (vii) Irrigated. (viii) N.A. (ix) N.A. (x) 11.2.1951.

## 2. TREATMENTS :

All combinations of (1), (2) and (3)

(1) 3 varieties : V<sub>1</sub>=CO. 421, V<sub>2</sub>=CO. 453 and V<sub>3</sub>=CO. 527.(2) 3 levels of N : N<sub>0</sub>=0, N<sub>1</sub>=60 and N<sub>2</sub>=120 lb./ac.(3) 3 levels of P<sub>2</sub>O<sub>5</sub> : P<sub>0</sub>=0, P<sub>1</sub>=40 and P<sub>2</sub>=80 lb./ac.N applied as A/S and P<sub>2</sub>O<sub>5</sub> as Super. Manuring on 21.3.1950.

## 3. DESIGN :

(i), (ii) 3<sup>3</sup> confounded design in which Z component of VNP interaction is confounded. (iii) (a) 50'×21'. (b) 44'×15'. (iv) N.A.

## 4. GENERAL :

(i) N.A. (ii) N.A. (iii) Sugarcane yield. (iv) (a) No. (b) and (c) N.A. (v) N.A. (vi) Analytical results of soil are :-

Depth	0"-11"	11"-28"	28"-47"	47"-72"
pH value	7.2	7.0	7.0	7.0
C/N	0.88	6.25	5.40	8.18
C/P	5.21	3.12	2.85	2.90

(vii) The expt. was conducted by D.S.R(M) on cultivators' fields.

## 5. RESULTS :

(i) 10.15 ton/ac.

(ii) 3.367 ton/ac.

(iii) Main effects of N and V are significant. Other effects and interactions are not significant.

(iv) Av. yield of sugarcane in ton/ac.

	N <sub>0</sub>	N <sub>1</sub>	N <sub>2</sub>	Mean	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>
V <sub>1</sub>	9.02	13.53	12.41	11.65	7.05	14.10	13.81
V <sub>2</sub>	7.63	11.54	18.79	12.65	9.47	14.47	14.02
V <sub>3</sub>	5.28	4.30	8.81	6.13	5.75	5.80	6.85
Mean	7.31	9.79	13.34	10.15	7.42	11.46	11.56
P <sub>0</sub>	6.93	6.46	8.87				
P <sub>1</sub>	8.31	11.53	14.54				
P <sub>2</sub>	6.69	11.38	16.61				

S.E. of any marginal mean = 1.122 ton/ac.

S.E. of body of any table = 1.944 ton/ac.

Crop :- Sugarcane.

Zone :- Hargaon (Sitapur).

Ref :- U.P. 50(202).

Type :- 'MV'.

Object :- To find the optimum manurial combination of N and P for three different varieties of Sugarcane.

**1. BASAL CONDITIONS :**(i) (a) to (c) N.A. (ii) *Domat*. (iii) N.A. (iv) As per treatments. (v) (a) 10 hoeings ; no ridges. (b) to (e) N.A. (vi) 18.3.1950. (vii) Canal irrigation. (viii) N.A. (ix) N.A. (x) 12 to 20.2.1951.**2. TREATMENTS :**

All combinations of (1), (2) and (3)

(1) 3 varieties : V<sub>1</sub>=CO. 421, V<sub>2</sub>=CO. 453 and V<sub>3</sub>=CO. 527.(2) 3 levels of N : N<sub>0</sub>=0, N<sub>1</sub>=60 and N<sub>2</sub>=120 lb./ac.(3) 3 levels of P<sub>2</sub>O<sub>5</sub> : P<sub>0</sub>=0, P<sub>1</sub>=40 and P<sub>2</sub>=80 lb./ac.N applied as A/S and P<sub>2</sub>O<sub>5</sub> as Super.**3. DESIGN :**(i), (ii) 3<sup>3</sup> confounded design in which W component of VNP interaction is confounded. (iii) (a) 57'x27'. (b) 51'x21'. (iv) N.A.**4. GENERAL :**

(i) N.A. (ii) No disease. (iii) Sugarcane yield. (iv) (a) No. (b) and (c) N.A. (v) N.A. (vi) Analytical results of soil are :

Depth	0"-12"	12"-35"	35"-58"	58"-72"
pH	7.5	7.5	7.0	7.5
C/N	11.1	7.81	6.13	6.5
C/P	6.45	2.84	1.96	3.51

(vi) The experiment was conducted by D.S.R(M) on cultivators' fields.

**5. RESULTS :**

(i) 30.11 ton/ac.

(ii) 5.221 ton/ac.

(iii) None of the main effects or their interactions is significant.



(iv) Av. yield of sugarcane in ton/ac.

	N <sub>0</sub>	N <sub>1</sub>	N <sub>2</sub>	Mean	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>
V <sub>1</sub>	23.86	30.23	28.41	27.50	25.98	29.95	26.59
V <sub>2</sub>	29.33	32.38	38.39	33.37	32.41	34.58	33.10
V <sub>3</sub>	26.30	31.63	30.42	29.45	25.01	31.56	31.80
Mean	26.50	31.41	32.41	30.11	27.80	32.03	30.50
P <sub>0</sub>	22.28	29.23	31.89				
P <sub>1</sub>	31.13	31.07	33.88				
P <sub>2</sub>	26.09	33.94	31.46				

S.E. of any marginal mean = 1.740 ton/ac.  
 S.E. of body any of table = 3.014 ton/ac.

Crop :- Sugarcane.

Ref :- U.P. 50(201).

Zone :- Hargaon (Sitapur).

Type :- 'MV'.

Object :- To find the optimum manurial combination of N and P for three different varieties of Sugarcane.

## 1. BASAL CONDITIONS :

(i) (a) to (e) N.A. (ii) *Domat*. (iii) Nil. (iv) As per treatments. (v) (a) to (e) N.A. (vi) 30.3.1950.  
 (vii) Irrigated. (viii) N.A. (ix) N.A. (x) 1, 2, 3.3.1951.

## 2. TREATMENTS :

All combinations of (1), (2) and (3)

(1) 3 varieties : V<sub>1</sub>=CO. 42I, V<sub>2</sub>=CO. 453 and V<sub>3</sub>=CO. 527(2) 3 levels of N : N<sub>0</sub>=0, N<sub>1</sub>=60 and N<sub>2</sub>=120 lb./ac.(3) 3 levels of P<sub>2</sub>O<sub>5</sub> : P<sub>0</sub>=0, P<sub>1</sub>=40 and P<sub>2</sub>=80 lb./ac.N applied as A/S, P<sub>2</sub>O<sub>5</sub> as Super. Manuring on 30.3.1950.

## 3. DESIGN :

(i) and (ii) 3<sup>3</sup> confounded design in which X component of VNP interaction is totally confounded. (iii) (a) 48' x 21'. (b) 42' x 15'. (iv) N.A.

## 4. GENERAL :

(i) N.A. (ii) N.A. (iii) Sugarcane yield. (iv) (a) No. (b) and (c) N.A. (v) N.A. (vi) Analytical results of soil are :

Depth	0"–11"	11"–24"	24"–50"	50"–72"
pH	6.1	6.2	6.4	6.5
C/N	9.52	12.03	5.51	6.43
C/P	5.13	6.63	3.37	4.35

(vii) The experiment was conducted by D.S.R. (S) on cultivator's fields.

## 5. RESULTS :

(i) 13.42 ton/ac.

(ii) 1.686 ton/ac.

(iii) All main effects are highly significant. Intercations N x P and V x N are significant. Interaction V x P is not significant.

(iv) Av. yield of sugarcane in ton/ac.

	N <sub>0</sub>	N <sub>1</sub>	N <sub>2</sub>	Mean	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>
V <sub>1</sub>	10.06	15.83	18.84	14.91	12.34	17.35	15.05
V <sub>2</sub>	9.24	16.23	23.59	16.35	14.12	17.56	17.38
V <sub>3</sub>	6.30	9.17	11.55	9.01	5.42	10.71	10.88
Mean	8.53	13.74	17.99	13.42	10.63	15.21	14.44
P <sub>0</sub>	7.03	12.24	12.60				
P <sub>1</sub>	8.63	14.03	22.98				
P <sub>2</sub>	9.97	14.95	18.40				

S.E. of any marginal mean

=0.562 ton/ac.

S.E. of body of any table

=0.973 ton/ac.

Crop :- Sugarcane.

Ref :- U.P. 50(200).

Zone :- Hargaon (Sitapur).

Type :- 'MV'.

Object :--To find the optimum manurial combination of N and P for three different varieties of Sugarcane.

## 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) *Kankrili* soil. (iii) N.A. (iv) As per treatments. (v) (a) 9 hoeings only. (b) to (e) N.A. (vi) 1.4.1950. (vii) Irrigated. (viii) N.A. (ix) N.A. (x) 13, 14, 15.2.1951.

## 2. TREATMENTS :

All combinations of (1), (2) and (3)

(1) 3 varieties : V<sub>1</sub>=CO. 421, V<sub>2</sub>=CO. 453 and V<sub>3</sub>=CO.527.(2) 3 levels of N : N<sub>0</sub>=0, N<sub>1</sub>=60 and N<sub>2</sub>=120 lb./ac.(3) 3 levels of P<sub>2</sub>O<sub>5</sub> : P<sub>0</sub>=0, P<sub>1</sub>=40 and P<sub>2</sub>=80 lb./ac.N applied as A/S, P<sub>2</sub>O<sub>5</sub> as Super. Manure applied on 1.4.1950.

## 3. DESIGN :

(i) and (ii) 3<sup>3</sup> confounded design in which Z component of VNP interaction is totally confounded. (iii) (a) 51'×21'. (b) 45'×15'. (iv) N.A.

## 4. GENERAL :

(i) N.A. (ii) *Pyrrilla* nymphes seen here and there. (iii) Sugarcane yield. (iv) (a) No. (b) and (c) N.A. (v) N.A. (vi) Analytical results of soil are :

Depth	0"-10"	10"-21"	21"-39"	39"-50"	50"-59"	59"-72"
pH	7.4	7.7	7.4	7.6	7.8	7.9
C/N	6.44	7.14	6.88	5.71	6.15	5.48
C/P	6.78	8.82	11.07	5.58	3.24	2.04

(vii) The experiment was conducted by D.S.R. (S) on cultivator's fields.

## 5. RESULTS :

(i) 25.05 ton/ac.

(ii) 2.627 ton/ac.

(iii) Main effects of N and V are highly significant, interaction N×P is significant. Other effects are not significant.

(iv) Av. yield of sugarcane in ton/ac.

	N <sub>0</sub>	N <sub>1</sub>	N <sub>2</sub>	Mean	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>
V <sub>1</sub>	21.39	27.38	35.07	27.95	27.48	25.91	30.46
V <sub>2</sub>	25.17	31.39	33.01	29.86	26.47	31.93	31.17
V <sub>3</sub>	13.01	16.57	22.44	17.34	17.52	16.67	17.84
Mean	19.86	25.11	30.17	25.05	23.83	24.84	26.49
P <sub>0</sub>	18.91	19.40	33.17				
P <sub>1</sub>	17.18	28.00	29.33				
P <sub>2</sub>	23.49	27.95	28.03				

S.E. of any marginal mean

=0.876 ton/ac.

S.E. of body of any table

=1.517 ton/ac.

Crop :-Sugarcane.

Ref :-U.P. 50(204).

Zone :-Hargaon (Sitapur).

Type :-'MV'.

Object :-To find the optimum manurial combination of N and P for three different varieties of Sugarcane.

## 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) *Kankrill* soil. (iii) N.A. (iv) As per treatments. (v) (a) 6 hoeings. No earthing. (vi) 11.3.1950. (vii) Irrigated. (viii) N.A. (ix) N.A. (x) 18 to 20.2.1951.

## 2. TREATMENTS :

All combinations of (1), (2) and (3)

(1) 3 varieties : V<sub>1</sub>=CO-421, V<sub>2</sub>=CO-453 and V<sub>3</sub>=CO-527.(2) 3 levels of N : N<sub>0</sub>=0, N<sub>1</sub>=60 and N<sub>2</sub>=120 lb./ac.(3) 3 levels of P<sub>2</sub>O<sub>5</sub> : P<sub>0</sub>=0, P<sub>1</sub>=40 and P<sub>2</sub>=80 lb./ac.N applied as A/S and P<sub>2</sub>O<sub>5</sub> as Super. Manuring on 11.3.1950.

## 3. DESIGN :

(i) and (ii) 3<sup>3</sup> confounded design in which X component of VNP interaction is totally confounded. (iii) (a) 60'×21'. (b) 54'×15'. (iv) N.A.

## 4. GENERAL :

(i) N.A. (ii) Pyrrilla attack noticed. (iii) Sugarcane yield. (iv) (a) No. (b) and (c) N.A. (v) N.A.

(vi) Analytical results of soil are :

Depth	0"-8"	8"-17"	17"-29"	29"-49"	49"-61"	61"-72"
pH	5.5	5.5	6.5	7.0	7.5	7.5
C/N	12.5	7.00	11.88	7.25	9.41	8.05
C/P	15.49	5.60	3.96	1.36	0.90	0.70

(vii) The experiment was conducted by D.S.R.(S) on cultivator's fields.

## 5. RESULTS :

(i) 25.54 ton/ac.

(ii) 2.976 ton/ac.

(iii) Main effects of N is highly significant. Main effect of V is significant. Other effect and interactions are not significant.

(iv) Av. yield of sugarcane in ton/ac.

	N <sub>0</sub>	N <sub>1</sub>	N <sub>2</sub>	Mean	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>
V <sub>1</sub>	24.55	28.93	28.82	27.43	30.69	25.27	26.34
V <sub>2</sub>	21.74	29.60	28.09	26.48	26.35	24.27	28.81
V <sub>3</sub>	18.74	24.31	25.05	22.70	25.03	21.87	21.20
Mean	21.68	27.61	27.32	25.54	27.36	23.81	25.45
P <sub>0</sub>	24.52	27.61	29.94				
P <sub>1</sub>	19.45	27.02	24.95				
P <sub>2</sub>	21.06	28.22	27.07				

S.E. of any marginal mean = 0.992 ton/ac.  
 S.E. of body of any table = 1.718 ton/ac.

Crop :- Sugarcane.  
 Zone :- Hargaoon (Sitapur).

Ref :- U.P. 53(205).  
 Type :- 'MV'.

Object :- To find the optimum manurial combination of N and P for three different varieties of Sugarcane.

#### 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) *Bhur*. (iii) N.A. (iv) As per treatments. (v) (a) Hoeings and one earthing. (b) to (e) N.A. (vi) 15.3.1950. (vii) Irrigated. (viii) and (ix) N.A. (x) 23.2.1951.

#### 2. TREATMENTS :

All combinations of (1), (2) and (3)

(1) 3 varieties : V<sub>1</sub>=CO-421, V<sub>2</sub>=CO-453 and V<sub>3</sub>=CO-527.

(2) 3 levels of N : N<sub>0</sub>=0, N<sub>1</sub>=60 and N<sub>2</sub>=120 lb./ac.

(3) 3 levels of P<sub>2</sub>O<sub>5</sub> : P<sub>0</sub>=0, P<sub>1</sub>=40 and P<sub>2</sub>=80 lb./ac.

N applied as A/S and P<sub>2</sub>O<sub>5</sub> as Super. Manuring on 15.3.1950.

#### 3. DESIGN :

(i) and (ii) 3<sup>3</sup> confounded design in which Y component of VNP interaction is confounded. (iii) (a) 60'×21'. (b) 54'×15'. (iv) N.A.

#### 4. GENERAL :

(i) and (ii) N.A. (iii) Sugarcane yield. (iv) (a) No. (b) and (c) N.A. (v) N.A. (vi) Analytical results of soil are :

Depth	0"-9"	9"-20"	20"-43"	43"-54"
pH	6.1	6.0	5.6	6.1
C/N	6.25	5.37	2.15	2.00
C/P	5.00	2.01	1.26	0.42

(vii) The experiment was conducted by D.S.R. (S) on cultivator's fields.

#### 5. RESULTS :

(i) 15.29 ton/ac.

(ii) 4.846 ton/ac.

(iii) Main effects and their interactions are not significant.

(iv) Av. yield of sugarcane in ton/ac.

	N <sub>0</sub>	N <sub>1</sub>	N <sub>2</sub>	Mean	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>
V <sub>1</sub>	19.72	13.10	19.32	17.38	22.90	13.64	15.60
V <sub>2</sub>	13.63	17.44	19.69	16.92	22.67	12.70	15.38
V <sub>3</sub>	8.08	16.22	10.40	11.57	9.35	10.11	15.25
Mean	13.81	15.59	16.47	15.29	18.31	12.15	15.41
P <sub>0</sub>	14.87	18.90	21.15				
P <sub>1</sub>	13.61	10.00	12.84				
P <sub>2</sub>	12.95	17.86	15.42				

S.E. of any marginal mean =1.615 ton/ac.

S.E. of body of any table =2.798 ton/ac.

Crop :-Sugarcane.

Ref :-U.P. 50(206).

Zone :-Hargaon (Sitapur).

Type :-'MV'.

Object :-To find the optimum manurial combination of N and P for three different varieties of Sugarcane.

## 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) *Matyar*. (iii) N.A. (iv) As per treatments. (v) (a) Hoeings by *kudali* and 3 cultivator plough. No earthing. (b) to (e) N.A. (vi) 1.4.1950. (vii) Irrigated. (viii) N.A. (ix) N.A. (x) 26, 27 and 28.2.1951.

## 2. TREATMENTS :

All combinations of (1), (2) and (3)

(1) 3 varieties : V<sub>1</sub>=CO. 421, V<sub>2</sub>=CO. 453 and V<sub>3</sub>=CO. 527.(2) 3 levels of N : N<sub>0</sub>=0, N<sub>1</sub>=60 and N<sub>2</sub>=120 lb./ac.(3) 3 levels of P<sub>2</sub>O<sub>5</sub> : P<sub>0</sub>=0, P<sub>1</sub>=40 and P<sub>2</sub>=80 lb./ac.N applied as A/S and P<sub>2</sub>O<sub>5</sub> as Super. Manuring on 1.4.1950.

## 3. DESIGN :

(i), (ii) 3<sup>3</sup> confounded design in which W component of VNP interaction is confounded. (iii) (a) 47'×24'. (b) 41'×16'. (iv) N.A.

## 4. GENERAL :

(i) N.A. (ii) Nil. (iii) Sugarcane yield. (iv) (a) No. (b) and (c) N.A. (v) N.A. (vi) Analytical results of soil are :

Depth	0"-9"	9"-19"	19"-48"	48"-72"
pH	7.4	7.4	7.3	7.4
C/N	11.38	4.54	2.91	3.33
C/P	5.32	2.67	2.24	0.98

(vii) The experiment was conducted by D.S.R(S) on cultivator's fields.

## 5. RESULTS :

- (i) 25.80 ton/ac.  
(ii) 9.417 ton/ac.  
(iii) None of the main effects and their interactions is significant.

(iv) Av. yield of sugarcane in ton/ac.

	N <sub>0</sub>	N <sub>1</sub>	N <sub>2</sub>	Mean	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>
V <sub>1</sub>	16.11	24.64	18.58	19.78	21.92	16.91	20.50
V <sub>2</sub>	29.75	30.35	28.95	29.68	25.85	31.57	31.64
V <sub>3</sub>	26.27	25.22	32.31	27.93	27.41	28.49	27.90
Mean	24.04	26.74	26.61	25.80	25.07	25.65	26.68
P <sub>0</sub>	23.93	27.73	23.54				
P <sub>1</sub>	24.66	25.88	26.42				
P <sub>2</sub>	23.54	26.61	29.90				

S.E. of any marginal mean = 3.139 ton/ac.

S.E. of body of any table = 5.437 ton/ac.

Crop :- Sugarcane.

Zone :- Hargaon (Sitapur).

Ref :- U.P. 50(207).

Type :- 'MV'.

Object :- To find the optimum manurial combination of N and P for three different varieties of Sugarcane.

**1. BASAL CONDITIONS :**(i) (a) to (c) N.A. (ii) *Kankrili* soil. (iii) N.A. (iv) As per treatments. (v) (a) 4 hoeings. (b) to (c) N.A. (vi) 16.3.1950. (vii) Irrigated. (viii) N.A. (ix) N.A. (x) 18, 19 and 20.2.1951.**2. TREATMENTS :**

All combinations of (1), (2) and (3)

(1) 3 varieties : V<sub>1</sub>=CO. 421, V<sub>2</sub>=CO. 453 and V<sub>3</sub>=CO. 527.(2) 3 levels of N : N<sub>0</sub>=0, N<sub>1</sub>=60 and N<sub>2</sub>=120 lb./ac.(3) 3 levels of P<sub>2</sub>O<sub>5</sub> : P<sub>0</sub>=0, P<sub>1</sub>=40 and P<sub>2</sub>=80 lb./ac.N applied as A/S and P<sub>2</sub>O<sub>5</sub> as Super. Manuring on 16.3.1950.**3. DESIGN :**(i), (ii) 3<sup>3</sup> confounded design in which Y component of VNP interaction is totally confounded. (iii) (a) 45'×21'. (b) 39'×15'. (iv) N.A.**4. GENERAL :**(i) N.A. (ii) *Pyrilla* nymphs present. (iii) Sugarcane yield. (iv) (a) No. (b) and (c) N.A. (v) N.A. (vi) Analytical results of the soil are :-

Depth	0"-8"	8"-20"	20"-35"
pH	7.2	7.1	3.5
C/N	12.38	8.18	8.12
C/P	18.57	6.75	3.51

(vii) The expt. was conducted by D.S.R(S) on cultivator's fields.

**5. RESULTS :**

(i) 18.36 ton/ac.

(ii) 2.311 ton/ac.

(i.i) Main effect of V is highly significant. Main effect of N is significant. Other effect and interactions are not significant.

(iv) Av. yield of sugarcane in ton/ac.

	N <sub>0</sub>	N <sub>1</sub>	N <sub>2</sub>	Mean	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>
V <sub>1</sub>	10.08	15.97	15.97	14.01	12.99	12.31	16.72
V <sub>2</sub>	22.54	24.88	24.88	24.10	24.02	23.69	24.58
V <sub>3</sub>	16.31	16.18	18.46	16.98	15.80	17.44	17.71
Mean	16.31	19.01	19.77	18.36	17.61	17.81	19.67
P <sub>0</sub>	18.80	17.24	16.78				
P <sub>1</sub>	12.98	19.70	20.76				
P <sub>2</sub>	17.16	20.09	21.76				

S.E. of any marginal mean = 0.770 ton/ac.  
 S.E. of body of any table = 1.335 ton/ac.

Crop :- Sugarcane.  
 Zone :- Hargaon (Sitapur).

Ref :- U.P. 50(208).  
 Type :- 'MV'.

Object :- To find the optimum manurial combinations of N and P for three different varieties of Sugarcane.

#### 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) *Bhur.* (iii) N.A. (iv) As per treatments. (v) (a) to (e) N.A. (vi) 15.3.1950. (vii) N.A. (viii) N.A. (ix) N.A. (x) 23.2.1951.

#### 2. TREATMENTS :

All combinations of (1), (2) and (3)

(1) 3 varieties : V<sub>1</sub>=CO. 421, V<sub>2</sub>=CO. 453 and V<sub>3</sub>=CO. 527.

(2) 3 levels of N : N<sub>0</sub>=0, N<sub>1</sub>=60 and N<sub>2</sub>=120 lb./ac.

(3) 3 levels of P<sub>2</sub>O<sub>5</sub> : P<sub>0</sub>=0, P<sub>1</sub>=40 and P<sub>2</sub>=80 lb./ac.

N applied as A/S and P<sub>2</sub>O<sub>5</sub> as Super. Manuring on 15.3.1950.

#### 3. DESIGN :

(i) and (ii) 3<sup>3</sup> confounded design in which X component of VNP interaction is confounded. (iii) (a) 60'×21'. (b) 54'×15'. (iv) N.A.

#### 4. GENERAL :

(i) N.A. (ii) N.A. (iii) Sugarcane yield. (iv) (a) No. (b) and (c) N.A. (v) N.A. (vi) Analytical results of soil are :

Depth	0°—14°	14° 46'	46°—58°	58°—72°
pH	7.0	6.8	6.9	6.9
C/N	14.58	14.58	15.4	15.11
C/P	12.44	5.83	2.3	3.54

(vii) The experiment was conducted by D.S.R. (S) on cultivator's fields.

#### 5. RESULTS :

- (i) 22.48 ton/ac.  
 (ii) 5.333 ton/ac.  
 (iii) None of the effects and their interactions is significant.

(iv) Av. yield of sugarcane in ton/ac.

	N <sub>0</sub>	N <sub>1</sub>	N <sub>2</sub>	Mean	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>
V <sub>1</sub>	25.45	21.35	23.82	23.54	21.49	25.34	23.79
V <sub>2</sub>	25.14	24.05	28.27	25.82	23.38	23.22	30.88
V <sub>3</sub>	15.58	19.56	19.10	18.08	19.26	23.30	11.68
Mean	22.06	21.65	23.73	22.48	21.38	23.95	22.12
P <sub>0</sub>	23.46	14.01	26.67				
P <sub>1</sub>	18.77	25.22	27.86				
P <sub>2</sub>	23.94	25.74	16.67				

S.E. of any marginal mean  
S.E. of body of any table

=1.778 ton/ac.  
=3.079 ton/ac.

Crop :- Sugarcane.

Site :- Govt. Agri. Farm, Baharaich.

Ref :- U.P. 50(192).

Type :- 'C'.

Object :- To find out suitable time of planting Sugarcane.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Sanaï* as G.M. (c) Nil. (ii) (a) Sandy loam. (b) Refer soil analysis, Baharaich. (iii) As per treatments. (iv) (a) Ploughings by Meston 7 times, by cultivator 3 times, planking 5 times along the later ploughings. (b) Sown flat. (c) N.A. (d) 5 rows/plot, rows 3' apart. (e) N.A. (v) *Sanaï* at 60 lb./ac. of N on 22.8.1950, top dressing 3 md. 20 seers of G.N.C. at 34 lb./ac. of N and A/S at 1 md. 1 seer at 25 lb./ac. of N on 12.6.1951. (vi) CO. 453 (mid-late). (vii) Irrigated. (viii) 5 hoeings by *kassi* and 3 by cultivator. (ix) N.A. (x) 10.3.1952.

## 2. TREATMENTS :

1. October planting (23.10.1950).
2. November planting (27.11.1950).
3. January planting (17.1.1951).
4. February planting (11.2.1951).
5. March planting (15.3.1951).

## 3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 4. (iv) (a) and (b) 86'×15'. (v) Nil. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) N.A. (iii) Germination, tillers, millable cane and sugarcane yield. (iv) (a) No. (b) and (c) No. (v) (a) Zones : Nawabgunj, Sardarnagar, Pharenda, Gauribazar, Captainganj and Ghugli. (b) N.A. (vi) Nil. (vii) Experiment conducted by D.S.R. (G).

## 5. RESULTS :

- (i) 19.45 ton/ac.
- (ii) 2.887 ton/ac.
- (iii) Treatment differences are not significant.
- (iv) Av. yield of sugarcane in ton/ac.

Treatment	Av. yield
1.	22.14
2.	19.27
3.	18.99
4.	18.38
5.	18.49
S.E./mean	=1.443 ton/ac.



Crop :- Sugarcane.

Ref :- U.P. 52 (226).

Site :- Govt Agri. Farm, Baharaich.

Type :- 'C'.

Object :- To find out methods of improving Sugarcane yield under late planting.

**1. BASAL CONDITIONS :**

(i) (a) Nil. (b) *Sanai*. (c) Nil. (ii) (a) Sandy Loam. (b) Refer soil analysis, Baharaich. (iii) 16.2.52 and 20.2.1.1952. (iv) (a) Ploughings by *desi* plough. Harrowing also done along with ploughings. (b) Planted in furrows made by *desi* plough. (c) 1275, 1530, 2550 and 3060 buds/plot according to treatments. (d) 5 rows/plot. (e) N.A. (v) Compost 150 md. on 1 and 2.1.1952 and Castor cake 9 md. on 24.1.1952. (vi) N.A. (vii) Irrigated. (viii) 5 hoeings by cultivator. (ix) N.A. (x) 1,3.2.1953.

**2. TREATMENTS :**

1. February planting—3' distance—setts overlapping.
2. March planting—3' distance—setts overlapping.
3. March planting—3' distance—double setting.
4. March planting—2½' distance—setts overlapping.
5. March planting—2½' distance—double setting.

**3. DESIGN :**

(i) R.B.D. (ii) (a) 5, (b) N.A. (iii) 4. (iv) (a) and (b) 85'×15'. (v) Nil. (vi) Yes.

**4. GENERAL :**

(iv) Crop condition satisfactory. February planted sugarcane was better than others in growth. (ii) N.A. (iii) Germination, tillers, millable cane and sugarcane yield. (iv) (a) to (c) No. (v) (a) Zones : Gorakhpur, Tamkahi, Faizabad and Ghugli. (b) N.A. (vi) Nil. (vii) Experiment conducted by D.S.R. (G).

**5. RESULTS :**

- (i) 22.86 ton/ac.  
 (ii) 3.927 ton/ac.  
 (iii) Treatment differences are not significant.  
 (iv) Av. yield of sugarcane in ton/ac.

Treatment	Av. yield
1.	26.04
2.	20.67
3.	21.92
4.	21.82
5.	23.87
S.E./mean	= 1.964 ton/ac.

Crop :- Sugarcane.

Ref :- U.P. 51(177).

Site :- Govt. Agri. Farm, Baharaich.

Type :- 'C'.

Object :- To find out suitable rotation with the Sugarcane crop.

**1. BASAL CONDITIONS :**

(i) (a) and (b) As per treatments. (c) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis, Baharaich. (iii) 11.2.1951. (iv) (a) 6 ploughing by Meston and 2 by cultivator plough and 5 plankings along with ploughings. (b) Flat sowing system. (c) 1806 buds/plot. (d) 3' apart. (e) N.A. (v) Top dressing of cake at 6 md. and A/S at 2 md. 20 srs. on 11.6.1951 (vi) CO.453 (mid-late). (vii) Irrigated. (viii) 7 hoeings by *kassi* and cultivator. (ix) N.A. (x) 5 to 20.3.1952.

**2. TREATMENTS :**

1. Fallow—sugarcane.
2. *Sanai*—sugarcane.
3. *Sawan*—sugarcane.
4. *Sanai*—mustard—sugarcane.
5. *Jowar*+*Arhar*—sugarcane.
6. *Arhar*+*Moong*—Peas—sugarcane.

**3. DESIGN :**

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) and (b) 86'×21'. (v) Block 4' apart. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) N.A. (iii) Germination, tillers, millable cane and sugarcane yield. (iv) (a) No. (b) and (c) N.A. (v) Zones : Captainganj, Sardarnagar and Anandnagar. (vi) Nil. (vii) Experiment conducted by D.S.R. (G).

## 5. RESULTS :

(i) 28.18 ton/ac.  
 (ii) 3.18 ton/ac.  
 (iii) Treatment differences are significant.  
 (iv) Av. yield of sugarcane in ton/ac.

Treatment	Av. yield
1.	30.97
2.	32.59
3.	26.91
4.	27.12
5.	26.50
6.	24.59
S.E./mean	= 1.59 ton/ac.

Crop :- Sugarcane.

Site :- Govt. Agri. Farm, Baharaich.

Ref :- U.P. 52(233).

Type :- 'C'.

Object :- To find out some suitable crop rotation for the Sugarcane.

## 1. BASAL CONDITIONS :

(i) (a) (b), As per treatments. (c) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis, Baharaich. (iii) 15.2.1952. (iv) (a) Harrowing along with hoeing. (b) N.A. (c) 1530 buds/plot. (d) 6 rows/plot. (e) N.A. (v) 220 md. i.e. 90 lb./ac. of N form 9 to 15.1.1952. (vi) CO. 453 (mid-late). (vii) Irrigated. (viii) 4 hoeings with cultivator. (ix) N.A. (x) 15, 16.3.1950.

## 2. TREATMENTS :

1. Fallow—fallow—sugarcane.
2. *Sanai*—fallow—sugarcane.
3. Maize—fallow—sugarcane.
4. *Sanai*—mustar—sugarcane.
5. *Jowar*+*arhar*—fallow—sugarcane.
6. *Moong*+*arhar*—fallow—sugarcane.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) and (b) 85'×18'. (v) Plots 4' apart. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) N.A. (iii) Germination, tillers, millable cane and sugarcane yield. (iv) (a) 1951 to 1952. (b) and (c) No. (v) (a) Zones : Ghugli, Captainganj, Gorakhpur, Faizabad, Anandnagar and Gauribazar (vi) Nil. (vii) Experiment was conducted by D.S.R.(G).

## 5. RESULTS :

(i) 25.47 ton/ac.  
 (ii) 2.53 ton/ac.  
 (iii) Treatment differences are highly significant.  
 (iv) Av. yield of sugarcane in ton/ac.

Treatment	Av. yield
1.	30.22
2.	32.96
3.	26.44
4.	29.30
5.	16.28
6.	17.62
S.E./mean	= 1.27 ton/ac.

Crop :- Sugarcane.

Ref :- U.P. 52(218).

Site :- Govt. Agri. Farm, Baharaich.

Type :- 'C'.

Object :- To find out some suitable crop rotation for Sugarcane.

## 1. BASAL CONDITIONS :

(i) (a), (b) As per treatments. (c) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis, Baharaich. (iii) As per treatments. (iv) (a) 1 ploughing with Meston, 3 ploughings with *desi* plough and 1 planking. (b) Sown in lines. (c) 1 440 buds/plot. (d) 3' apart. (e) N.A. (v) Castor cake at 40 lb./ac. of N on 6.10.1952, 31.1.1953. and 2.4.1953. Top dressing by mixture on 15.7.1953. (vi) CO. 453 (medium-late). (vii) Irrigated. (viii) 2 hoeings and 1 earthing. (ix) N.A. (x) Jan, 1954.

## 2. TREATMENTS :

1. Paddy—fallow—sugarcane in Jan. 1953.
2. Paddy+*dhaincha*—fallow—sugarcane in Jan. 1953.
3. Paddy+*dhaincha*—peas sugarcane in Oct. 1952.
4. Paddy+*dhaincha*—gram—sugarcane in Oct. 1952.
5. Paddy—peas—sugarcane in March, 1953.
6. Paddy—gram—sugarcane in March, 1953.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) and (b) 48'×29'. (v) Nil. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) N.A. (iii) Germination, tillers, millable cane and sugarcane yield. (iv) (a) 1952 to 1954. (b) and (c) No. (v) (a) Captainganj, Gorakhpur. (b) N.A. (vi) Nil. (vii) Experiment was conducted by D.S.R(G).

## 5. RESULTS :

- (i) 18.76 ton/ac.  
(ii) 4.62 ton/ac.  
(iii) Treatments are highly significant.  
(iv) Av. yield of sugarcane in ton/ac.

Treatment	Av. yield
1.	20.73
2.	20.80
3.	23.99
4.	24.43
5.	11.60
6.	11.03
S.E./mean	=2.31 ton/ac.

Crop :- Sugarcane.

Ref :- U.P. 53(259).

Site :- Govt. Agri. Farm, Baharaich.

Type :- 'C'.

Object :- To find out the proper rotation with the Sugarcane crop on the basis of intensive cultivation in paddy grown areas.

## 1. BASAL CONDITIONS :

(i) (a) and (b) As per treatments. (c) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis, Baharaich. (iii) As per treatments. (iv) (a) 2 ploughings for October planting and 3 ploughings for January and March planting and 1 harrowing. (b) Flat planting in line. (c) 1440 buds/plot. (d) 18 rows/plot at 3' apart. (e) N.A. (v) 72 lb./ac. of N as Castor cake applied in total along with the plantings on different dates and top dressing 16 lb./ac. of N as A/S on 15.5.1954. (vi) CO. 453 (late). (vii) Irrigated. (viii) N.A. (ix) N.A. (x) February 1955.

## 2. TREATMENTS :

1. Paddy - fallow—sugarcane on 3.2.1954.
2. Paddy+*dhaincha*—fallow—sugarcane on 3.2.1954.
3. Paddy+*dhaincha*—peas—sugarcane on 2.10.1953.
4. Paddy+*dhaincha*—gram—sugarcane on 2.10.1953.
5. Paddy—peas—sugarcane on 25.4.1954.
6. Paddy—gram—sugarcane on 25.4.1954.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) and (b) 48'×30'. (v) Nil. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) N.A. (iii) Germination, tillers, millable cane and sugarcane yield. (iv) (a) 1952 to 1954. (b) and (c) No. (v) (a) Lakshmganj, Captaingunj, Gorakhpur and Faizabad zones. (b) N.A. (vi) Nil. (viii) Experiment was conducted by D.S.R. (G).

## 5. RESULTS :

(i) 26.81 ton/ac.  
 (ii) 5.51 ton/ac.  
 (iii) Treatment differences are significant.  
 (iv) Av. yield of sugarcane in ton/ac.

Treatment	Av. yield
1.	25.61
2.	23.13
3.	33.44
4.	31.95
5.	27.99
6.	18.75
S.E./mean	= 2.75 ton/ac.

Crop :- Sugarcane.

Ref :- U.P. 50(184).

Site :- Govt. Agri. Farm, Baharaich.

Type :- 'C'.

Object :—To find out the proper rotation with the Sugarcane crop on the basis of intensive cultivation in paddy grown areas.

## 1. BASAL CONDITIONS :

(i) (a) and (b) As per treatments. (c) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis, Baharaich. (iii) N.A. (iv) (a) to (c) N.A. (d) 7 rows/plot. (e) N.A. (v) Compost 3 C.L. on 6.2.1950 and Castor cake at 79 lb./ac. on 12 and 15.5.1950 (vi) CO. 453 (mid-late). (vii) Irrigated. (viii) 5 hoeings. (ix) N.A. (x) N.A.

## 2. TREATMENTS :

1. Fallow—fallow—sugarcane.
2. *Sana* G.M.—fallow sugarcane.
3. Maize—fallow—sugarcane.
4. Paddy—peas—sugarcane.
5. Paddy—fallow—sugarcane.
6. *Arhar*+paddy—fallow—sugarcane.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 6. (iv) (a) and (b) 87'×21'. (v) Nil. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) N.A. (iii) Germination, tillers, millable cane and sugarcane yield. (iv) (a) No. (b) and (c) No. (v) (a) Deoria, Sardarnagar, Anandnagar, Captainganj, Ghugli and Balrampur zones. (b) N.A. (vi) Nil. (vii) Experiment conducted by D.S.R. (G).

## 5. RESULTS :

(i) 34.56 ton/ac.  
 (ii) 2.79 ton/ac.  
 (iii) Treatment differences are not significant.  
 (iv) Av. yield of sugarcane in ton/ac.

Treatment	Av. yield
1.	34.51
2.	36.43
3.	33.80
4.	35.08
5.	30.73
6.	36.81
S.E./mean	= 1.13 ton/ac.

Crop :-Sugarcane.

Ref :-U.P. 53(258).

Site :-Govt. Agri. Farm, Faizabad.

Type :-'C'.

Object :-To find out proper rotation with the Sugarcane crop on the basis of intensive cultivation in paddy grown areas.

## 1. BASAL CONDITIONS :

(i) (a) and (b) As per treatments. (c) N.A. (ii) (a) Loam. (b) N.A. (iii) As per treatments. (iv) (a) Ploughings twice by *praja* plough and thrice by *desi* plough. (b) Flat planting. (c) 1890 buds/plot. (d) Rows 3' apart. (e) —. (v) Compost at 40 lb./ac. of N on 27.1.1954; G.N.C. and A/S at 40 lb./ac. of N at planting. Top dressing of A/S at 20 lb./ac. of N on 16.7.1954. (vi) CO. 393 (early) (vii) Irrigated. (viii) 1 hoeing by *kudali* and 1 by cultivator. 1 earthing by ridger. (ix) N.A. (x) 28, 29.1.1955 and 1.2.1955.

## 2. TREATMENTS :

1. Paddy—fallow—sugarcane on 28.1.1954.
2. Paddy+*dhaincha*—fallow—sugarcane on 28.1.1954.
3. Paddy+*dhaincha*—peas—sugarcane on 20.10.1953
4. Paddy+*dhaincha*—gram—sugarcane on 20.10.1953.
5. Paddy—peas—sugarcane on 10.3.1954.
6. Paddy—gram—sugarcane on 3.4.1954.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) 70'×27'. (b) 64'×21'. (v) 3' around. (vi) Yes.

## 4. GENERAL :

(i) and (ii) N.A. (iii) Sugarcane yield at harvest excluding cane harvested for sampling of juice. (iv) (a) 1953—1955. (b) and (c) No. (v) (a) Lakshmiganj, Captainganj, Gorakhpur and Faizabad zones. (b) N.A. (vi) Nil. (vii) Experiment conducted by D.S.R.(G).

## 5. RESULTS :

- (i) 17.90 ton/ac.  
 (ii) 2.01 ton/ac.  
 (iii) Treatment differences are highly significant.  
 (iv) Av. yield of sugarcane in ton/ac.

Treatment	Av. yield
1.	21.86
2.	21.85
3.	19.90
4.	15.69
5.	16.36
6.	11.73
S.E./mean	=1.00 ton/ac.

Crop :-Sugarcane.

Ref :-U.P. 49(4).

Site :-Sugarcane Res. Sub-Stn., Kunraghat.

Type :-'C'.

Object :-To see the effects of different *Kharif* crops on Sugarcane crop.

## 1. BASAL CONDITIONS :

(i) (a) and (b) As per treatments. (c) G.M. (ii) (a) Sandy loam. (b) N.A. (iii) 23 and 24.2.1949. (iv) (a) 4 preparatory ploughings with *desi* and Watt's plough. (b) Sown flat. (c) 69 three budded setts/row. (d) and (e) N.A. (v) N.A. (vi) CO-453 (late). (vii) Irrigated. (viii) 1 earthing and 1 hoeing. (ix) 52.86°. (x) 21.2.1950 to 3.3.1950.

## 2. TREATMENTS :

1. Wheat—fallow—sugarcane.
2. Wheat—*chari*—sugarcane.
3. Wheat—paddy—sugarcane.
4. Wheat—*guar* for fodder—sugarcane.
5. Wheat—*sanai* for G.M.—sugarcane.
6. Wheat—*sanai*+berseem—sugarcane.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) 56'×27'. (b) 50'×21'. (v) 3' around. (vi) Yes.

## 4. GENERAL :

(i) Normal. No lodging. (ii) No. (iii) Germination, tillers, millable cane and sugarcane yield. (iv) (a) 1949 to 1951. (b) No. (c) N.A. (v) (a) No. (b) N.A. (vi) Nil. (vii) Experiment conducted by D.S.R.(G).

## 5. RESULTS :

- (i) 17.42 ton/ac.  
 (ii) 2.633 ton/ac.  
 (iii) Treatment differences are not significant.  
 (iv) Av. yield of sugarcane in ton/ac.

Treatment	Av. yield
1.	15.24
2.	18.88
3.	15.73
4.	19.27
5.	16.90
6.	18.49
S.E./mean	=1.317 ton./ac.

Crop :-Sugarcane.

Ref :-U.P. 50(28).

Site :-Sugarcane Res. Sub-Stn., Kunraghat.

Type :-'C'.

Object :-To see the effects of different *Kharif* crops on Sugarcane crop.

## 1. BASAL CONDITIONS :

(i) (a) and (b) As per treatments. (c) G.M. (ii) (a) Sandy loam. (b) N.A. (iii) 22, 23.2.1950. (iv) (a) 6 preparatory ploughings with *desi* and Watt's ploughs. (b) Sown flat. (c) 60 three budded setts/row. (d) and (e) N.A. (v) Nil. (vi) CO.453 (late). (vii) Irrigated. (viii) 1 earthing and 8 hoeings. (ix) 44.96°. (x) 4.1.1951 to 14.2.1951.

## 2. TREATMENTS :

1. Wheat—fallow—sugarcane.
2. Wheat—*chari*—sugarcane.
3. Wheat—paddy—sugarcane.
4. Wheat—*guar*—sugarcane.
5. Wheat—*sanai*—sugarcane.
6. Wheat—*sanai*+berseem—sugarcane.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) 56'×27'. (b) 50'×21'. (v) 3' around. (vi) Yes.

## 4. GENERAL :

(i) Normal. No lodging. (ii) No. (iii) Germination, tillers, millable cane and sugarcane yield. (iv) (a) 1949 to 1951. (b) and (c) No. (v) (a) and (b) No. (vi) Nil. (vii) Experiment was conducted by D.S.R.(G):

## 5. RESULTS :

- (i) 20.03 ton/ac.  
 (ii) 2.119 ton/ac.  
 (iii) Treatment differences are not significant.  
 (iv) Av. yield of sugarcane in ton/ac.

Treatment	Av. yield
1.	20.59
2.	21.30
3.	20.34
4.	18.66
5.	19.83
6.	19.47
S.E./mean	=1.059 ton/ac.

Crop :- Sugarcane.

Ref :- U.P. 51(21).

Site :- Sugarcane Res. Sub-Stn., Kunraghat.

Type :- 'C'.

Object :- To see the effects of different *kharif* crops on Sugarcane crop.

## 1. BASAL CONDITIONS :

(i) (a) and (b) As per treatments. (c) G.M. (ii) (a) Sandy loam. (b) N.A. (iii) 22.2.1951. (iv) (a) 6 preparatory ploughings with *desi* and victory plough. (b) Sown flat. (c) 60, 3-budded setts/row. (d) and (e) N.A. (v) 60 lb./ac. of N as Neem cake and A/S (50 : 50) applied at tillering. (vi) CO. 453. (vii) Irrigated. (viii) 1 earthing and 5 hoeings. (ix) 27.19". (x) 8.1.1952 to 1.2.1952.

## 2. TREATMENTS :

1. Fallow—sugarcane.
2. *Chari*—sugarcane.
3. *Guar*—sugarcane.
4. *Sanai*—sugarcane.
5. Paddy—sugarcane.
6. *Sanai*+berseem—sugarcane.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) 56'×27'. (b) 50'×21'. (v) 3' around. (vi) Yes.

## 4. GENERAL :

(i) Normal, no lodging. (ii) No. (iii) Germination, tiller, millable cane and sugarcane yield. (iv) (a) 1949—1951. (b) and (c) No. (v) (a) and (b) No. (vi) Nil. (vii) Experiment conducted by D.S.R(G).

## 5. RESULTS :

- (i) 20.24 ton/ac.
- (ii) 2.256 ton/ac.
- (iii) Treatment differences are highly significant.
- (iv) Av. yield of sugarcane in ton/ac.

Treatment	Av. yield
1.	20.91
2.	18.27
3.	18.65
4.	25.80
5.	19.71
6.	18.08
S.E./mean	=1.128 ton/ac.

Crop :- Sugarcane.

Ref :- U.P. 52(54).

Site :- Sugarcane Res. Sub-Stn., Kunraghat.

Type :- 'C'.

Object :- To see the effects of different *kharif* crops on Sugarcane crop.

## 1. BASAL CONDITIONS :

(i) (a) and (b) As per treatments. (c) No. (ii) (a) Sandy loam. (b) N.A. (iii) As per treatments. (iv) (a) 5 ploughings with cultivator and *desi* plough. (b) N.A. (c) 60, three budded setts/row (d) and (e) N.A. (v) Castor cake at 60 lb./ac. of N and A/S at 60 lb./ac of N top dressed. (vi) CO. 453 (late) (vii) Irrigated. (viii) 7 hoeings and 1 earthing. (ix) 2.35" (x) 31.1.1953 to 2.2.1953.

## 2. TREATMENTS :

1. Paddy—fallow—sugarcane planted on 31.1.1952.
2. Paddy+*dhaincha*—fallow—sugarcane planted on 31.1.1952.
3. Paddy+*dhaincha*—pea—sugarcane planted on 18.10.1951.
4. Paddy—*dhaincha*+gram—sugarcane planted on 11.10.1951.
5. Paddy—pea—sugarcane planted on 23,24.3.1952.
6. Paddy—gram—sugarcane planted on 23, 24.3.1952.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) 27'×39'. (b) 21'×33'. (v) 3' around. (vi) Yes.

## 4. GENERAL :

(i) Normal. No lodging. (ii) Attack of borers; borers were killed on 21.5.1952. (iii) Germination, tillers, millable cane and sugarcane yield. (iv) (a) 1952 to 1955. (b) and (c) No. (v) (a) and (b) No. (vi) Nil. (vii) Experiment conducted by D.S.R. (G).

## 5. RESULTS :

- (i) 19.43 ton/ac.  
 (ii) 3.520 ton/ac.  
 (iii) Treatment differences are not significant.  
 (iv) Av. yield of sugarcane in ton/ac.

Treatment	Av. yield
1.	20.56
2.	21.41
3.	19.62
4.	18.09
5.	20.45
6.	16.43
S.E./mean	=1.760 ton/ac.

Crop :- Sugarcane.

Ref :- U.P. 53(170).

Site :- Sugarcane Res. Sub-Stn., Kunraghat.

Type :- 'C'.

Object :- To see the effects of different *kharif* crops on Sugarcane crop.

## 1. BASAL CONDITIONS :

(i) (a) and (b) As per treatments. (c) No. (ii) (a) Sandy loam. (b) N.A. (iii) As per treatments. (iv) (a) 10 preparatory ploughings with *desi* and victory plough. (b) N.A. (c) 60 three budded setts/row. (d) and (e) N.A. (v) G.N.C. at 60 lb./ac. of N and 60 lb./ac. of N as A/S. (vi) CO. 453 (late). (vii) Irrigated. (viii) 1 earthing and hoeing. (ix) 50.57%. (x) 1.2.1954 to 8.3.1954.

## 2. TREATMENTS :

1. Paddy—fallow—sugarcane planted on 6.2.1953.
2. Paddy+*dhaincha*—fallow—sugarcane planted on 6.2.1953.
3. Paddy+*dhaincha*—pea—sugarcane planted on 16.10.1952.
4. Paddy+*dhaincha*—gram—sugarcane planted on 16.10.1952.
5. Paddy—pea—sugarcane planted on 3, 4.4.1953.
6. Paddy—gram—sugarcane planted on 3, 4.4.1953.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) 27'×59'. (b) 21'×53'. (v) 3' around. (vi) Yes.

## 4. GENERAL :

(i) Normal. No lodging. (ii) Attack of borers. (iii) Germination, tillers, millable cane, sugarcane yield. (iv) (a) 1952 to 1955. (b) and (c) No. (v) (a) and (b) No. (vi) Nil. (vii) Experiment conducted by D.S.R. (G).

## 5. RESULTS :

- (i) 20.75 ton/ac.  
 (ii) 3.105 ton/ac.  
 (iii) Treatment differences are not significant.  
 (iv) Av. yield of sugarcane in ton/ac.

Treatment	Av. yield
1.	21.62
2.	20.61
3.	20.62
4.	21.79
5.	20.19
6.	19.69
S.E./mean	=1.552 ton/ac.



Crop :- Sugarcane.

Ref :- U.P. 52(61).

Site :- Sugarcane Res. Sub-Stn., Muzaffarnagar.

Type :- C'.

Object :- To find out the possibilities of taking gram as a catch crop in Sugarcane.

## 1. BASAL CONDITIONS :

(j) (a) G.M.—Wheat—Fodder—Sugarcane. (b) *Moong*. (c) Nil. (ii) (a) Light loam. (b) Refer soil analysis, Muzaffarnagar. (iii) Autumn 8.10.1951 and spring 17 and 18.3.1952. Gram was also sown on this date. (iv) (a) 6 preparatory ploughings for autumn sugarcane and gram. 9 preparatory ploughings for spring sugarcane. (b) Planted flat. (c) 70 md. of seed cane and 4200 buds/ac. (d) In rows 3' apart and two rows of gram between rows of sugarcane. (e) N.A. (v) Compost broadcast at 80 lb./ac. of N before planting. (vi) CO-453 (late) (vii) Irrigated. (viii) 7 hoeings in autumn sugarcane and 6 hoeings in spring sugarcane. Earthing up in July. (ix) 26.62'. (x) 22 to 27.12.1952.

## 2. TREATMENTS :

Main-plot treatments :

2 times of sowing :  $S_1$ =autumn sowing and  $S_2$ =spring sowing.

Sub-plot treatments :

2 levels of catch crop :  $G_0$ =no gram and  $G_1$ =gram.

A/S at 60 lb./ac. of N and Castor cake at 20 lb./ac. of N over the basal dressing of compost was applied in the last fortnight of May.

## 3. DESIGN :

(i) Split-plot. (ii) (a) 2 main-plots/replication and 2 sub-plots/main-plot. (b) N.A. (iii) 6. (iv) (a) Main-plot size gross = 1/13.35 ac. Sub : 75'×21'. (b) 69'×15'. (v) One row on either side and 3' border on each end of plot. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Too much borer in general, most of the millable sugarcane remained stunted. Autumn planted was much affected by pyrilla damage. (iii) Germination, tiller, millable cane counting and sugarcane yield. (iv) (a) 1952—1953 and 1954—1955. (b) and (c) No. (v) (a) and (b) Nil. (vi) Nil. (vii) Experiment conducted by D.S.R.(M).

## 5. RESULTS :

(i) 15.81 ton/ac.

(ii) (a) 1.77 ton/ac.

(b) 1.47 ton/ac.

(iii) Main effects of S and G and S×G interaction are highly significant.

(iv) Av. yield of sugarcane in ton/ac.

	$G_0$	$G_1$	Mean
$S_1$	20.77	15.49	18.13
$S_2$	13.56	13.41	13.49
Mean	17.17	14.45	15.81

S.E. of difference of two

1. S marginal means = 0.72 ton/ac.
2. G marginal means = 0.60 ton/ac.
3. G means at a level of S = 0.85 ton/ac.
4. S means at a level of G = 0.94 ton/ac.

Crop :- Sugarcane.

Ref :- U.P. 53(177).

Site :- Sugarcane Res. Sub-Stn. Muzaffarnagar.

Type :- 'C'.

Object :- To find out the possibilities of taking gram as a catch crop in Sugarcane.

## 1. BASAL CONDITIONS :

(i) (a) G.M.—Wheat—Fodder—Sugarcaue. (b) *Guar* for fodder. (c) Nil. (ii) (a) Light loam. (b) Refer soil analysis, Muzaffarnagar. (iii) Autumn on 12.10.1953 and spring on 20.3.1953. Gram was also sown on these dates. (iv) (a) 4 preparatory ploughings for autumn sugarcane and gram. 12 preparatory ploughings for spring sugarcane. (b) Planted flat. (c) 80 md. of sugarcane seed; 4200 buds/ac. (d) In rows 3' apart and two rows of gram between 2 rows of Sugarcane. (e) N.A. (v) Compost broadcast at 80 lb./ac. of N before planting. (vi) COS-453 (late). (vii) Irrigated. (viii) 9 hoeings in autumn sugarcane and 8 hoeings in spring sugarcane. Earthing up in July. (ix) 31.20°. (x) 27.11.1953 to 30.11.1953.

## 2. TREATMENTS :

Main-plot treatments :

2 times of sowing :  $S_1$ =autumn sowing and  $S_2$ =spring sowing.

Sub-plot treatments :

2 levels of catch crop :  $G_0$ =no gram and  $G_1$ =gram.

## 3. DESIGN :

(i) Split-plot. (ii) (a) 2 main-plots/replication and 2 sub-plots/main-plot. (b) N.A. (iii) 6. (iv) (a) Main-plot size gross = 1/13.35. Sub : 75' × 21'. (b) 62' × 15'. (v) One row on each side and 3' border on each end of plot. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Nil. (iii) Germination, tiller, millable sugarcane. (iv) (a) 1952—1953 and 1954—1955. (b) and (c) No. (v) (a) and (b) Nil. (vi) Nil. (vii) Experiment conducted by D.S.R.(M).

## 5. RESULTS :

(i) 22.63 ton/ac.

(ii) (a) 4.159 ton/ac.

(b) 1.956 ton/ac.

(iii) Main effects of G and interaction S × G are highly significant. Main effect of S is not significant.

(iv) Av. yield of sugarcane in ton/ac.

	$G_0$	$G_1$	Mean
$S_1$	26.48	19.46	22.97
$S_2$	21.71	22.86	22.29
Mean	24.10	21.16	22.63

S.E. of difference of two

1. S marginal means = 1.70 ton/ac.
2. G marginal means = 0.80 ton/ac.
3. G means at a level of S = 1.13 ton/ac.
4. S means at a level of G = 1.88 ton/ac.

Crop :- Sugarcane.

Ref :- U.P. 52(199).

Site :- Sugarcane Res. Sub-Stn., Neoli.

Type :- 'C'.

Object :- To find out the possibility of inter cropping gram with Autumn Sugarcane.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) *Sana* (c) No. (ii) (a) Light sandy loam (*khaddar* soil having alkaline patches). (b) Refer soil analysis, Neoli. (iii) 17.10.1952 (October planting and gram) and 18.2.1953 (February planting). (iv) (a) Harrowing by tractor on 17.9.1952, ploughing by Neoli plough on 19, 23 and 29.9.1952 and 9.10.1952. Harrowing by tractor on 27.9.1952 and 15.10.1952. Ploughing by tractor 13.10.1952. (b) N.A. (c) Seed rate of gram = 30 sr./ac. sugarcane 52 three budded setts/row. (d) Sown behind the plough, (e) —. (v) *Sana* green manured (turning in on 16.8.1952). Application of A/S and *mohwa* cake at 8½/plot. (vi) Gram—local variety. Sugarcane CO-453. (vii) Irrigated. (viii) Hoeing with cultivator on 4, 19 and 27.4.1953. Hoeing by spade on 4.6.1953 and 7.7.1953. (ix) N.A. (x) Gram 28.3.1953. Sugarcane—N.A.

## 2. TREATMENTS :

1. October planting + gram inter sown.
2. October planting.
2. February planting.

## 3. DESIGN :

- (i) R.B.D. (ii) (a) 3. (b) N.A. (iii) 5. (iv) (a) 50'×24'. (b) 45'×18'. (v) Plot to plot distance=3'. (vi) Yes.

## 4. GENERAL :

- (i) Gram—failed due to disease and the soil is not suitable for gram cultivation. Sugarcane satisfactory.  
 (ii) Gram suffered very badly by wilting at the ripening in stage March 1953. No disease in sugarcane.  
 (iii) Germination, tiller, counting, millable cane and sugarcane yield. (iv) (a) to (c) No. (v) (a) and (b) No. (vi) Nil. (vii) Experiment conducted by D.S.R. (S).

## 5. RESULTS :

- (i) 19.47 ton/ac.  
 (ii) 1.41 ton/ac.  
 (iii) Treatment differences are not significant.  
 (iv) Av. yield of sugarcane in ton/ac.

Treatment	Av. yield
1.	20.37
2.	18.02
3.	20.03
S.E./mean	= 0.63 ton/ac.

Crop :- Sugarcane.

Ref :- U.P. 4 (49).

Site :- Sugarcane Res. Stn., Shahjahanpur.

Type :- 'C'.

Object :—To study the antibiotic effect of Sorghum and Maize plants on the growth of subsequent crop of Sugarcane.

## 1. BASAL CONDITIONS :

- (i) (a) No. (b) As per treatments. (c) No. (ii) (a) Loam. (b) Refer soil analysis, Shahjahanpur. (iii) 21.2.1948. (iv) (a) and (b) Ploughing on 29.6.1947 and 3.7.1947 (for *Jowar* and Maize). Ploughing and *pata* on 6.10.1947, 8 and 18.2.1948. (c) 50 setts/row. (d) and (e) N.A. (v) Top dressing A/S at 100 lb./ac. of N on 18.5.1948. (vi) CO-421 (medium). (vii) Irrigated. (viii) Hoeing and earthing on 10.8.1948. (ix) N.A. (x) 20.12.1948.

## 2. TREATMENTS :

1. Control.
2. Sugarcane after sorghum crop *i.e.* roots left in the soil.
3. Sorghum (*jowar*) roots added superficially (16 srs./plot).
4. Sugarcane after maize crop (roots of maize left in soil).
5. Maize roots (20 srs./plot)—added superficially.

## 3. DESIGN :

- (i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 3. (iv) (a) N.A. (b) 33'×40'. (v) N.A. (vi) Yes.

## 4. GENERAL :

- (i) N.A. (ii) N.A. (iii) Germination, tillers, millable cane and sugarcane yield. (iv) (a) 1947—1949. (b) and (c) No. (v) (a) and (b) No. (vi) Nil. (vii) Experiment conducted by D.S.R. (S).

## 5. RESULTS :

- (i) 24.75 ton/ac.  
 (ii) 4.37 ton/ac.  
 (iii) Treatment differences are not significant.

## (iv) Av. yield of sugarcane in ton/ac.

Treatment	Av. yield
1.	24.72
2.	24.48
3.	24.83
4.	24.26
5.	25.47
S.E./mean	= 2.52 ton/ac.

Crop :-Sugarcane.

Ref :-U.P. 49(112).

Site :-Sugarcane Res. Stn., Shahjahanpur.

Type :-'C'.

Object :-To study the antibiotic effect of Sorghum and Maize crop and mixture on Sugarcane.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) Sorghum, Maize or Fallow as per treatments. (c) No. (ii) (a) Loam. (b) Refer soil analysis, Shahjahanpur. (iii) 3.3.1949. (iv) (a), (b) N.A. (c) 40 three budded setts/row and 11 rows/plot. (d) and (e) N.A. (v) Top dressing of A/S at 150 lb./ac. of N. (vi) CO. 453 and CO. 557. (vii) Irrigated. (viii) N.A. (ix) 48.59" (from March 1949 to Dec. 1949). (x) N.A.

## 2. TREATMENTS :

1. Control.
2. After sorghum crop.
3. After maize crop.
4. Mixed with sugarcane (CO. 453).
5. Sorghum mixed with sugarcane (CO.557).

## 3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 3. (iv) (a) N.A. (b) 40' x 33'. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) N.A. (iii) Sugarcane yield. (iv) (a) 1949-1950. (b) and (c) No. (v) (a) and (b) No. (vi) Nil. (vii) Experiment was conducted by D.S.R(S).

## 5. RESULTS :

- (i) 13.28 ton/ac.
- (ii) 2.976 ton/ac.
- (iii) Treatment differences are not significant.
- (iv) Av. yield of sugarcane in ton/ac.

Treatment	Av. yield
1.	14.47
2.	11.14
3.	15.17
4.	13.02
5.	12.60
S.E./mean	=1.683 ton/ac.

Crop :-Sugarcane.

Ref.-U.P. 53(203).

Site :-Sugarcane Res. Stn. Shahjahanpur.

Type :-'C'.

Object :-To study the different times of planting Sugarcane.

## 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Loam. (b) Refer soil analysis, Shahjahanpur. (iii) As per treatments. (iv) (a) 4 ploughings with victory plough, 5 *desi* ploughings. plankings. (b) to (e) N.A. (v) 50 lb./ac. of G.N.C.+ 10 lb./ac. of N as A/S on 10.10.1952 in July and Oct. plots ; on 6.2. in Feb. plots on 23.4 G.N.C.+A/S 30 lb./ac. of N+30 lb./ac. of N to whole expt. (vi) CO. 453 (late). (vii) Irrigated. (viii) Hoing with *kassi* and cultivator earthing on 16.7.1953. (ix) 61 57" (From August 1952 to Jan. 1954). (x) 19.1.1954.

**2. TREATMENTS :**

1. *Adali* (July) planting on 29.7.1952.
2. Autumn (October) planting on 11.10.1952.
3. Spring (Feb.) planting on 6.2.1953.

**3. DESIGN :**

- (i) R.B.D. (ii) (a) 3. (b) N.A. (iii) 4. (iv) (a) 65'×18'. (b) 59'×12'. (v) 3' on all sides of the plot. (vi) Yes.

**4. GENERAL :**

- (i) Good. (ii) Nil. (iii) No. of tillers, millable cane and sugarcane yield. (iv) (a) 1953—55. (b) and (c) No. (v) (a) and (b) No. (vi) Nil. (vii) The experiment was conducted by D.S.R(S).

**5. RESULTS :**

- (i) 30.68 ton/ac.  
 (ii) 3.573 ton/ac.  
 (iii) Treatment differences are not significant.  
 (iv) Av. yield of sugarcane in ton/ac.

Treatment	Av. yield
1.	27.50
2.	33.90
3.	30.64
S.E./mean	= 1.786 ton/ac.

Crop :- Sugarcane.

Site :- Sugarcane Res. Stn., Shahjahanpur.

Ref :- U.P. 51(143).

Type :- 'C'.

Object :- To compare the effect of planting Sugarcane in October and in the month of March on the growth, yield and juice quality of Sugarcane (preliminary experiment).

**1. BASAL CONDITIONS :**

- (i) (a) to (c) N.A. (ii) (a) Loam. (b) Refer soil analysis, Shahjahanpur. (iii) As per treatments. (iv) (a) to (e) N.A. (v) Top dressing at 100 lb./ac. of N on 4.6.1952. (vi) CO. 453 (late). (vii) Irrigated. (viii) Hoeing on 27.11.1951, 19.3.1952, 11.4.1952, 30.4.1952, 13.5.1952, weeding and hoeing on 7.1.1952. Hoeing and light earthing on 1.3.1952 and earthing on 1.8.1952. (ix) 35.27" . (x) 14.1.1953.

**2. TREATMENTS :**

1. October planting on 4.10.1951.
2. March planting on 21.3.1952.

**3. DESIGN :**

- (i) R.B. (ii) (a) 2. (b) N.A. (iii) 3. (iv) (a) N.A. (b) 25'×15'. (v) Yes, but details are not available. (vi) Yes.

**4. GENERAL :**

- (i) N.A. (ii) N.A. (iii) Tillers, millable cane and sugarcane yield. (iv) (a) No. (b) and (c) No. (v) (a) and (b) No. (vi) Nil. (vii) Experiment conducted by D.S.R (S).

**5. RESULTS :**

- (i) 30.00 ton/ac.  
 (ii) 2.973 ton/ac.  
 (iii) Treatment difference is significant.  
 (iv) Av. yield of sugarcane in ton/ac.

Treatment	Av. yield
1.	36.04
2.	23.97
S.E./mean	= 1.716 ton/ac.

Crop :- Sugarcane.

Ref :- U.P. 53(221).

Site :- Sugarcane Res. Stn., Shahjahanpur.

Type :- 'C'.

Object :- To study the effect of sowing Sugarcane setts taken from the top and lower portion of cane.

## 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Loam. (b) Refer soil analysis, Shahjahanpur. (iii) 30.1.1953. (iv) (a) and (b) N.A. (c) 36, 720 buds/ac. (34 setts/row). (d) and (e) N.A. (v) Basal dressing of *sanai*; top dressing of A/S at 60 lb./ac. of N on 7.4.1953. (vi) CO. 453 (late). (vii) Irrigated. (viii) Hoeing with cultivator on 25.2.1953, hoeing with *kassi* on 16.4.1953, 30.4.1953, 18.5.1953 and earthing on 16.8.1953. (ix) 45.73° (x) 12.2.1954.

## 2. TREATMENTS :

1. Sugarcane setts taken from top portions of cane.
2. Sugarcane setts taken from lower portion of cane.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 2. (b) N.A. (iii) 3. (iv) (a) N.A. (b) 40'×27'. (v) Yes, but no details are available. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) N.A. (iii) Tillers, millable cane and sugarcane yield. (iv) (a) No. (b) and (c) No. (vi) Nil. (vii) Experiment conducted by D.S.R. (S).

## 5. RESULTS :

- (i) 28.02 ton/ac.
- (ii) 2.353 ton/ac.
- (iii) Treatment difference is significant.
- (iv) Av. yield of sugarcane in ton/ac.

Treatment	Av. yield
1.	27.53
2.	28.52
S.E./mean	= 1.359 ton/ac.

Crop :- Sugarcane.

Ref :- U.P. 53 (222).

Site :- Sugarcane Res. Stn., Shahjahanpur.

Type :- 'C'.

Object :- To study the effect of planting cane at different seed rates on the germination, growth, juice quality and yield of Sugarcane.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) *Sanai*. (c) No. (ii) (a) Loam. (b) Refer soil analysis, Shahjahanpur. (iii) N.A. (iv) (a) and (b) N.A. (c) As per treatments. (d) and (e) N.A. (v) *Sanai* as green manure and A/S at 60 lb./ac. of N. (vi) CO. 453 (late). (vii) and (viii) N.A. (ix) 43.13°. (x) N.A.

## 2. TREATMENTS :

- 3 seed rates :
1. Low (25,000 buds/ac.).
  2. Medium (54,000 buds/ac.).
  3. High (65,000 buds/ac.).

## 3. DESIGN :

(i) R.B.D. (ii) (a) 3. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 40'×27'. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) N.A. (iii) Germination, tillers, millable cane and sugarcane yield. (iv) (a) to (c) No. (v) (a) and (b) No. (vi) Nil. (vii) Experiment conducted by D.S.R. (S).

## 5. RESULTS :

- (i) 28.48 ton/ac.
- (ii) 1.827 ton/ac.
- (iii) Treatment differences are not significant.

(iv) Av yield of sugarcane in ton/ac.

Treatment	Av. yield
1.	26.97
2.	29.62
3.	28.85
S.E./mean	= 0.913 tcn/ac.

Crop :- Sugarcane.

Ref :- U.P. 53(204).

Site :- Sugarcane Res. Stn., Shahjahanpur.

Type :- 'C'.

Object :- To study the effect of intercropping Gram with Sugarcane.

1. BASAL CONDITIONS :

(i) (a) to (c) No. (ii) (a) Loam. (b) Refer soil analysis, Shahjahanpur. (iii) As per treatments. (iv) (a) and (b) N.A. (c) 36 3-budded setts/row. (d) and (e) N.A. (v) N.A. (vi) CO.453 (late). (vii) N.A. (viii) N.A. (ix) 43.23". (x) 16.1.1954.

2. TREATMENTS :

1. Sugarcane planted on 24.10.1952.
  2. Sugarcane planted on 24.10.1952 intercropped with gram.
  3. Gram in October, 1952 followed by sugarcane planted on 2.4.1953 after harvest of gram.
  4. Sugarcane planted on 7.3.1953.
- Sowing of gram 24.10.1952 and harvesting on 24.3.1953.

3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 2. (iv) (a) 36'×21'. (b) 30'×15'. (v) Left, 3' on all sides of the plot. (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) Nil. (iii) Sugarcane yield. (iv) (a) 1953-1954. (b) and (c) No. (v) (a) and (b) No. (vi) Nil. (vii) Experiment conducted by D.S.R. (S).

5. RESULTS :

- (i) 21.59 ton/ac.
- (ii) 7.968 ton/ac.
- (iii) Treatment differences are not significant.
- (iv) Av. yield of sugarcane in ton/ac.

Treatment	Av. yield
1.	23.42
2.	18.49
3.	27.51
4.	16.94
S.E./mean	= 5.635 ton/ac.

Crop :- Sugarcane.

Ref :- U.P. 48(53).

Site :- Sugarcane Res. Stn., Shahjahanpur.

Type :- 'C'.

Object :- To study the effect of keeping setts under cowdung and topping before sowing on the germination and yield of Sugarcane (winter germination experiment).

1. BASAL CONDITIONS :

(i) (a) N.A. (b) *Sanai* G.M. (c) No. (ii) (a) Loam. (b) Refer soil analysis, Shahjahanpur. (iii) As per treatments. (iv) (a), (b) N.A. (c) 50 three budded setts/row, 7 rows/plot. (d) and (e) N.A. (v) Basal dressing of *Sanai* (60 lb./ac. of N). Top dressing of A/S 40 lb./ac. of N. (vi) CO. 421 (medium). (vii) N.A. (viii) N.A. (ix) N.A. (x) N.A.

## 2. TREATMENTS :

## Main-plot treatments :

4 dates of planting :  $D_1=23.11.1948$ ,  $D_2=23.12.1948$ ,  $D_3=22.1.1949$  and  $D_4=23.2.1949$ .

## Sub-plot treatments :

4 treatments given to setts :  $T_1$ =Control,  $T_2$ =Setts kept for one day under cowdung,  $T_3$ =Setts kept for two days under cowdung and  $T_4$ =Topping one week before sowing.

## 3. DESIGN :

(i) Split-plot. (ii) (a) 4 main plots/replication ; 4 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) N.A. (b)  $48' \times 21'$ . (v) Yes, but no details are available. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) N.A. (iii) Tillers, millable cane and sugarcane yield. (iv) 1948—1950. (b) and (c) No. (v) (a) and (b) No. (vi) Nil. (vii) Experiment conducted by D.S.R.(S).

## 5. RESULTS :

- (i) 19.59 ton/ac.  
 (ii) (a) 3.673 ton/ac.  
 (b) 2.798 ton/ac.  
 (iii) None of the effects is significant.  
 (iv) Av. yield of sugarcane in ton/ac.

	$T_1$	$T_2$	$T_3$	$T_4$	Mean
$D_1$	16.37	18.30	15.86	18.69	17.30
$D_2$	20.77	21.04	19.78	19.12	20.18
$D_3$	19.83	19.68	21.98	18.84	20.08
$D_4$	20.10	18.33	20.61	24.16	20.80
Mean	19.27	19.34	19.56	20.20	19.59

## S.E. of difference of two

1. D marginal means =1.500 ton/ac.  
 2. T marginal means =1.142 ton/ac.  
 3. T means at a level of D =2.285 ton/ac.  
 4. D means at a level of T =2.483 ton/ac.

Crop :-Sugarcane.

Ref :-U.P. 49(114).

Site :- Sugarcane Res. Stn., Shahjahanpur.

Type :-'C'.

Object :-To study the effect of keeping setts under cowdung and topping before sowing on the germination and yield of Sugarcane.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) *Sanai* G.M. (c) No. (ii) (a) Loam. (b) Refer soil analysis, Shahjahanpur. (iii) As per treatments. (iv) (a) and (b) N.A. (c) 35 three budded setts/row (d) and (e) N.A. (v) Basal dressing of *Sanai* Top dressing 100 lb./ac. of N. (vi) CO. 421 (medium). (vii) Irrigated. (viii) N.A. (ix) 40.17'. (x) 12 to 18.2.1951.

## 2. TREATMENTS :

## Main-plot treatments :

4 dates of planting :  $D_1=23.11.1949$ ,  $D_2=23.12.1949$ ,  $D_3=29.1.1950$  and  $D_4=23.2.1950$ .

## Sub-plot treatments :

4 treatments given to setts :  $T_1$ =Control (fresh setts).  $T_2$ =Setts kept under cowdung for 24 hours,  $T_3$ =Setts kept under cowdung for 48 hours and  $T_4$ =Setts from cane topped 3 weeks before sowing.

## 3. DESIGN :

(i) Split-plot. (ii) (a) 4 main-plots/replication and 4 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) N.A. (b)  $33' \times 21'$ . (v) Yes—but details are not available. (vi) Yes.



## 4. GENERAL :

(i) N.A. (ii) N.A. (iii) Tillers, millable cane and sugarcane yield. (iv) (a) 1948—1950. (b) and (c) No. (v) (a) and (b) No. (vi) Nil. (vii) Experiment conducted by D.S.R.(S).

## 5. RESULTS :

- (i) 23.34 ton/ac.  
 (ii) (a) 3.745 ton/ac.  
 (b) 3.089 ton/ac.  
 (iii) None of the effects is significant.  
 (iv) Av. yield of sugarcane in ton/ac.

	T <sub>1</sub>	T <sub>2</sub>	T <sub>3</sub>	T <sub>4</sub>	Mean
D <sub>1</sub>	21.88	23.38	24.36	21.99	22.90
D <sub>2</sub>	23.84	23.15	26.96	23.73	24.42
D <sub>3</sub>	21.76	22.80	21.42	24.02	22.50
D <sub>4</sub>	22.23	23.03	24.53	24.36	23.54
Mean	22.43	23.09	24.32	23.52	23.34

## S.E. of difference of two

1. D marginal means =1.324 ton/ac.
2. T marginal means =1.093 ton/ac.
3. T means at a level of D =2.185 ton/ac.
4. D means at a level of T =2.309 ton/ac.

Crop :- Sugarcane.

Ref :- U.P. 50(154).

Site :- Sugarcane Res. Stn., Shahjahanpur.

Type :- 'C'.

Object :—To study the effect of keeping setts under stored cow-dung and topping before planting on the germination and yield of Sugarcane (winter germination experiment).

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) *Sanai*. (c) No. (ii) (a) Loam. (b) Refer soil analysis, Shahjahanpur. (iii) As per treatments. (iv) (a) and (b) N.A. (c) 50 three budded setts/row. (d) and (e) N.A. (v) Basal dressing of *Sanai*. A/S at 100 lb./ac. of N top dressed on 7.5.1951. (vi) CO. 421 (medium). (vii) Irrigated. (viii) Hoeings on 27.1.1951, 31.3.1951, 3.5.1951 and 6.6.1951. Earthing on 22.8.1951. (ix) 31.98" (x) N.A.

## 2. TREATMENTS :

## Main-plot treatments :

4 dates of planting : D<sub>1</sub>=18.11.1950, D<sub>2</sub>=20.12.1950, D<sub>3</sub>=18.1.1951 and D<sub>4</sub>=17.2.1951.

## Sub-plot treatments :

4 treatments given to setts : T<sub>1</sub>=Control (fresh setts), T<sub>2</sub>=Setts kept under stored cowdung for 24 hours, T<sub>3</sub>=Setts kept under stored cowdung for 48 hours and T<sub>4</sub>=Setts from cane topped 10 days before planting.

## 3. DESIGN :

(i) Split-plot. (ii) (a) 4 main-plots/replication and 4 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) N.A. (b) 52'×21', (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) N.A. (iii) Tillers, millable cane and sugarcane yield. (iv) (a) 1948—1950. (b) and (c) No. (v) (a) and (b) No. (vi) Nil. (vii) Experiment conducted by D.S.R.(S).

## 5. RESULTS :

- (i) 21.23 ton/ac.  
 (ii) (a) 2.935 ton/ac.  
 (b) 2.106 ton/ac.  
 (iii) None of the effects is significant.

(iv) Av. yield of sugarcane in lb /ac.

	T <sub>1</sub>	T <sub>2</sub>	T <sub>3</sub>	T <sub>4</sub>	Mean
D <sub>1</sub>	20.83	18.36	22.32	22.15	20.92
D <sub>2</sub>	21.36	20.54	19.54	20.97	20.60
D <sub>3</sub>	17.60	21.15	22.67	21.49	20.73
D <sub>4</sub>	22.13	22.43	22.66	23.47	22.67
Mean	20.48	20.62	21.80	22.02	21.23

S.E. of difference of two

1. D marginal means =1.198 ton/ac.
2. T marginal means =0.860 ton/ac.
3. T means at a level of D =1.720 ton/ac.
4. D means at a level of T =1.911 ton/ac.

Crop :- Sugarcane.

Ref :- U.P. 52(181).

Site :- Sugarcane Res. Stn., Shahjahanpur.

Type :- 'C'.

Object :- To study the effect of planting setts split longitudinally on germination and yield of Sugarcane.

**1. BASAL CONDITIONS :**

(i) (a) to (c) N.A. (ii) (a) Loam. (b) Refer soil analysis, Shahjahanpur. (iii) 9.4.1952. (iv) (a) to (c) N.A. (c) 20 three budded setts/row. (d) 6 rows/plot 1½' apart. (v) Manuring with 120 lb./ac. of N in the form of G.N.C. and A/S (1:1). (vi) CO.K. 30 (medium-late). (vii) N.A. (viii) N.A. (ix) 31.47" (x) 11.12.1952

**2. TREATMENTS :**

1. Three budded setts split into two halves and planted after dusting cut sides with gammaxene.
2. Three budded setts split into two halves and planted without dusting gammaxene at cut sides.
3. Three budded setts planted with gammaxene applied in furrows at 40 lb./ac.
4. Three budded setts planted without gammaxene application.

**3. DESIGN :**

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 4. (iv) (a) and (b) 20' x 9'. (v) No. (vi) Yes.

**4. GENERAL :**

(i) Poor. (ii) No. (iii) Germination count, tillering, millable cane and sugarcane yield. (iv) (a) 1952-1953. (b) and (c) No. (v) (a) and (b) No. (vi) Nil. (vii) Experiment conducted by D.S.R.(S).

**5. RESULTS :**

- (i) 4.14 ton/ac.
- (ii) 0.57 ton/ac.
- (iii) Treatment differences are highly significant.
- (iv) Av. yield of sugarcane in ton/ac.

Treatment	Av. yield
1.	4.13
2.	2.88
3.	4.53
4.	5.03
S.E./mean	= 0.29 ton/ac,

Crop :-Sugarcane.

Ref :-U.P. 53(205).

Site :-Sugarcane Res. Stn., Shahjahanpur.

Type :-'C'.

Object :-To study the effect of planting setts split longitudinally on germination and yield of Sugarcane..

## 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Loam. (b) Refer soil analysis, Shahjahanpur. (iii) 23.2.1953. (iv) (a) Ploughings with *desi* plough on 6, 7, 8, 20, and 21.2.1953. Planking on 7, 9, 11 and 21.2.1953. (b) N.A. (c) 25, three budded setts/row. (d) 6 rows in gross plots at 1½' distance. (e) N.A. (v) G.N.C.+A/S at 80 lb./ac. of N+40 lb./ac. of N (mixing manure). (vi) CO.K. 30 (mid-late). (vii) Irrigated.(viii) Hoeing with *kassi* on 27.3.1953, 24 and 30.4.1953. (ix) 40.55". (x) N.A.

## 2. TREATMENTS :

1. Three budded setts splitted into two halves and planted after dusting cut sides with gammaxene.
2. Three budded setts splitted into two halves and planted without dusting gammaxene.
3. Three budded setts planted with gammaxene applied in furrrows at 40 lb./ac.
4. Three budded setts planted without gammaxene application.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 4. (iv) (a) and (b) 23'x9'. (v) No. (vi) Yes.

## 4. GENERAL :

(i) Satisfactory. (ii) Nil. (iii) Germination count, tillering, millable cane and sugarcane yield. (iv) (a) 1952 - 1953. (b) and (c) N.A. (v) (a) and (b) No. (vi) Nil. (vii) Experiment conducted by D.S.R.(S).

## 5. RESULTS :

- (i) 15.84 ton/ac.
- (ii) 2.50 ton/ac.
- (iii) Treatment differences are highly significant.
- (iv) Av. yield of sugarcane in ton/ac.

Treatment	Av. yield
1.	16.23
2.	11.42
3.	20.12
4.	15.58
S.E./mean	=1.251 ton/ac.

Crop :-Sugarcane.

Ref :-U.P. 51(129).

Site :-Sugarcane Res. Stn., Shahjahanpur.

Type :-'C'.

Object :-To study the relative effect of earthing and binding up on Sugarcane.

## 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Loam. (b) Refer soil analysis, Shahjahanpur. (iii) 28.2.1951. (iv) (a) Ploughings by victory plough and tractor planking on 7 and 8.1.1951. (b) N.A. (c) No. of setts in treatments 1 and 2—N.A. 34 setts in treatment 3 and 4 (3 budded). (d) and (e) N.A. (v) Basal dressing castor cake at 100 lb./ac. of N on 28.2.1951 and top dressing of A/S at 20 lb./ac. of N on 8.5.1951. (vi) CO.6222 (medium). (vii) Irrigated. (viii) Binding on 29 and 30.8.1951. Earthing on 28.8.1951. Hoeing with cultivator on 6, 7.4.1951 and 9.5.1951. Hoeing with *kassi* on 29.3.1951, 27.5.1951 and 18.6.1951. (ix) 29.86". (x) 16 and 17.2.1952.

## 2. TREATMENTS :

1. Rows 3' apart, 1 sett per 3 sq. feet with earthing up.
2. Rows 3' apart, 1 sett per 3 sq. feet with binding up sugarcane.
3. Rows 2' apart, 1 sett per 3 sq. feet with binding up sugarcane.
4. Rows 2' apart, 1 sett per 3 sq. feet without earthing up sugarcane and without binding sugarcane.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 4. (Replication 4 was rejected because 2 plots were badly spoiled). (iv) (a) and (b) 51'x12'. (v) No. (vi) Yes.

## 4. GENERAL :

- (i) Good. (ii) Nil. (iii) Tillers, millable cane and sugarcane yield. (iv) (a) 1951—1952. (b) and (c) No. (v) (a) and (b) No. (vi) Nil. (vii) Experiment conducted by D.S.R.(S).

## 5. RESULTS :

- (i) 24.82 ton/ac.  
 (ii) 2.123 ton/ac.  
 (iii) Treatment differences are not significant.  
 (iv) Av. yield of sugarcane in ton/ac.

Treatment	Av. yield
1.	23.99
2.	25.73
3.	26.08
4.	23.49
S.E./mean	=1.226 ton/ac.

Crop :- Sugarcane.

Ref :- U.P. 52(179).

Site :- Sugarcane Res. Stn., Shahjahanpur.

Type :- 'C'.

Object :- To study the relative effect of earthing and binding up of Sugarcane.

## 1. BASAL CONDITIONS :

- (i) N.A. (b) *Sanai*. (c) No. (ii) (a) Loam. (b) Refer soil analysis, Shahjahanpur. (iii) 24.3.1952. (iv) (a) 3 ploughings by *victory* plough, 7 ploughings by *desi* plough, 1 ploughing by liver harrow and plankings. (b) N.A. (c) 24 setts/line in two feet apart row and 42 setts/line in three feet apart rows. (d) and (e) N.A. (v) G.N.C. and A/S on 14.5.1952 and F.Y.M. on 30.1.1952. *Sanai* turning on 11.9.1951. (vi) CO. 622 (medium). (vii) Irrigated. (viii) Hoing with *kassi* and cultivator earthing and binding. (ix) 33.30° (x) 1 and 10.2.1953.

## 2. TREATMENTS :

- Rows 3' apart with earthing up—one three budded sett per feet of a row.
- Rows 3' apart with binding—one three budded sett per feet of a row.
- Rows 2' apart with binding—one three budded sett per 1½' of a row.
- Rows 2' apart without binding—one, three budded sett per 1½' of a row.
- Rows 3' apart without earthing or binding—one three budded set per feet of a row.

## 3. DESIGN :

- (i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 4. (iv) (a) (i) 42' × 16' (in rows 2' apart) and 42' × 18' (in rows 3' apart). (b) 36' × 12'. (v) 3' and 2' one either side for plots having rows 2' apart and 3' and 3' on either side for plots having rows 3' apart. (vi) Yes.

## 4. GENERAL :

- (i) Fair but sugarcane lodged in replication one. (ii) Nil. (iii) No. of tillers, millable cane and sugarcane yield. (iv) (a) 1952—1953. (b) and (c) No. (v) (a) and (b) No. (vi) Nil. (vii) Experiment conducted by D.S.R.(S).

## 5. RESULTS :

- (i) 25.73 ton/ac.  
 (ii) 1.70 ton/ac.  
 (iii) Treatment differences are highly significant.  
 (iv) Av. yield of sugarcane in ton/ac.

Treatment	Av. yield
1.	23.64
2.	22.35
3.	28.00
4.	28.71
5.	25.96
S.E./mean	=0.98 ton/ac.

Crop :- Sugarcane.

Ref :- U.P. 49(155).

Zone :- Captainganj (Deoria).

Type :- 'C'.

Object :- To find the suitable time of planting Sugarcane.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) Early paddy. (c) N.A. (ii) *Bhat* soil. (iii) 60 lb./ac. of N as F.Y.M., 25 lb./ac. of N as *Neem* cake and 35 lb./ac. of N as A/S. (iv) CO. 513—(early) (improved). (v) (a) 3 hoeings. (b) to (e) N.A. (vi) As per treatments. (vii) Irrigated. (viii) N.A. (ix) N.A. (x) 20.2.1951.

2. TREATMENTS :

1. November planting on 25.11.1949.
2. January planting on 15.1.1950.
3. February planting on 25.2.1950.
4. March planting.
5. April planting.

3. DESIGN :

(i) and (ii) R.B.D. with 4 replications. (iii) (a) N.A. (b) 67'x18'. (iv) N.A.

4. GENERAL :

(i) N.A. (ii) N.A. (iii) Germination, tillers, millable and sugarcane yield. (iv) (a) Yes, 1949—1951. (b) and (c) N.A. (v) N.A. (vi) Nil. (vii) The experiment was conducted by D.S.R. (G) on cultivators' fields.

5. RESULTS :

- (i) 12.10 ton/ac.
- (ii) 2.007 ton/ac.
- (iii) Treatment differences are not significant.
- (iv) Av. yield of sugarcane in ton/ac.

Treatment	Av. yield
1.	10.92
2.	12.52
3.	13.74
4.	11.20
5.	12.11
S.E./mean	=1.003 ton/ac.

Crop :- Sugarcane.

Ref :- U.P. 50(191).

Zone :- Captainganj (Deoria).

Type :- 'C'.

Object :- To find out a suitable time of planting Sugarcane.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) N.A. (c) 120 md. of factory manure at sowing time on 29.10.1950 (ii) *Bhat* soils. (iii) Top dressing A/S at 20 srs. on 7.7.1951. (iv) CO.573 (improved). (v) (a) Ploughing by victory plough on 2.7.1950 and 15.10.1950, ploughing by *desi* plough on 8 and 27.10.1950 and 7 hoeings by *kassi*. (b) Flat sowing. (c) and (d) 1680 buds/plot and 8 rows/plot. (e) N.A. (vi) As per treatments. (vii) Irrigated. (viii) and (ix) N.A. (x) 26.3.1952.

2. TREATMENTS :

1. October planting on 29.10.1950.
2. November planting on 29.11.1950.
3. January planting on 28.1.1951.
4. February planting on 27.2.1951.
5. March planting on 24.3.1951.

3. DESIGN :

(i) and (ii) R.B.D. with 4 replications. (iii) (a) 70'x24'. (b) 64'x18'. (iv) N.A.

4. GENERAL :

(i) and (ii) N.A. (iii) Germination, millable cane and sugarcane yield. (iv) (a) 1949—1951. (b) and (c) N.A. (v) N.A. (vi) Nil. (vii) The experiment was conducted by D.S.R. (G) on cultivators' fields.

## 5. RESULTS :

- (i) 17.73 ton/ac.  
 (ii) 1.729 ton/ac.  
 (iii) Treatment differences are not significant.  
 (iv) Av. yield of sugarcane in ton/ac.

Treatment	Av. yield
1.	16.36
2.	18.13
3.	16.88
4.	19.26
5.	18.00
S.E./mean	= 0.864 ton/ac.

Crop :- Sugarcane.

Ref :- U.P. 51(165).

Zone :- Captainganj (Deoria).

Type :- 'C'.

Object :- To study different times of planting Sugarcane in different treatments.

## 1. BASAL CONDITIONS :

- (i) (a) N.A. (b) Early paddy. (c) N.A. (ii) *Bhat* soil. (iii) 6 C.L.ac./ of press mud manure on 6.11.1951  
 (iv) CO.356 (mid-late) (improved). (v) (a) Ploughing by *desi* plough. Hoeing by *kassi*. Earthing up on 1.8.1952. (b) Flat planting. (c) 1440 buds/plot, (d) and (e) N.A. (vi) As per treatments. (vii) Irrigated.  
 (viii) and (ix) N.A. (x) 24.1.1953.

## 2. TREATMENTS :

- November planting on 16.11.1951.
- January planting on 23.1.1952.
- February planting on 2.2.1952.
- March planting on 2.3.1952.

## 3. DESIGN :

- (i) and (ii) R.B.D. with 4 replications. (iii) (a) 24' x 60'. (b) 54' x 18'. (iv) N.A.

## 4. GENERAL :

- (i) and (ii) N.A. (iii) Germination, millable cane, tillers and sugarcane yield. (iv) (a) 1949—1951. (b) and (c) N.A. (v) N.A. (vi) Nil. (vii) The experiment was conducted by D.S.R. (G) on cultivators' fields.

## 5. RESULTS :

- (i) 21.46 ton/ac.  
 (ii) 1.783 ton/ac.  
 (iii) Treatment differences are not significant.  
 (iv) Av. yield of sugarcane in ton/ac.

Treatment	Av. yield
1.	20.23
2.	21.13
3.	22.50
4.	21.98
S.E./mean	= 0.891 ton/ac.

Crop :- Sugarcane.

Ref -U.P. 51(182).

Zone :- Gauribazar (Deoria).

Type :- 'C'.

Object :- To improve the Sugarcane yield under late planting conditions.

## 1. BASAL CONDITIONS :

- (i) (a) N.A. (b) *Sanai* (G.M.) (c) No. (ii) Clay loam. (iii) 80 lb./ac. of N+150 lb./ac. of P<sub>2</sub>O<sub>5</sub> were used at planting on 7.2.1951 and 29.3.1951. (iv) CO-513 (early) improved. (v) (a) Ploughings by tractor on 13.10.1951, harrowing by tractor on 25.10.1950, 1.11.1950 and 16.12.1950, 7 hoeings and one earthing on 2.7.1951. (b) N.A. (c) and (d) 10 rows/plot in treatments 1, 2 and 3. and 12 rows/plot in treatments 4 and 5. No. of buds/plot treatment wise (1) 2160, (2) 2160, (3) 4320, (4) 7592 and (5) 5184. (e) N.A. (vi) As per treatments. (vii) Irrigated. (viii) and (ix) N.A. (x) 23.3.1952.

## 2. TREATMENTS :

1. Normal planting (first week of February) (control).
  2. Late planting at the end of March in rows at 3' distance with normal setting.
  3. Late planting at the end of March in rows at 3' distance with double setting.
  4. Late planting at the end of March in rows at 2½' distance with normal setting.
  5. Late planting at the end of March in rows at 2½' distance with double setting.
- Planting of treatment 1 on 7.2.1951 and others on 29.3.1951.

## 3. DESIGN :

(i) and (ii) R.B.D. with 4 replications (iii) (a) 72'×30'. (b) 66'×24' for treatments 1, 2 and 3 and 67'×25' for treatments 4 and 5. (iv) N.A.

## 4. GENERAL :

(i) and (ii) N.A. (iii) Germination, tillers, millable cane and sugarcane yield. (iv) (a) Yes, 1951-1952. (b) and (c) N.A. (v) N.A. (vi) Nil. (vii) The Experiment was conducted by D.S.R.(G) on cultivators' field.

## 5. RESULTS :

- (i) 31.59 ton/ac.
- (ii) 3.466 ton/ac.
- (iii) Treatment differences are not significant.
- (iv) Av. yield of sugarcane in ton/ac.

Treatment	Av. yield
1.	30.92
2.	31.77
3.	32.66
4.	28.91
5.	33.69
S.E./mean	=1.733 ton/ac.

Crop :- Sugarcane.

Zone :- Gorakhpur (Deoria).

Ref :- U.P. 52(224).

Type :- 'C'.

Object :- To improve sugarcane yield under late planted conditions.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) *Sanai*. (c) Nil. (ii) Sandy loam + clay loam. (iii) Mixture of Castor cake and A/S at 100 lb./ac. of N and Super at 100 lb./ac. of P<sub>2</sub>O<sub>5</sub>. (iv) CO-513 (early) improved. (v) (a) Ploughings by tractor on 1.10.1951; harrowing by tractor on 5.10.1951, 5 and 14.1.1952; trenching by tractor on 25.1.1952; hoeing by *kudali* and earthing up by *phawara*. (b) Trench planting. (c) and (d) 10 rows and 12 rows per plot according to treatments. No. of buds planted/plot: (1) 2160, (2) 2160, (3) 4320, (4) 2592 and (5) 5184. (e) N.A. (vi) As per treatments. (vii) Irrigation by tube-well. (viii) and (ix) N.A. (x) 11.3.1953.

## 2. TREATMENTS :

1. Normal planting in February—rows at 3' apart with single setts (control).
2. Late planting in March at 3' apart—normal setting.
3. Late planting in March at 3' apart—double setting.
4. Late planting in March at 2½' apart—normal setting.
5. Late planting in March at 2½' apart—double setting.

Dates of planting : treatment 1 on 7.2.1952 and other treatments on 23.3.1952.

## 3. DESIGN :

(i) and (ii) R.B.D. with 4 replications. As the yield for 2 replications is not given, analysis has been based on 2 replications only. (iii) (a) and (b) 72'×30'. (iv) N.A.

## 4. GENERAL :

(i) and (ii) N.A. (iii) Germination, tillers, millable cane and sugarcane yield. (iv) (a) No. (b) and (c) N.A. (v) N.A. (vi) Nil. (vii) The experiment was conducted by D.S.R. (G) on cultivators' fields.

**5. RESULTS :**

- (i) 40.47 ton/ac.
- (ii) 5.403 ton/ac.
- (iii) Treatment differences are not significant.
- (iv) Av. yield of sugarcane in ton/ac.

Treatment	Av. yield
1.	45.96
2.	36.60
3.	40.56
4.	39.08
5.	40.16
S.E./mean	≈3.818 ton/ac.

Crop :- Sugarcane.

Ref :- U.P. 49(154).

Zone :- Gauribazar (Deoria).

Type :- 'C'.

Object :- To find out the suitable time of planting Sugarcane.

**1. BASAL CONDITIONS :**

- (i) (a) N.A. (b) *Sanol*. (c) Nil. (ii) Clay loam. (iii) N.A. (iv) CO.453 (mid-late) improved. (v) (a) 7 hoeings. (b) to (e) N.A. (vi) As per treatments. (vii) Irrigated. (viii) N.A. (ix) N.A. (x) 26.2.1951.

**2. TREATMENTS :**

- 1. October planting on 20.10.1949.
- 2. November planting on 15.11.1949.
- 3. January planting on 15.1.1950.
- 4. February planting on 15.2.1950.
- 5. March planting on 15.3.1950.
- 6. April planting 15.4.1950.

**3. DESIGN :**

- (i) and (ii) R.B.D. with 4 replications. (iii) (a) N.A. (b) 67' x 18'. (iv) N.A.

**4. GENERAL :**

- (i) and (ii) N.A. (iii) Germination, tillers, millable cane and sugarcane yield. (iv) (a) 1949-1951. (b) and (c) N.A. (v) N.A. (vi) Nil. (vii) The experiment was conducted by D.S.R. (G) on cultivators' fields.

**5. RESULTS :**

- (i) 9.21 ton/ac.
- (ii) 0.462 ton/ac.
- (iii) Treatment differences are highly significant.
- (iv) Av. yield of sugarcane in ton/ac.

Treatment	Av. yield
1.	9.88
2.	8.80
3.	9.37
4.	9.52
5.	10.01
6.	7.70
S.E./mean	0.231 ton/ac.

Crop :- Sugarcane.

Ref :- U.P. 50(189).

Zone :- Gauribazar (Deoria).

Type :- 'C'.

Object :- To find out suitable time of planting Sugarcane.

**1. BASAL CONDITIONS :**

- (i) (a) N.A. (b) *Sanol* G.M. (c) Nil. (ii) Clay loam. (iii) 80 lb./ac. of N and 150 lb./ac. of P<sub>2</sub>O<sub>5</sub> at planting. (iv) BO.24 (improved). (v) (a) Ploughing by tractor on 13.10.1950. Harrowing by tractor on 25.10.1950 (thrice). Hoeings from 24.11.1950 to 26.6.1951. Earthing on 6.7.1951. (b) N.A. (c) and (d) 1386 buds/plot and 7 rows/plot. (e) N.A. (vi) As per treatments. (vii) Irrigated. (viii) and (ix) N.A. (x) 13.2.1952.



**2. TREATMENTS :**

1. October planting on 28.10.1950.
2. November planting on 15.11.1950.
3. January planting on 15.1.1951.
4. February planting on 15.2.1951.
5. March planting on 15.3.1951.

**3. DESIGN :**

(i) and (ii) R.B.D. with 4 replications. (iii) (a) 80' x 21'. (b) 74' x 15'. (iv) N.A.

**4. GENERAL :**

(i) and (ii) N.A. (iii) Germination, tillers, millable cane and sugarcane yield. (iv) (a) 1949-1951. (b) and (c) N.A. (v) N.A. (vi) Nil. (vii) The experiment was conducted by D.S.R. (G) on cultivators' fields.

**5. RESULTS :**

- (i) 37.57 ton/ac.
- (ii) 2.329 ton/ac.
- (iii) Treatment differences are highly significant.
- (iv) Av. yield of sugarcane in ton/ac.

Treatment	Av. yield
1.	44.49
2.	41.53
3.	34.32
4.	32.82
5.	34.70
S.E./mean	=1.164 ton/ac.

Crop :- Sugarcane.

Zone :- Lakshmiganj (Deoria).

Ref :- U.P. 53(250).

Type :- 'C'.

Object :- To improve cane yield under late planting conditions.

**1. BASAL CONDITIONS :**

(i) (a) N.A. (b) Sugarcane. (c) N.A. (ii) *Bhat* soil. (iii) Press mud at 100 mds./ac. on 21.1.1953. Top dressing by castor cake at 8 mds./ac. on 22.2.1953, A/S at 2 mds./ac. on 25.2.1953. (iv) CO. 617 (medium)—improved. (v) (a) Ploughing by tractor hoeing by cultivator and *kudali*. (b) Flat planting with spade. (c) and (d) 7 rows in treatments 1, 2 and 3 and 8 in treatments 4 and 5. No. of buds planted per plot : 1680 in treatments 1 and 2, 3360 in treatment 3, 1920 in treatment 4 and 3849 in treatment 5. (e) N.A. (vi) As per treatments. (vii) Unirrigated. (viii) N.A. (ix) N.A. (x) 2.2.1954.

**2. TREATMENTS :**

1. Normal planting at the end of February 1953 in rows 3' apart with single setts.
  2. Late planting at the end of the March and in rows 3' apart with normal setting, setts overlapping one another.
  3. Late planting at the end of March in rows 3' apart with double setting.
  4. Late planting in rows 2½' apart and with setts overlapping one another.
  5. Late planting in rows 2½' apart and with double setting.
- Dates of planting : treatment 1 on 22.2.1953 and treatments 2, 3, 4 and 5 on 25.3.1953.

**3. DESIGN :**

(i), (ii) R.B.D. with 4 replications of which 2 replications were damaged. (iii) (a) 80' x 21'. (b) 74' x 15'. (iv) N.A.

**4. GENERAL :**

(i) N.A. (ii) N.A. (iii) Germination, millable cane, tillers and sugarcane yield. (iv) (a) No. (b) and (c) N.A. (v) N.A. (vi) Nil. (vii) The experiment was conducted by D.S.R. (G) on cultivators' fields.

**5. RESULTS :**

- (i) 9.18 ton/ac.
- (ii) 1.887 ton/ac.
- (iii) Treatment differences are not significant.

## (iv) Av. yield of sugarcane in ton/ac.

Treatment	Av. yield.
1.	9.80
2.	6.88
3.	9.39
4.	7.05
5.	12.78
S.E./mean	=1.334 ton/ac.

Crop :- Sugarcane.

Ref :- U.P. 53(249).

Zone :- Captainganj (Deoria).

Type :- 'C'.

Object :- To improve cane yield under late planted conditions.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) Paddy. (c) N.A. (ii) *Bangar*. (iii) Compost at 200 md./ac. on 15.11.1952. Top dressing of Compost at 1½ md./ac. on 2.5.1953. (iv) CO 617 (medium) improved. (v) (a) Ploughing by *desi* plough hoeing by *kudali*. (b) Flat planting with spade. (d) 7 and 8 rows/plot. Buds planted/plot in treatments 1 and 2=1155, treatment-3=2310 ; treatment-4=1320 and treatment-5=2640. (e) N.A. (vi) As per treatments. (vii) Irrigated. (viii) N.A. (ix) N.A. (x) 25.2.1954.

## 2. TREATMENTS :

- Normal planting at the end of Jan. 1963 in rows 3' apart with single setts.
- Late planting at the end of March and in rows 3' apart with normal setting (single setts).
- Late planting at the end of March in rows 3' apart with double setting.
- Late planting in rows 2½' apart with setts overlapping one another.
- Late planting in rows 2½' apart with double setting.

Dates of planting : treatment 1 on 2.2.1953 and others on 17.3.1953.

## 3. DESIGN :

(i), (ii) R.B.D. with 3 replications. (iii) (a) 55'×21'. (b) 49'×15'. (iv) N.A.

## 4. GENERAL :

(i) N.A. (b) N.A. (iii) Germination, millable cane, tillers and sugarcane yield. (iv) (a) No. (b) and (c) N.A. (v) N.A. (vi) Nil. (vii) The expt. was conducted by D.S.R.(G) on cultivators' fields.

## 5. RESULTS :

- 15.37 ton/ac.
- 2.558 ton/ac.
- Treatment differences are not significant.
- Av. yield of sugarcane in ton/ac.

Treatment	Av. yield
1.	12.14
2.	15.69
3.	13.03
4.	17.45
5.	18.54
S.E./mean	=1.477 ton/ac.

Crop :- Sugarcane.

Ref :- U.P. 52(225).

Zone :- Tamkohi (Deoria).

Type :- 'C'.

Object :- To improve Sugarcane yield under late planted conditions.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) *Sanai* for G.M. (sown on 3.7.1951). (c) Nil. (ii) *Bhat* soil. (iii) Castor cake at 3 md., A/S at 2 md. Super at 1 md. (iv) CO. 513. early (improved). (v) (a) Ploughings by tractor and levelling on 20.7.1951, 11.10.1951, ploughing by bullocks and levelling on 22.12.1951, cultivator on 19.1.1952, disc harrowing by tractor and levelling on 19.2.1951. (b) Flat planting. (c) and (d) 10 rows/plot for treatments 1, 2 and 3, 12 rows for treatments 4 and 5, manuring and hoeing on 24.6.1952 and hoeing by bullocks. (e) N.A. (vi) As per treatments. (vii) N.A. (viii) N.A. (ix) N.A. (x) 15.2.1953.

**2. TREATMENTS :**

1. Normal planting during February at 3' distance—single setting.
2. Late planting at 3' distance single setting.
3. Late planting at 3' distance—double setting.
4. Late planting at 2½' distance—single setting.
5. Late planting at 2½' distance—double setting.

Dates of planting : treatment 1 in February, 1952 and others on 20.3.1952.

**3. DESIGN :**

- (i) and (ii) R.B.D. with 4 replications (iii) (a) and (b) 60'×30'. (iv) N.A.

**4. GENERAL :**

- (i) N.A. (ii) N.A. (iii) Germination, millable canes, tillers and sugarcane yield. (iv) (a) to (c) N.A. (v) N.A. (vi) Nil. (vii) The experiment was conducted by D.S.R. (G) on cultivators' fields.

**5. RESULTS :**

- (i) 21.37 ton/ac.  
 (ii) 1.458 ton/ac.  
 (iii) Treatment differences are not significant.  
 (iv) Av. yield of sugarcane in ton/ac.

Treatment	Av. yield
1.	21.07
2.	20.05
3.	22.08
4.	21.21
5.	22.45
S.E./mean	= 0.729 ton/ac.

**Crop :- Sugarcane.**

**Zone :- Deoria (Deoria).**

**Ref :- U.P. 50(178).**

**Type :- 'C'.**

**Object :-** To find out suitable rotation with the Sugarcane crop.

**1. BASAL CONDITIONS :**

- (i) (a) and (b) As per treatments. (c) N.A. (ii) N.A. (iii) Compost top dressed on 14, 15 and 19.5.1950., (iv) CO.S 109 (medium). (v) (a) to (e) N.A. (vi) 7 to 8.2.1950. (vii) Irrigated. (viii) 5 hoeings. (ix) N.A. (x) 25.3.1951.

**2. TREATMENTS :**

1. Fallow—fallow - sugarcane.
2. *Sanai* (G.M.)—fallow—sugarcane.
3. Maize - fallow—sugarcane.
4. Paddy - fallow - sugarcane.
5. Paddy—peas—sugarcane.
6. *Arhar+kodon*—sugarcane.

**3. DESIGN :**

- (i) and (ii) R.B.D. with 4 replications. (iii) (a) N.A. (b) 49'×24'. (iv) N.A.

**4. GENERAL :**

- (i) N.A. (ii) N.A. (iii) Sugarcane yield. (iv) (a) No. (b) and (c) N.A. (v) N.A. (vi) Nil. (vii) The experiment was conducted by D S.R. (G). on cultivators' fields.

**5. RESULTS :**

- (i) 16.67 ton/ac.  
 (ii) 0.941 ton/ac.  
 (iii) Treatment differences are significant.  
 (iv) Av. yield of sugarcane in ton/ac.

Treatment	Av. yield
1.	17.35
2.	17.86
3.	16.92
4.	16.16
5.	16.07
6.	15.65
S.E./mean	= 0.471 ton/ac.

Crop :- Sugarcane.  
Zone :- Captainganj (Deoria).

Ref :- U.P. 50(181).  
Type :- 'C'.

Object :- To find out suitable rotation with the Sugarcane crop.

1. BASAL CONDITIONS :

(i) (a) and (b) As per treatments. (c) N.A. (ii) *Bhat* soils. (iii) 25 lb./ac. of N as Castor cake and 35 lb./ac. of N as *neem* cake+A/S. (iv) POJ 2878 (mid-late). (v) (a) to (e) N.A. (vi) 22.1.1950. (vii) N.A. (viii) N.A. (ix) N.A. (x) 19.2.1951.

2. TREATMENTS :

1. Paddy - fallow—sugarcane.
2. Fallow—fallow—sugarcane.
3. *Sanai*—fallow—sugarcane.

3. DESIGN :

(i) and (ii) R.B.D. with 4 replications. (iii) (a) N.A. (b) 67'×24'. (iv) N.A.

4. GENERAL :

(i) N.A. (ii) N.A. (iii) Germination, millable cane, tillers and sugarcane yield. (iv) (a) No. (b) N.A. (c) N.A. (v) N.A. (vi) Nil. (vii) The experiment was conducted by D.S.R. (G).

5. RESULTS :

- (i) 5.43 ton/ac.
- (ii) 0.441 ton/ac.
- (iii) Treatment differences are not significant.
- (iv) Av. yield of sugarcane in ton/ac.

Treatment	Av. yield
1.	5.22
2.	5.69
3.	5.37
S.E./mean	0.221 ton/ac.

Crop :- Sugarcane.  
Zone :- Lakshmiganj (Deoria).

Ref :- U.P. 53(255).  
Type :- 'C'.

Object :- To find out suitable rotation with Sugarcane crop.

1. BASAL CONDITIONS :

(i) (a) and (b) N.A. (c) As per treatments. (ii) *Bhat* soil. (iii) Top dressing at 1 md. 25 seer/ac. as A/S on 2.7.1954. (iv) 22.10.1953, 30.1.1954 and 24.3.1954. (v) (a) 7 ploughings. (b) Flat planting with spade. (c) 2160 buds/plot. (d) 9 rows/plot. (e) N.A. (vi) CO 356 (medium-late) improved. (vii) N.A. (viii) 6 hoeings and 1 earthing up by spade. (ix) N.A. (x) 28.3.1955.

2. TREATMENTS :

1. Early Paddy—fallow—sugarcane plant in Jan. 1954.
2. Early Paddy+*dhaincha*—fallow—sugarcane planted in Jan. 1954.
3. Early Paddy+*dhaincha*—peas—sugarcane planted in Oct. 1953.
4. Early Paddy+*dhaincha*—gram—sugarcane planted in Oct. 1953.
5. Early Paddy alone—peas—sugarcane planted in March, 1954.
6. Early Paddy alone gram—sugarcane planted in March, 1954.

3. DESIGN :

(i) and (ii) R.B.D. with 4 replications. (iii) 80'×27'. (b) 74'×21'. (iv) N.A.

4. GENERAL :

(i) N.A. (ii) N.A. (iii) Germination, tillers, millable cane and sugarcane yield. (iv) (a) 1953 to 1955 (b) N.A. (c) N.A. (v) N.A. (vi) Nil. (vii) The experiment was conducted by D.S.R. (G).

## 5. RESULTS :

- (i) 13.84 ton/ac.  
 (ii) 2.291 ton/ac.  
 (iii) Treatment differences are highly significant.  
 (iv) Av. yield of sugarcane in ton/ac.

Treatment	Av. yield
1.	17.25
2.	16.45
3.	17.80
4.	14.72
5.	9.38
6.	7.47
S.E./mean	1.145 ton/ac.

Crop :- Sugarcane.  
 Zone :- Captainganj (Deoria).

Ref :- U.P. 52(219).  
 Type :- 'C'.

Object :- To find out suitable rotation for Sugarcane crop.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) As per treatments. (c) N.A. (ii) *Bangar*. (iii) Press mud at 100 md./ac. on 8.1.1953. Top manuring of A/S at 2 md./ac. on 24.4.1953. (iv) CO. 356 (medium-late) [(improved)]. (v) (a) Ploughing by *desi* plough. (b) Flat sowing by spade. (c) 1320 buds/plot. (d) 8 rows/plot. (e) N.A. (vi) As per treatments. (vii) Irrigated. (viii) 4 hoeings by *kudali*. (ix) N.A. (x) 25.2.1954.

## 2. TREATMENTS :

- Paddy—fallow—sugarcane on 25.1.1953.
- Paddy+*dhaincha*—fallow—sugarcane on 25.1.1953.
- Paddy+*dhaincha* Peas—sugarcane on 15.10.1952.
- Paddy+*dhaincha*—gram—sugarcane on 15.10.1952.
- Paddy alone—peas—sugarcane on 18.3.1953.
- Paddy alone gram—sugarcane on 18.3.1953.

## 3. DESIGN :

(i), (ii) R.B.D. with 3 replications. (iii) (a) 55'×24'. (b) 49'×18'. (iv) N.A.

## 4. GENERAL :

(i) N.A. (ii) N.A. (iii) Germination, millable cane, tillers and sugarcane yield. (iv) (a) 1952 to 1955. (b) and (c) N.A. (v) N.A. (vi) Nil. (vii) The expt. was conducted by D.S.R.(G) on cultivators' fields.

## 5. RESULTS :

- (i) 15.12 ton/ac.  
 (ii) 1.989 ton/ac.  
 (iii) Treatment differences are not significant.  
 (iv) Av. yield of sugarcane in ton/ac.

Treatment	Av. yield
1.	16.78
2.	15.35
3.	12.85
4.	16.03
5.	15.80
6.	13.91
S.E./mean	=1.148 ton/ac.

Crop :- Sugarcane.  
Zone :-Captainganj (Deoria).

Ref :- U.P. 53(254).

Type :- 'C'.

Object :-To find out the best rotation for Sugarcane crop.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) Gram and then as per treatments: (c) N.A. (ii) *Bangar*. (iii) Press mud at 100 md./ac. on 20.4.1954. A/S at 1 md./ac. on 25.5.1954 and 1 md./ac. on 5.7.1954. (iv) CO. 617 (medium) (improved). (v) (a) 2 ploughings by *desi* plough. (b) Flat planting by spade. (c) 2160 buds/plot. (d) 9 rows/plot. (e) N.A. (vi) As per treatments. (vii) Irrigated. (viii) Hoeing by *kudali*, 1 earthing up by spade. (ix) N.A. (x) 13.1.1955.

## 2. TREATMENTS :

1. Early paddy—fallow—sugarcane planted on 22.1.1954.
2. Early paddy+*dhanicha*—fallow—sugarcane planted on 21.10.1953.
3. Early paddy+*dhaincha*—peas—sugarcane planted on 22.1.1954.
4. Early paddy+*dhaincha*—gram—sugarcane planted on 21.10.1953.
5. Early paddy alone—peas—sugarcane planted on 27.3 1954.
6. Early paddy alone—gram—sugarcane planted on 27.3.1954.

## 3. DESIGN :

(i), (i) R.B.D. with 4 replications. (iii) (a) 80'×27'. (b) 74'×21'. (iv) N.A.

## 4. GENERAL :

(i) N.A. (ii) N.A. (iii) Germination, tillers, millable cane and sugarcane yield. (iv) (a) 1952—1954. (b) and (c) N.A. (v) N.A. (vi) Nil. (vii) The expt. was conducted by D.S.R.(G) on cultivators' fields.

## 5. RESULTS :

- (i) 16.34 ton/ac.
- (ii) 2.717 ton/ac.
- (iii) Treatment differences are not significant.
- (iv) Av. yield of sugarcane in ton/ac.

Treatment	Av. yield
1.	15.81
2.	17.59
3.	15.28
4.	13.33
5.	17.92
6.	18.10
S.E./mean	=1.358 ton/ac.

Crop :- Sugarcane.  
Zone :-Gorakhpur (Deoria).

Ref :-U.P. 52(221).

Type :- 'C'.

Object :-To find out the best rotation for Sugarcane crop.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) As per treatments. (c) N.A. (ii) Sandy loam. (iii) Mixture of castor cake and A/S at 100 lb./ac. of N on 9.8.1952, 15.1.1953 and 29.3.1953. (iv) CO.511 (improved). (v) (a) 1 tractor plough, 2 harrowings by tractor. (b) Trench planted. (c) 6372 buds/plot. (d) 9 rows/plot (e) N.A. (vi) As per treatments. (vii) Irrigated. (viii) Hoeings by hand *kudali*. (ix) N.A. (x) 23.1.1954.

## 2. TREATMENTS :

1. Paddy—fallow—sugarcane planting on 15.1.1953.
2. Paddy+*dhaincha*—fallow—sugarcane planting on 15.1.1953.
3. Paddy+*dhaincha*—peas—sugarcane planting on 30.10.1952.
4. Paddy+*dhaincha*—gram—sugarcane planting on 30.10.1952.
5. Paddy—peas—sugarcane planting on 29.3.1953.
6. Paddy—gram—sugarcane planting on 29.3.1953.

## 3. DESIGN :

(i) and (ii) R B.D. with 4 replications. (iii) (a) 59'×27'. (b) 53'×21'. (iv) N.A.

## 4. GENERAL :

(i) and (ii) N.A. (iii) Germination, tillers, millable cane and sugarcane yield. (iv) (a) 1952 to 1954. (b) and (c) N.A. (v) N.A. (vi) Nil. (vii) The experiment was conducted by D.S.R. (G) on cultivators' fields.

## 5. RESULTS :

(i) 18.22 ton/ac.

(ii) 1.029 ton/ac.

(iii) Treatment differences are highly significant.

(iv) Av. yield of sugarcane in ton/ac.

Treatment	Av. yield
1.	18.66
2.	19.46
3.	20.40
4.	16.48
5.	14.74
6.	19.58

S.E./mean = 0.515 ton/ac.

Crop :- Sugarcane.

Zone :- Gorakhpur (Deoria).

Ref :- U.P. 53(253).

Type :- 'C'.

Object :- To find out the best rotation for Sugarcane crop.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) As per treatments. (c) N.A. (ii) Sandy loam. (iii) N.A. (iv) CO.S.453 (medium-late) improved. (v) (a) 3 ploughings by tractor. (b) Flat planting. (c) 1620 buds/plot. (d) 9 rows/plot. (e) N.A. (vi) As per treatments. (vii) Irrigated. (viii) 9 ploughings by hand hoe. (ix) N.A. (x) 5.4.1955.

## 2. TREATMENTS :

1. Paddy—fallow—sugarcane planting on 28.1.1954.
2. Paddy+*dhaincha*—fallow—sugarcane planting on 28.1.1954.
3. Paddy+*dhaincha*—peas—sugarcane planting on 29.10.1953.
4. Paddy+*dhaincha*—gram—sugarcane planting on 29.10.1953.
5. Paddy+peas—sugarcane planting on 3.3.1954.
6. Paddy—gram—sugarcane planting on 3.3.1954.

## 3. DESIGN :

(i) and (ii) R.B.D. with 4 replications. (iii) (a) 59' x 27'. (b) 53' x 21'. (iv) N.A.

## 4. GENERAL :

(i) and (ii) N.A. (iii) Germination, tillers, millable cane and sugarcane yield. (iv) (a) 1952 to 1954. (b) and (c) N.A. (v) N.A. (vi) Nil. (vii) The experiment was conducted by D.S.R (G) on cultivators' fields.

## 5. RESULTS :

(i) 21.89 ton/ac.

(ii) 0.891 ton/ac.

(iii) Treatment differences are highly significant.

(iv) Av. yield of sugarcane in ton/ac.

Treatment	Av. yield
1.	25.04
2.	26.86
3.	19.99
4.	18.24
5.	19.83
6.	21.38

S.E./mean = 0.446 ton/ac.

Crop :- Sugarcane.  
Zone :- Gauribazar (Deoria).

Ref :- U.P. 52(229),  
Type :- 'C'.

Object :—To find out the suitable rotation for Sugarcane crop.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) As per treatments. (c) N.A. (ii) Clay loam and sandy loam. (iii) N.A. (iv) CO. 397 (early) (improved). (v) (a) 1 ploughings by tractor, 1 harrowing by tractor. (b) Trench planting. (c) 1752 buds/plot. (d) 8 rows/plot. (e) N.A. (vi) 22.2.1952. (vii) Irrigated. (viii) 4 hoeings by *kudal* and 1 earthing up by *phawara* and *kudal*. (ix) N.A. (x) 30.3.1953.

2. TREATMENTS :

1. Fallow—fallow—sugarcane.
2. *Sanai* - fallow—sugarcane.
3. Paddy—fallow—sugarcane.
4. Paddy—peas—sugarcane.

3. DESIGN :

(i) and (ii) R.B.D. with 4 replications. (iii) (a) 73'×24'. (b) 67'×18'. (iv) N.A.

4. GENERAL :

(i) N.A. (ii) N.A. (iii) Germination, tillers, millable cane and sugarcane yield. (iv) (a) No. (b) and (c) N.A. (v) N.A. (vi) Nil. (vii) The experiment was conducted by D.S.R. (G) on cultivators' fields.

5. RESULTS :

- (i) 29.65 ton/ac.
- (ii) 3.358 ton/ac.
- (iii) Treatment differences are not significant.
- (iv) Av. yield of sugarcane in ton/ac.

Treatment	Av. yield
1.	29.68
2.	32.96
3.	27.75
4.	28.20
S.E./mean	= 1.679 ton/ac.

Crop :- Sugarcane.  
Zone :- Captainganj (Deoria).

Ref :- U.P. 51(168).  
Type :- 'C'.

Object :—To find out the suitable rotation for Sugarcane.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) As per treatments. (c) N.A. (ii) *Bhat* soil. (iii) Top dressing of A/S at 20 seers on 1.7.1951. (iv) CO. 356 (mid-late). (v) (a) 4 ploughings by *desi* plough and 1 ploughing by *victory* plough. (b) Flat planting. (c) 1752 buds/plot. (d) 9 rows/plot. (e) N.A. (vi) 8.2.1951. (vii) Irrigated. (viii) 5 hoeings by *kassi*. (ix) N.A. (x) 28 and 29.2.1952.

2. TREATMENTS :

1. Fallow—fallow—sugarcane.
2. Paddy—peas—sugarcane.
3. Paddy—fallow—sugarcane.

3. DESIGN :

(i) and (ii) R.B.D. with 4 replications. (iii) (a) 64'×27'. (b) 58'×21'. (iv) N.A.

4. GENERAL :

(i) N.A. (ii) N.A. (iii) Germination, millable cane, tillers and sugarcane yield. (iv) (a) 1951 to 1953. (v) N.A. (vi) Nil. (vii) The experiment was conducted by D.S.R. (G) on cultivators' fields.

5. RESULTS :

- (i) 13.16 ton/ac.
- (ii) 2.502 ton/ac.
- (iii) Treatment differences are not significant.



## (iv) Av. yield of sugarcane in ton/ac.

Treatment	Av. yield
1.	13.11
2.	13.65
3.	12.73
S.E./mean	= 1.7511 ton/ac.

Crop :- Sugarcane.

Ref :- U.P. 52(231).

Zone :- Captainganj (Deoria).

Type :- 'C'.

Object :- To find out suitable rotation for Sugarcane crop.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) As per treatments. (c) N.A. (ii) *Bhat* soil. (iii) 6 C.L. of press mud cake. (iv) CO. 364 (improved). (v) (a) 1 Ploughing by *meston* plough and 2 *desi* ploughings. (b) Flat planting. (c) 1728 buds/plot. (d) 9 rows/plot. (e) N.A. (vi) 9.2.1952. (vii) Irrigated. (viii) 10 hoeings by *kudali* and 1 earthing up. (ix) N.A. (x) 2.3.1953.

## 2. TREATMENTS :

1. Fallow—fallow—sugarcane.
2. Paddy Peas—sugarcane.
3. Paddy—fallow—sugarcane.

## 3. DESIGN :

(i) and (ii) R.B.D. with 4 replications. (iii) (a) 64'×27'. (b) 58'×21'. (iv) N.A.

## 4. GENERAL :

(i) N.A. (ii) N.A. (iii) Germination, fillers, millable cane and sugarcane yield. (iv) (a) 1951 to 1952. (b) and (c) N.A. (v) N.A. (vi) Nil. (vii) Experiment conducted by D.S.R.(G) on cultivators' fields.

## 5. RESULTS :

- (i) 23.14 ton/ac.  
 (ii) 4.025 ton/ac.  
 (iii) Treatment differences are significant  
 (iv) Av. yield of sugarcane in ton/ac.

Treatments	Av. yield
1.	22.79
2.	22.68
3.	23.96
S.E./mean	=2.012 ton/ac.

Crop :- Sugarcane.

Ref :- U.P. 52(227).

Zone :- Faizabad (Faizabad).

Type :- 'C'.

Object :- To find out suitable rotation for Sugarcane crop.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) As per treatments. (c) N.A. (ii) Loam. (iii) G.N.C. at 40 lb./ac. of N on 13.2.1952. A/S at 15 lb./ac. of N on 29.2.1952. Top dressing A/S at 30 lb./ac. of N and G.N.C. at 15 lb./ac. of N on 1.7.1952. (iv) CO. 313. (early) (improved). (v) (a) Ploughings by *desi* plough. (b) Flat planting. (c) N.A. (d) 3' distance in lines. Furrows opened by spade. (e) N.A. (vi) As per treatments. (vii) Irrigated (viii) 6 hoeings by *kudali* and 1 earthing up. (ix) N.A. (x) 10, 13 and 20.3.1953.

## 2. TREATMENTS :

1. Fallow—fallow—sugarcane on 13.2.1952.
2. *Sanai*—fallow—sugarcane on 13.2.1952.
3. Maize—fallow—sugarcane on 13.2.1952.
4. Paddy fallow—sugarcane on 13.2.1952.
5. Paddy peas—sugarcane on 29.2.1952.
6. Early paddy—peas—sugarcane on 29.2.1952.

## 3. DESIGN :

(i) and (ii) R.B.D. with 4 replications. (iii) (a) 73'×24'. (b) 67'×18'. (iv) N.A.

## 4. GENERAL :

(i) N.A. (ii) N.A. (iii) Germination, millable cane and sugarcane yield. (iv) (a) No. (b) and (c) N.A. (v) N.A. (vi) Nil. (vii) The experiment was conducted by D.S.R.(G) on cultivators' fields.

## 5. RESULTS :

(i) 11.19 ton/ac.  
 (ii) 1.050 ton/ac.  
 (iii) Treatment differences are not significant.  
 (iv) Av. yield of sugarcane in ton/ac.

Treatment	Av. yield
1.	11.88
2.	12.22
3.	10.43
4.	11.00
5.	10.63
6.	10.96
S.E./mean	=0.525 ton/ac.

Crop :- Sugarcane.

Zone :- Balrampur (Gonda).

Ref :- U.P. 49(156).

Type :- 'C'.

Object :- To find the suitable time of planting Sugarcane.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) *Sanai*. (c) Nil. (ii) Loam. (iii) *Sanai* at 60 lb./ac. of N. A/S at 33 lb./ac. of N on 12.7.1950. Castor cake at 7 mds. (iv) CO.453 (mid-late) improved. (v) (a) 6 hoeings. (b) N.A. (c) 5 rows/plot. (d) and (e) N.A. (vi) As per treatments. (vii) Irrigated. (viii) N.A. (ix) N.A. (x) 11.1.1951.

## 2. TREATMENTS :

1. October planting on 19.10.1949.
2. November planting on 15.11.1949.
3. December planting—N.A.
4. January planting on 30.1.1950.
5. February planting on 16.2.1950.
6. March planting on 7.3.1950.
7. April planting—N.A.

## 3. DESIGN :

(i) and (ii) R.B.D. with 6 replications. (iii) (a) and (b) 73'×15'. (iv) N.A.

## 4. GENERAL :

(i) Growth good. (ii) N.A. (iii) Germination, tillers, millable cane and sugarcane yield. (iv) (a) No. (b) and (c) N.A. (v) N.A. (vi) Nil. (vii) The experiment was conducted by D.S.R.(G) on cultivators' fields. Gaps were filled in the case of October, November and December plantings.

## 5. RESULTS :

(i) 30.30 ton/ac.  
 (ii) 3.561 ton/ac.  
 (iii) Treatment differences are not significant.  
 (iv) Av. yield of sugarcane in ton/ac.

Treatment	Av. yield
1.	40.60
2.	33.34
3.	29.35
4.	31.75
5.	29.74
6.	29.84
7.	17.51
S.E./mean	=1.454 ton/ac.

Crop :- Sugarcane.  
Zone :- Nawabganj (Gonda).

Ref :- U.P. 53(248).  
Type :- 'C'.

Object :- To suggest ways to improve Sugarcane yield in the late planting conditions.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) Maize. (c) N.A. (ii) Loam. (iii) Manuring with press mud compost at 375 mds./ac. on 30.10.1952 to 2.11.1952 (100 lb /ac. of N is available). (iv) CO.453 (medium late) improved. (v) (a) 4 tractor ploughings. Hoeing by cultivator and *kassi*. (b) Flat planting. (c) No. of buds planted per plot : 1050, 1260, 2520 and 2100 according to treatments. (d) Rows 3' apart. (e) N.A. (vi) 28.2.1953. (vii) Irrigated. (viii) and (ix) N.A. (x) 13 to 15.2.1954.

2. TREATMENTS :

1. Normal planting in the month of February in rows 3' apart with single setts.
2. Late planting at the end of March in rows 3' apart with single setts.
3. Planting in rows 2½' apart in single setts at the end of March.
4. Planting in rows 2½' apart in double setts at the end of March.
5. Planting in rows 3' apart in double setts at the end of March (normal planting).

3. DESIGN :

(i) and (ii) R.B.D. with 4 replications. (iii) (a) and (b) 50' x 15'. (iv) N.A.

4. GENERAL :

(i) and (ii) N.A. (iii) Germination, tillers, millable canes and sugarcane yield. (iv) (a) No. (b) and (c) N.A. (v) N.A. (vi) Nil. (vii) The Experiment was conducted by D.S.R.(G) on cultivators' fields.

5. RESULTS :

- (i) 19.63 ton/ac.
- (ii) 2.733 ton/ac.
- (iii) Treatment differences are highly significant.
- (iv) Av. yield of sugarcane in ton/ac.

Treatment	Av. yield
1.	22.43
2.	15.08
5.	17.48
4.	21.18
5.	21.99
S.E./mean	=1.367 ton/ac.

Crop :- Sugarcane.  
Zone :- Nawabganj (Gonda).

Ref :- U.P. 50(186).  
Type :- 'C'.

Object :- To find out suitable time of planting Sugarcane.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) Wheat. (c) N.A. (ii) Loam. (iii) Press mud compost 100 mds at 30 lb./ac. of N on 18.10.1950. Top dressing of mixture at 7 mds 20 seers (49 lb./ac. of N) on 30.5.1951. (iv) CO. 453 (mid late) (improved). (v) (a) 1 ploughing by spade and 5 *desi* plough. (b) Sown flat in lines 3' apart. (c) 1800 buds/plot. (d) 8 rows/plot. (e) N.A. (vi) As per treatments. (vii) Irrigated. (viii) 2 by cultivator and 2 by *kassi*. 2 hoeing by *desi* plough, (ix) N.A. (x) 18.2.1951.

2. TREATMENTS :

1. October planting (27.10.1950).
2. November planting (19.11.1950).
3. January planting (27.1.1951).
4. February planting (18.2.1951).
5. March planting (27.3.1951).

3. DESIGN:

(i) and (ii) R.B.D. with 4 replications. (iii) (a) and (b) 75' x 24'. (iv) N.A.

## 4. GENERAL :

- (i) N.A. (ii) N.A. (iii) Germination, tillers, millable cane and sugarcane yield. (iv) (a) No. (b) N.A.  
 (c) N.A. (v) N.A. (vi) Nil. (vii) The experiment was conducted by D.S.R. (G). on cultivators' fields.

## 5. RESULTS :

- (i) 15.03 ton/ac.  
 (ii) 3.979 ton/ac.  
 (iii) Treatment differences are significant.  
 (iv) Av. yield of sugarcane in ton/ac.

Treatment	Av. yield
1.	9.47
2.	13.79
3.	19.91
4.	17.91
5.	14.09
S.E./mean	=1.990 ton/ac.

Crop :- Sugarcane.

Zone :- Balrampur (Gonda).

Ref :- U.P. 50(185).

Type :- 'C'.

Object :- To find out suitable rotation with Sugarcane crop.

## 1. BASAL CONDITIONS :

- (i) (a) N.A. (b) As per treatments. (c) N.A. (ii) Loam. (iii) Castor cake at 40 lb./ac. of N on 9.4.1950.  
 (iv) CO. 453 (mid-late) (improved). (v) (a) to (e) N.A. (vi) 9.4.1950. (vii) Irrigated. (viii) 4 hoeings. (ix)  
 N.A. (x) 25.2.1951.

## 2. TREATMENTS :

1. *Sanai* G.M.—fallow—sugarcane.
2. Maize—fallow—sugarcane.
3. Paddy + *arhar*—fallow—sugarcane.
4. Paddy—Pea - sugarcane.
5. Fallow—fallow - sugarcane.
6. Paddy—fallow—sugarcane.

## 3. DESIGN :

- (i) and (ii) R.B.D. with 6 replications. (iii) (a) and (b) 74' x 30'. (iv) N.A.

## 4. GENERAL :

- (i) N.A. (ii) N.A. (iii) Germination, tillers, millable canes and sugarcane yield. (iv) (a) No. (b) N.A.  
 (c) N.A. (v) N.A. (vi) Nil. (vii) The experiment was conducted by D.S.R. (G). on cultivators' fields

## 5. RESULTS :

- (i) 7.97 ton/ac.  
 (ii) 1.705 ton/ac.  
 (iii) Treatment differences are not significant.  
 (iv) Av. yield of sugarcane in ton/ac.

Treatment	Av. yield
1.	9.38
2.	8.02
3.	8.22
4.	8.03
5.	7.58
6.	6.57
S.E./mean	=0.696 ton/ac.

Crop :- Sugarcane.  
Zone :- Nawabganj (Gonda).

Ref :- U.P. 50(182).  
Type :- 'C'.

Object :- To find out suitable rotation with Sugarcane crop.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) As per treatments. (c) N.A. (ii) Loam. (iii) Press mud at 100 lb./ac. of N on 22.2.1950, G.N.C. at 2 mds./ac on 22.6.1950 and A/S at 1 md. 27 seers. (iv) CO. 453 (mid-late), (improved). (v) (a) to (c) N.A. (d) 8 rows/plot. (e) N.A. (vi) 18.2.1950. (vii) Irrigated. (viii) 5 hoeings. (ix) N.A. (x) 12.3.1951.

2. TREATMENTS :

1. *Sana* G.M.—fallow—sugarcane.
2. Fallow—fallow—sugarcane.
3. *Arhar*+paddy—fallow—sugarcane.
4. Paddy—pea—sugarcane.
5. Maize—fallow—sugarcane.
6. Paddy—fallow—sugarcane.

3. DESIGN :

(i) and (ii) R.B.D. with 4 replications. (iii) (a) and (b) 78'×24'. (iv) N.A.

4. GENERAL :

(i) N.A. (ii) N.A. (iii) Sugarcane yield. (iv) (a) No. (b) and (c) No. (v) N.A. (vi) Nil. (vii) The experiment was conducted by D.S.R. (G) on cultivators' fields.

5. RESULTS :

- (i) 27.01 ton/ac.
- (ii) 3.574 ton/ac.
- (iii) Treatment differences are highly significant.
- (iv) Av. yield of sugarcane in ton/ac.

Treatment	Av. yield
1.	34.70
2.	24.53
3.	34.81
4.	18.78
5.	24.16
6.	25.10
S.E./mean	=1.787 ton/ac.

Crop :- Sugarcane.  
Zone :- Gorakhpur (Gorakhpur).

Ref :- U.P. 52(220).  
Type :- 'C'.

Object :- To find out suitable rotation with Sugarcane crop.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) As per treatments. (c) N.A. (ii) Sandy loam. (iii) A/S at 4 mds./ac. on 22.3.1953 and 5.6.1953. (iv) CO. 453 (mid-late), (improved). (v) (a) 2 ploughings by ordinary plough. (b) Trench planted. (c) 6480 buds/plot. (d) 9 rows/plot. (e) N.A. (vi) As per treatments. (vii) Irrigated. (viii) 2 hoeings by hand *kudali*. (ix) N.A. (x) 23.2.1954.

2. TREATMENTS :

1. Paddy—fallow—sugarcane planting on 21.1.1953.
  2. Paddy+*dhaincha*—fallow—sugarcane planting on 21.1.1953.
  3. Paddy+*dhaincha*—peas—sugarcane planting on 29.10.1952.
  4. Paddy+*dhaincha*—gram—sugarcane planted on 29.10.1952.
  5. Paddy—pea—sugarcane planting on 30.3.1953.
  6. Paddy—gram—sugarcane planting on 30.3.1953.
- Sowing of paddy+*dhaincha* on 19.7.1952, uprooting of *dhaincha* on 22.8.1952.

3. DESIGN :

(i) and (ii) R.B.D. with 4 replications. (iii) (a) 60'×27'. (b) 54'×21'. (iv) N.A.

## 4. GENERAL :

(i) N.A. (ii) N.A. (iii) Germination, tillers, millable cane and sugarcane yield. (iv) (a) 1952 to 1955. (b) and (c) N.A. (v) N.A. (vi) Nil. (vii) The experiment was conducted by D.S.R. (G) on cultivators' fields.

## 5. RESULTS :

- (i) 16.00 ton/ac.  
 (ii) 3.607 ton/ac.  
 (iii) Treatment differences are not significant.  
 (iv) Av. yield of sugarcane in ton/ac.

Treatment	Av. yield
1.	16.49
2.	15.42
3.	15.57
4.	17.06
5.	14.97
6.	16.46
S.E./mean	=1.803 ton/ac.

Crop :- Sugarcane.

Zone :- Gorakhpur (Ghorakhpur).

Ref :- U.P 53(251).

Type :- 'C'.

Object :- To find out suitable rotation with Sugarcane crop.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) As per treatments. (c) N.A. (ii) Sandy loam. (iii) N.A. (iv) CO. 453 (medium late) (improved). (v) 2 ploughings by tractor. (b) Flat planting. (c) 1674 buds/plot. (d) 9 rows/plot. (e) N.A. (vi) As per treatments. (vii) Irrigated. (viii) 3 hoeings by hand hoe and 1 earthing by spade. (ix) N.A. (x) 30.4.1955.

## 2. TREATMENTS :

1. Paddy-fallow-sugarcane planted on 21.1.1954,
2. Paddy+*dhanicha*-fallow-sugarcane planted on 21.1.1954.
3. Paddy+*dhanicha*-pea-sugarcane planted on 22.10.1958.
4. Paddy+*dhanicha*-gram-sugarcane planted on 22.10.1953.
5. Paddy-pea-sugarcane planted on 24.3.1954.
6. Paddy-gram-sugarcane planted on 24.3.1954,

## 3. DESIGN :

(i), (ii) R B.D. with 4 replications. (iii) (a) 60'×27'. (b) 54'×21'. (iv) N.A.

## 4. GENERAL :

(i) N.A. (ii) N.A. (iii) Germination, tillers, millable cane and sugarcane yield. (iv) (a) 1952 to 1955. (b) and (c) N.A. (v) N.A. (vi) Nil. (vii) The experiment was conducted by D.S.R.(G) on cultivators' fields.

## 5. RESULTS :

- (i) 21.73 ton/ac.  
 (ii) 3.963 ton/ac.  
 (iii) Treatment differences are not significant.  
 (iv) Av. yield of sugarcane in ton/ac.

Treatment	Av. yield
1.	20.02
2.	22.80
3.	24.38
4.	20.86
5.	20.37
6.	21.96
S.E./mean	=1.981 ton/ac.

Crop :- Sugarcane.  
Zone :- Gorakhpur (Gorakhpur).

Ref :- U.P. 52(222).  
Type :- 'C'.

Object :- To find out suitable rotation with sugarcane crop.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) As per treatments. (c) N.A. (ii) Sandy cam. (iii) 75 lb./ac. of N through mixture of A/S and G.N.C. on 17.10.1952, 25.1.1952, 2.4.1953, at the time of planting sugarcane. (iv) CO. 453 (mid-late) improved. (v) (a) 7 *desi* ploughings and 1 by tractor. (b) Trench planting. (c) 6480 buds/plot. (d) and (e) N.A. (vi) As per treatments. (vii) Irrigated. (viii) 10 hoeings by *kudalt*. (ix) N.A. (x) 14.3.1954.

2. TREATMENTS :

1. Paddy—fallow - sugarcane planted on 25.1.1953.
2. Paddy + *dhancha*—fallow—sugarcane planted on 25.1.1953.
3. Paddy + *dhaincha*—pea—sugarcane planted on 17.10.1952.
4. Paddy + *dhaincha*—gram—sugarcane planted on 17.10.1952.
5. Paddy—pea—sugarcane planted on 2.4.1953.
6. Paddy - Gram—sugarcane planted on 2.4.1953.

3. DESIGN :

(i), (ii) R.B.D. with 4 replications. (iii) (a) 60' × 27'. (b) 54' × 21'. (iv) N.A.

4. GENERAL :

(i) N.A. (ii) N.A. (iii) Germination, tillers, millable cane and sugarcane yield. (iv) (a) 1952—55. (b) and (c) N.A. (v) N.A. (vi) Nil. (vii) The experiment was conducted by D.S.R.(G) on cultivators' fields.

5. RESULTS :

- (i) 11.12 ton/ac.
- (ii) 0.507 ton/ac.
- (iii) Treatment differences are highly significant.
- (iv) Av. yield of sugarcane in ton/ac.

Treatment	Av yield
1.	14.08
2.	13.67
3.	9.20
4.	3.18
5.	12.12
6.	14.45
S.E./mean	= 0.25 ton/ac.

Crop :- Sugarcane.  
Zone :- Gorakhpur (Gorakhpur).

Ref :- U.P. 53(252).  
Type :- 'C'.

Object :- To find out suitable rotation with Sugarcane crop.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) As per treatments. (c) N.A. (ii) Sandy loam. (iii) N.A. (iv) CO. 453 (medium-late) improved. (v) (a) 2 tractor ploughings and 2 ploughings by *desi* plough, 1 harrowing by tractor, (b) Flat planting. (c) 1674 buds/plot. (d) 9 rows/plot. (e) N.A. (vi) As per treatments. (vii) Irrigated. (viii) Hoeing by hand spade and earthing by spade on 22.6.1954. (ix) N.A. (x) 13.3.1955.

2. TREATMENTS :

1. Paddy—fallow—sugarcane planting in January 1954.
2. Paddy + *dhaincha*—fallow—sugarcane planting in January 1954.
3. Paddy + *dhaincha*—pea—sugarcane planting in October 1953.
4. Paddy + *dhaincha*—gram—sugarcane planting in October 1953.
5. Paddy + *dhaincha*—pea—sugarcane planting in March 1954.
6. Paddy—gram—pea sugarcane planting in March 1954.

3. DESIGN :

(i) and (ii) R.B.D. with 4 replications. (iii) (a) 60' × 27'. (b) 54' × 21'. (iv) N.A.

**4. GENERAL :**

(i) and (ii) N.A. (iii) Germination, tillers, millable cane and sugarcane yield. (iv) (a) 1952 to 1954. (b) and (c) N.A. (v) N.A. (vi) Nil. (vii) The experiment was conducted by D.S.R.(G) on cultivators' fields.

**5. RESULTS :**

- (i) 25.10 ton ac.  
 (ii) 4.293 ton/ac.  
 (iii) Treatment differences are not significant.  
 (iv) Av. yield of sugarcane in ton/ac.

Treatment	Av. yield
1.	25.33
2.	26.08
3.	21.99
4.	21.31
5.	28.84
6.	27.08

S.E./mean = 2.147 ton/ac.

Crop :- Sugarcane.

Ref :- U.P. 50(179).

Zone :- Sardarnagar (Gorakhpur).

Type :- 'C'.

Object :- To find out suitable rotation with Sugarcane crop.

**1. BASAL CONDITIONS :**

(i) (a) N.A. (b) As per treatments. (c) N.A. (ii) Loam. (iii) A/S on 5.4.1950 and 20.5.1950 as top dressing. (iv) CO.453 (mid-late) improved. (v) (a) to (e) N.A. (vi) 30 and 31.1.1950. (vii) Irrigated. (viii) 4 hoeings. (ix) N.A. (x) 15 and 16.2.1951.

**2. TREATMENTS :**

1. *Sana*—G.M.—fallow—sugarcane.
2. Maize—fallow—sugarcane.
3. Paddy—fallow—sugarcane.
4. Paddy—pea—sugarcane.
5. *Arhar—kodon*—fallow—sugarcane.
6. Fallow—fallow—sugarcane.

**3. DESIGN :**

(i) and (iii) R.B.D. with 6 replications. (ii) (a) N.A. (b) 74' x 15'. (iv) N.A.

**4. GENERAL :**

(i) and (ii) N.A. (iii) Germination, tillers, millable cane and sugarcane yield. (iv) (a) 1950 to 1952. (b) and (c) N.A. (v) N.A. (vi) Nil. (vii) The experiment was conducted by D.S.R. (G) on cultivators' fields.

**5. RESULTS :**

- (i) 16.62 ton/ac.  
 (ii) 3.513 ton/ac.  
 (iii) Treatment differences are not significant.  
 (iv) Av. yield of sugarcane in ton/ac.

Treatment	Av. yield
1.	17.75
2.	15.54
3.	16.96
4.	15.79
5.	17.17
6.	16.49

S.E./mean = 1.434 ton/ac.



Crop :-Sugarcane.

Ref :-U.P.51(169).

Zone :-Gorakhpur (Gorakhpur).

Type :-'C'.

Object :-To find out suitable rotation with Sugarcane crop.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) As per treatments. (c) N.A. (ii) Loam. (iii) N.A. (iv) CO-453 (mid-late) improved. (v) (a) Ploughing on 12.8.1951. Trenching by spade on 24.1.1951. (b) N.A. (c) 1680 buds/plot. (d) and (e) N.A. (vi) 7.2.1951. (vii) Irrigated. (viii) 4 hoeings by spades and *kudali* and 1 earthing up by plough. (ix) N.A. (x) February, 1952.

## 2. TREATMENTS :

1. Fallow—fallow—sugarcane.
2. *Sanai* (G.M.)—fallow—sugarcane.
3. Maize—fallow—sugarcane.
4. Paddy—fallow—sugarcane.
5. Paddy—pea—sugarcane.
6. *Arhar—kodon*—fallow—sugarcane.

## 3. DESIGN :

(i) and (ii) R.B.D. with 4 replications. (iii) (a) 80'×20'. (b) 74'×15'. (iv) N.A.

## 4. GENERAL :

(i) and (ii) N.A. (iii) Germination, tillers, millable cane and sugarcane yield. (iv) (a) 1950—1953. (b) and (c) N.A. (v) N.A. (vi) Nil. (vii) The experiment was conducted by D.S.R. (G). on cultivators' fields.

## 5. RESULTS :

- (i) 15.61 ton/ac.  
 (ii) 5.753 ton/ac.  
 (iii) Treatment differences are not significant.  
 (iv) Av. yield of sugarcane in ton/ac.

Treatment	Av. yield
1.	18.56
2.	14.23
3.	13.15
4.	12.70
5.	15.54
6.	19.50

S.E./mean = 2.877 ton/ac.

Crop :-Sugarcane.

Re :-U.P. 52(230).

Zone :-Gorakhpur (Gorakhpur).

Type :-'C'.

Object :-To find out suitable rotation with Sugarcane crop.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) As per treatments. (c) N.A. (ii) Loam. (iii) Top dressing of A/S at 4 md./ac. on 16.3.1952 and 6.6.1952. (iv) CO.454 (mid-late) improved. (v) (a) Ploughings and trenching by bullocks and manual labour 3 times. (b) Trench planting. (c) 1752 buds/plot. (d) 8 rows/plot. (e) N.A. (vi) 7.2.1952. (vii) Irrigated. (viii) 5 hoeings by *kudali* and 1 earthing up by spade. (ix) N.A. (x) 1.3.1953.

## 2. TREATMENTS :

1. Fallow—fallow—sugarcane.
2. *Sanai*—fallow—sugarcane.
3. Maize—fallow—sugarcane.
4. Paddy—fallow—sugarcane.
5. Paddy—pea—sugarcane.
6. Early *arhar*—pea—sugarcane.

## DESIGN :

(i) and (ii) R.B.D. with 4 replications. (iii) 73'×24'. (b) 67'×18'. (iv) N.A.

**4. GENERAL :**

(i) and (ii) N.A. (iii) Germination, tillers, millable canes and sugarcane yield. (iv) (a) 1950 to 1952. (b) and (c) N.A. (v) N.A. (vi) Nil. (vii) The experiment was conducted by D.S.R. (G) on cultivators' fields.

**5. RESULTS :**

- (i) 21.68 ton/ac.  
 (ii) 3.687 ton/ac.  
 (iii) Treatments are not significantly different.  
 (iv) Av. yield of sugarcane in ton/ac.

Treatment	Av. yield
1.	22.82
2.	21.64
3.	21.94
4.	19.49
5.	22.62
6.	21.59
S.E./mean	= 1.844 ton/ac.

Crop :- Sugarcane.

Ref :- U.P. 50(180).

Zone :- Anandnagar (Gorakhpur).

Type :- 'C'.

Object :- To find out suitable rotation with Sugarcane crop.

**1. BASAL CONDITIONS :**

(i) (a) N.A. (b) As per treatments. (c) N.A. (ii) Sandy loam. (iii) N.A. (iv) CO. 453 (mid late) (improved). (v) (a) to (e) N.A. (vi) 10.2.1950. (vii) Irrigated. (viii) 4 hoeings. (ix) N.A. (x) 21 and 22.2.1951.

**2. TREATMENTS :**

1. Fallow—fallow—sugarcane.
2. *Sanal* (G.M.)—fallow—sugarcane.
3. Maize—fallow—sugarcane.
4. Paddy—fallow—sugarcane.
5. Paddy—peas—sugarcane.
6. *Arhar*+early paddy—fallow—sugarcane.

**3. DESIGN :**

(i) and (ii) R.B.D. with 4 replications. (iii) (a) N.A. (b) 54'×18'. (iv) N.A.

**4. GENERAL :**

(i) N.A. (ii) N.A. (iii) Germination, tillers, millable cane and sugarcane yield. (iv) (a) 1950 to 1952. (b) N.A. (c) N.A. (v) N.A. (vi) N.A. (vii) The experiment was conducted by D.S.R. (G) on cultivators' fields.

**5. RESULTS :**

- (i) 32.33 ton/ac.  
 (ii) 4.789 ton/ac.  
 (iii) Treatments are not significantly different.  
 (iv) Av. yield of sugarcane in ton/ac.

Treatment	Av. yield
1.	32.43
2.	33.94
3.	35.07
4.	30.24
5.	32.43
6.	29.86
S.E./mean	= 1.955 ton/ac.

Crop :- Sugarcane.  
Zone :- Pharenda (Gorakhpur).

Ref :- U.P. 51(170).  
Type :- 'C'.

Object :- To find out suitable rotation with Sugarcane crop.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) As per treatments. (c) No. (ii) Sandy loam. (iii) N.A. (iv) CO. 453 (mid-late) (improved). (v) (a) 3 ploughings by *desi* plough. Ridging on 26.12.1950. (b) N.A. (c) 1752 buds/plot. (d) 8 rows/plot. (e) N.A. (vi) 4.3.1951. (vii) Irrigated. (viii) 1 hoeing, 4 hoeings by spade and 1 earthing up by spade. (ix) N.A. (x) 29.1.1952.

2. TREATMENTS :

1. Fallow—fallow—sugarcane.
2. *Sanai*—fallow—sugarcane.
3. Maize—fallow—sugarcane.
4. Paddy—fallow—sugarcane.
5. *Sawan*—fallow—sugarcane.
6. Paddy—peas—sugarcane.

3. DESIGN :

(i) and (ii) R.B.D. with 6 replications. (iii) (a) 73'×24'. (b) 67'×18'. (iv) N.A.

4. GENERAL :

(i) N.A. (ii) N.A. (iii) Germination, tillers, millable canes and sugarcane yield. (iv) (a) 1950 to 1952. (b) N.A. (c) N.A. (v) N.A. (vi) Nil. (vii) The experiment was conducted by D.S.R. (G) on cultivators' fields.

5. RESULTS :

- (i) 30.43 ton/ac.
- (ii) 4.537 ton/ac.
- (iii) Treatments are significantly different.
- (iv) Av. yield of sugarcane in ton/ac.

Treatment	Av. yield
1.	29.44
2.	34.50
3.	26.43
4.	33.20
5.	27.95
6.	31.04
S.E./mean	= 1.8522 ton/ac.

Crop :- Sugarcane.  
Zone :- Anandnagar (Gorakhpur).

Ref :- U.P. 52(228).  
Type :- 'C'.

Object :- To find out the suitable rotation with Sugarcane crop.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) As per treatments. (c) N.A. (ii) Sandy loam. (iii) A/S at 3 mds. 3 seers 12 chks. and G.N.C. at 4 mds. 20 seers, total 75 lb./ac. of N. (iv) CO. 453 (mid-late), (improved). (v) (a) 1 ploughing by tractor, 1 ploughing by bullocks and harrowing by bullocks on 3.7.1951. (b) Trench planting. (c) 1752 buds/plot. (d) 8 rows/plot. (e) N.A. (vi) 5.3.1952. (vii) Irrigated. (viii) 6 hoeings by *kudal* and 1 earthing up by spade. (ix) N.A. (x) 30.4.1953.

2. TREATMENTS :

1. Fallow—fallow—sugarcane.
2. *Sanai*—fallow—sugarcane.
3. Maize—fallow—sugarcane.
4. Paddy—fallow—sugarcane.
5. Paddy—peas—sugarcane.
6. Early paddy—peas—sugarcane.

3. DESIGN :

(i) and (ii) R.B.D. with 4 replications. (iii) (a) 73'×24'. (b) 67'×18'. (iv) N.A.

## 4. GENERAL :

(i) N.A. (ii) N.A. (iii) Germination, tillers, millable cane and sugarcane yield. (iv) (a) 1950—1952, (b) and (c) N.A. (v) N.A. (vi) Nil. (vii) The experiment was conducted by D.S.R. (G) on cultivators' fields.

## 5. RESULTS :

- (i) 35.16 ton/ac.  
 (ii) 4.205 ton/ac.  
 (iii) Treatments are not significantly different.  
 (iv) Av. yield of sugarcane in ton/ac.

Treatment	Av. yield
1.	37.11
2.	36.82
3.	32.01
4.	36.12
5.	24.58
6.	34.33
S.E./mean	=2.103 ton/ac.

Crop :- Sugarcane.  
 Zone :- Ghugli (Gorakhpur).

Ref :- U.P. 50(183).  
 Type :- 'C'.

Object :—To find out the best rotation with Sugarcane crop.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) As per treatments. (c) N.A. (ii) *Bhat* soil. (iii) 60 lb./ac. of N as *mahua* mixture, 25 lb./ac. of N as mixture and 35 lb./ac. of N as A/S. (iv) CO. 356 (mid-late) (improved). (v) (a) to (e) N.A. (vi) 26.1.1950. (vii) Irrigated. (viii) 8 hoeings. (ix) N.A. (x) N.A.

## 2. TREATMENTS :

1. Fallow—fallow—sugarcane.
2. Late paddy—fallow—sugarcane.
3. Late paddy—*lathri*—sugarcane.
4. *Sanai*—fallow—sugarcane.

## 3. DESIGN :

(i) and (ii) R.B.D. with 4 replications. (iii) (a) N.A. (b) 1/46 ac. (iv) N.A.

## 4. GENERAL :

(i) N.A. (ii) N.A. (iii) Sugarcane yield. (iv) (a) No. (b) and (c) N.A. (v) N.A. (vi) Nil. (vii) The experiment was conducted by D.S.R. (G) on cultivators' fields.

## 5. RESULTS :

- (i) 13.04 ton/ac.  
 (ii) 0.895 ton/ac.  
 (iii) Treatments are significantly different.  
 (iv) Av. yield of sugarcane in ton/ac.

Treatment	Av. yield
1.	14.15
2.	11.83
3.	12.25
4.	13.94
S E./mean	=0.447 ton/ac.

Crop :- Sugarcane.  
Zone :- Ghugli (Gorakhpur).

Ref :- U.P. 52(232).  
Type :- 'C'.

Object :- To find out suitable rotation with Sugarcane crop.

1. BASAL CONDITIONS :

- (i) (a) N.A. (b) As per treatments. (c) N.A. (ii) *Bhat* soil. (iii) N.A. (iv) CO. 513 (early) (improved). (v) (a) 1 ploughing by tractor, 5 ploughings by *desi* plough. (b) Flat planting. (c) 1752 buds/plot. (d) 8 rows/plot. (e) N.A. (vi) 19, 20 and 21.2.1952. (vii) Irrigated. (viii) 6 hoeings by *kassfi*. (ix) N.A. (x) 25.3.1953.

2. TREATMENTS ;

1. Fallow—fallow—sugarcane.
2. *Sanaï*—fallow—sugarcane.
3. Maize (*chari*)—fallow—sugarcane.
4. Paddy—fallow—sugarcane.
5. Paddy—peas—sugarcane.
6. Early paddy—fallow—sugarcane.

*Sanaï* sowing on 26.6.1951. Maize sowing on 3.7.1951 and paddy sowing on 4.7.1951.

3. DESIGN :

- (i), (ii) R.B.D. with 4 replications. (iii) (a) and (b) 73'×24'. (iv) N.A.

4. GENERAL :

- (i) N.A. (ii) N.A. (iii) Germination, tillers, millable cane and sugarcane yield. (iv) (a) No. (b) and (c) N.A. (v) N.A. (vi) Nil. (vii) The experiment was conducted by D.S.R(G). on cultivators' fields.

5. RESULTS :

- (i) 18.65 ton/ac.  
(ii) 1.959 ton/ac.  
(iii) 7 treatments are not significantly different.  
(iv) Av. yield of sugarcane in ton/ac.

Treatment	Av. yield
1.	19.66
2.	20.58
3.	19.21
4.	19.03
5.	17.38
6.	16.06
S.E./mean	=0.979 ton/ac.

Crop :- Sugarcane.  
Zone :- Anandnagar (Gorakhpur).

Ref :- U.P. 49(152).  
Type :- 'C'.

Object :- To find out the suitable time of planting Sugarcane.

1. BASAL CONDITIONS :

- (i) (a) N.A. (b) *Sanaï* (G.M.). (c) Nil. (ii) Sandy loam. (iii) Manure on 21.10.1949 (Name of manure and dose—N.A.). (iv) CO. 453 (mid-late) (improved). (v) (a) 10 hoeings. (b) to (e) N.A. (vi) As per treatments. (vii) Irrigated. (viii) N.A. (ix) N.A. (x) 23.2.1951.

2. TREATMENTS :

1. October planting.
2. November planting.
3. January planting.
4. February planting.
5. March planting.
6. April planting.

3. DESIGN :

- (i), (ii) R.B.D. with 4 replications. (iii) (a) N.A. (b) 67'×18'. (iv) N.A.

**4. GENERAL :**

(i) N.A. (ii) N.A. (iii) Germination, tillers, millable cane and sugarcane yield. (iv) (a) 1949 to 1951. (b) and (c) N.A. (v) N.A. (vi) Nil. (vii) The experiment was conducted by D.S.R. (G) on cultivators' fields.

**5. RESULTS :**

- (i) 25.07 ton/ac.  
 (ii) 4.349 ton/ac.  
 (iii) Treatment differences are highly significant.  
 (iv) Av. yield of sugarcane in ton/ac.

Treatment	Av. yield
1.	29.81
2.	28.34
3.	27.54
4.	27.24
5.	21.35
6.	16.15
S.E./mean	=2.175 ton/ac.

Crop :- Sugarcane.

Ref :- U.P.50(188).

Zone :- Pharenda (Gorakhpur).

Type :- 'C'.

Object :- To find out the suitable time of planting Sugarcane.

**1. BASAL CONDITIONS :**

(i) (a) N.A. (b) *Sanai*. (c) Nil. (ii) Sandy loam. (iii) N.A. (iv) CO-453 (mid-late) improved. (v) (a) Harrowing and hoeing. Ridging, hoeing and earthing by spade. (b) N.A. (c) 1752 buds/plot. (d) 8 rows/plot. (e) N.A. (vi) As per treatments. (vii) Irrigated. (viii) N.A. (ix) N.A. (x) 28.2.1952.

**2. TREATMENTS :**

1. October planting on 18.10.1950.
2. November planting on 19.11.1950.
3. January planting on 19.1.1951.
4. February planting on 19.2.1951.
5. March planting on 19.3.1951.

**3. DESIGN :**

(i) and (ii) R.B.D. with 4 replications. (iii) (a) 73'×24'. (b) 67'×18' (iv) N.A.

**4. GENERAL :**

(i) and (ii) N.A. (iii) Germination, tillers, millable cane and sugarcane yield. (iv) (a) 1949--1951. (b) and (c) N.A. (v) N.A. (vi) Nil. (vii) The experiment was conducted by D.S.R. (G) on cultivators' fields.

**5. RESULTS :**

- (i) 29.29 ton/ac.  
 (ii) 6.460 ton/ac.  
 (iii) Treatment differences are not significant.  
 (iv) Av. yield of sugarcane in ton/ac.

Treatment	Av. yield
1.	31.39
2.	31.35
3.	34.79
4.	27.16
5.	21.77
S.E./mean	=3.230 ton/ac.

Crop :- Sugarcane.

Ref :- U.P. 51(166).

Site :- Gorakhpur (Gorakhpur).

Type :- 'C'.

Object :—To find out suitable time of planting Sugarcane in different tracts.

**1. BASAL CONDITIONS :**

(i) (a) N.A. (b) *Sanai* (c) Nil. (ii) Sandy loam. (iii) *Sanai* buried on 26.8.1950 (50 lb./ac. of N). A/S at 4 mds. 5 seers/ac. (70 lb./ac. of N). G.N.C. at 6 mds./ac. (iv) CO.453 (mid-late) improved. (v) (a) Ploughing by tractor, harrowing by tractor, hoeing by *kudali* and earthing up by spade. (b) Trench planting. (c) 1752 buds/plot (d) 8 rows/plot. (e) N.A. (vi) 25th of each month (as per treatments). (vii) Irrigated. (viii) and (ix) N.A. (x) 22.4.1953.

**2. TREATMENTS :**

1. October planting.
2. November planting.
3. January planting.
4. February planting.
5. March planting.

**3. DESIGN :**

(i) and (ii) R.B.D. with 4 replications. (i.i) (a) 73'×24'. (b) 67'×18'. (iv) N.A.

**4. GENERAL :**

(i) and (ii) N.A. (iii) Germination, tillers, millable cane and sugarcane yield. (iv) (a) 1949—1951. (b) and (c) N.A. (v) N.A. (vi) Nil. (vii) The experiment was conducted by D.S.R. (G) on cultivators' fields.

**5. RESULTS :**

- (i) 37.15 ton/ac.  
 (ii) 4.997 ton/ac.  
 (iii) Treatment differences are significant.  
 (iv) Av. yield of sugarcane in ton/ac.

Treatment	Av. yield
1.	43.79
2.	39.35
3.	31.60
4.	37.69
5.	33.30
S.E./mean	=2.498 ton/ac.

Crop :- Sugarcane.

Ref :- U.P. 49 (153).

Zone :- Sardarnagar (Gorakhpur).

Type :- 'C'.

Object :—To find out the suitable time of planting Sugarcane.

**1. BASAL CONDITIONS :**

(i) (a) N.A. (b) *Sanai* (G.M.). (c) Nil. (ii) Loam. (iii) A/S on 3.4.1950 and 19.5.1950. (iv) CO.453 (mid-late) improved. (v) (a) 9 hoeings. (b) to (e) N.A. (vi) As per treatments. (vii) Irrigated. (viii) and (ix) N.A. (x) 10 and 11.2.1951.

**2. TREATMENTS :**

1. October planting.
2. November planting.
3. January planting.
4. February planting.
5. March planting.
6. April planting.

**3. DESIGN :**

(i) and (ii) R.B.D. with 4 replications. (iii) (a) N.A. (b) 74 × 14'. (iv) N.A.

## 4. GENERAL :

(i) and (ii) N.A. (iii) Germination, tillers, millable cane and sugarcane yield. (iv) (a) 1949—1950. (b) and (c) N.A. (v) N.A. (vi) Nil. (vii) The experiment was conducted by D.S.R. (G) on cultivators' fields.

## 5. RESULTS :

- (i) 17.20 ton/ac.  
 (ii) 3.900 ton/ac.  
 (iii) Treatment differences are highly significant.  
 (iv) Av. yield of sugarcane in ton/ac.

Treatment	Av. yield
1.	22.85
2.	22.34
3.	18.69
4.	13.55
5.	18.94
6.	6.80
S.E./mean	= 1.950 ton/ac.

Crop :- Sugarcane.

Zone :- Sardarnagar (Gorakhpur).

Ref :- U.P. 50(187).

Type :- 'C'.

Object :—To find out suitable time of planting Sugarcane.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) *Sanai*. (c) Nil. (ii) Loam. (iii) N.A. (iv) CO.453 (mid-late) improved. (v) (a) Hoeings by spade and *kudal*. Earthing by spade. (b) N.A. (c) 1680 buds/plot. (d) and (e) N.A. (vi) As per treatments. (vii) Irrigated. (viii) and (ix) N.A. (x) 26 and 27.2.1952.

## 2. TREATMENTS :

1. October planting on 26.10.1950.
2. November planting on 23.11.1950.
3. January planting on 24.1.1951.
4. February planting on 16.2.1951.
5. March planting on 9.3.1951.

## 3. DESIGN :

(i) and (ii) R.B.D. with 4 replications. (iii) (a) 80'×21'. (b) 74'×15'. (iv) N.A.

## 4. GENERAL :

(i) and (ii) N.A. (iii) Germination, tillers, millable cane and sugarcane yield. (iv) (a) 1949—1950. (b) and (c) N.A. (v) N.A. (vi) Nil. (vii) The experiment was conducted by D.S.R. (G) on cultivators' fields.

## 5. RESULTS :

- (i) 13.55 ton/ac.  
 (ii) 4.960 ton/ac.  
 (iii) Treatment differences are not significant.  
 (iv) Av. yield of sugarcane in ton/ac.

Treatment	Av. yield
1.	15.24
2.	13.98
3.	13.23
4.	10.77
5.	14.53
S.E./mean	= 2.480 ton/ac.



Crop :- Sugarcane.  
Zone :- Ghugli (Gorakhpur).

Ref :- U.P. 50(190).  
Type :- 'C'.

Object ;—To find out suitable time of planting Sugarcane.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) *Sanal* G.M. sown on 22.6.1950. (c) Nil. (ii) *Bhat* soil (iii) Top dressing 24 md. 26 seers of *mohwa* cake mixture. (containing A/S and cake at 60 lb./ac. of N on 4.8.1951. (iv) CO. 356 (mid-late) improved. (v) (a) Ploughing by victory plough on 12.8.1950, ploughing and planting by *desi* plough on 20.9.1950 and 14.10.1950, digging by spades and *kassi* on 12, 13.10.1950, earthing by *kassi* on 4 to 7.8.1951 and hoeing by *kassi* 7 times. (b) Sown by flat system of planting followed by earthing. (c) and (d) 536 buds in 8 rows/plot. (e) N.A. (vi) As per treatments. (vii) Irrigated. (viii) N.A. (ix) N.A. (x) 10.3.1952.

2. TREATMENTS ;

1. October planting (20.10.1950).
2. November planting (21.11.1950).
3. January planting (10.1.1951).
4. February planting (11.2.1951).
5. March planting (12.3.1951).

3. DESIGN :

(i) and (ii) R.B.D. with 4 replications. (iii) (a) 67'×24'. (b) 61'×28'. (iv) N.A.

4. GENERAL :

(i) N.A. (ii) N.A. (iii) Germination, millable cane, tillers and sugarcane yield. (iv) (a) 1950-1951. (b) N.A. (c) N.A. (v) N.A. (vi) Nil. (vii) The experiment was conducted by D.S.R. (G) on cultivators' fields.

5. RESULTS :

- (i) 20.21 ton/ac.
- (ii) 2.568 ton/ac.
- (iii) Treatment differences are not significant.
- (iv) Av. yield of sugarcane in ton/ac.

Treatment	Av. yield
1.	18.77
2.	20.82
3.	21.18
4.	20.30
5.	19.98
S.E./mean	= 1.184 ton/ac.

Crop :- Sugarcane.  
Zone :- Ghugli (Gorakhpur).

Ref :- U.P. 51(167).  
Type :- 'C'.

Object :- To study the time of planting Sugarcane in different tracts.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) *Bajra* and sugarcane (for green fodder). (c) N.A. (ii) *Bhat* soil. (iii) Application of compost 180 md. on 24 to 26.11.1951. (iv) CO. 419 (late) improved. (v) (a) Ploughing by tractor and *desi* plough. Furrow making. Harrowing and earthing up. (b) Trench planting. (c) and (d) 960 buds in 8 rows/plot. (e) N.A. (vi) As per treatments. (vii) N.A. (viii) N.A. (ix) N.A. (x) 12 to 18.1.1953.

2. TREATMENTS :

1. November planting (28.11.1951).
2. January planting (13.1.1952).
3. February planting (14.2.1952).
4. March planting (7.3.1952).

3. DESIGN .

(i) and (ii) R.B.D. with 4 replications. (iii) (a) and (b) 46'×23'. (iv) N.A.

## 4. GENERAL :

(i) N.A. (ii) N.A. (iii) Germination, tillers, millable cane and sugarcane yield. (iv) (a) 1950-1951. (b) N.A. (c) N.A. (v) N.A. (vi) Nil. (vii) The experiment was conducted by D.S.R. (G) on cultivators' fields.

## 5. RESULTS :

- (i) 40.58 ton./ac.  
 (ii) 2.827 ton/ac.  
 (iii) Treatment differences are not significant.  
 (iv) Av. yield of sugarcane in ton/ac.

Treatment	Av. yield
1.	39.64
2.	41.26
3.	40.92
4.	40.49
S.E./mean	=1.414 ton/ac.

Crop :- Sugarcane.

Ref. - U.P. 51(183).

Zone :- Sardarnagar (Gorakhpur).

Type :- 'C'.

Object :- To improve the Sugarcane yield under late planted conditions.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) *Sanai* (G.M.) (c) No. (ii) Loam. (iii) *Sanai*. (iv) CO.453 (Late) (improved) (v) (a) Trenching by spade, hoeing by *kudali* and earthing by spade. (b) N.A. (c) 10 and 12 rows/plot; No. of buds/plot (treatment-wise). (1) 2400, (2) 2400, (3) 4800 [(4) 2880 and (5) 5760. (d) and (e) N.A. (vi) As under treatments. (vii) Irrigated. (viii) N.A. (ix) N.A. (x) 27.2.1952.

## 2. TREATMENTS :

- Control—normal planting (January).
  - Late planting at the end of March in rows 3' apart with single setting.
  - Late planting at the end of March in rows 3' apart with double setting.
  - Late planting at the end of March in rows 2½' apart with single setting.
  - Late planting at the end of March in rows 2½' apart with double setting.
- Dates of planting treatment 1 on 31.1.1951 and others on 23 and 27.3.1951.

## 3. DESIGN :

(i), (ii) R.B.D. with 4 replications. (iii) (a) 80'×30'. (b) 74'×24' for treatments 1, 2 and 3 and 73'×25' for treatments 4 and 5. (iv) N.A.

## 4. GENERAL :

(i) N.A. (ii) N.A. (iii) Sugarcane yield. (iv) (a) 1951 to 1953. (b) and (c) N.A. (v) N.A. (vi) Nil. (vii) The experiment was conducted by D.S.R. (G) on cultivators' fields.

## 5. RESULTS :

- (i) 9.98 ton/ac.  
 (ii) 1.989 ton/ac.  
 (iii) Treatment differences are not significant.  
 (iv) Av. yield of sugarcane in ton/ac.

Treatment	Av. yield
1.	10.64
2.	9.04
3.	9.65
4.	10.95
5.	9.63
S.E./mean	=0.995 ton/ac.

Crop :- Sugarcane.  
Zone :- Gorakhpur (Gorakhpur).

Ref :- U.P. 52(234).  
Type :- 'C'.

Object :- To improve Sugarcane yield under late planted conditions.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) Paddy. (c) N.A. (ii) Loam. (iii) A/S at 4 md./ac. *Neem* cake at 12 md./ac. (iv) CO. 453 (late) (improved). (v) (a) Ploughing and trenching by spade and harrowing. (b) N.A. (c) and (d) 10 and 12 rows/plot according to treatments buds/plot treatment-wise (1) 2400, (2) 2400, (3) 2880, (4) 5760 and (5) N.A. (e) N.A. (vi) As per treatments. (vii) Irrigated. (viii) Hoeing by *kudali* and earthing up by spade. (ix) N.A. (x) 15 to 23.3.1953.

2. TREATMENTS :

1. Normal planting—February (control).
2. Late planting at the end of March in rows 3' apart with normal setting.
3. Late planting at the end of March in rows 3' apart with double setting.
4. Late planting at the end of March in rows 2½' apart with normal setting.
5. Late planting at the end of March in rows 2½' apart with double setting.

3. DESIGN :

(i), (ii) R.B.D. with 4 replications. (iii) (a) 80'×30'. (b) 74'×24' for treatments 1, 2 and 3 and 75'×25' for treatments 4 and 5. (iv) N.A.

4. GENERAL :

(i) N.A. (ii) N.A. (iii) Germination, millable cane, tillers and sugarcane yield. (iv) (a) 1951—1953. (b) and (c) N.A. (v) N.A. (vi) Nil. (vii) The experiment was conducted by D.S.R.(G) on cultivators' fields.

5. RESULTS :

- (i) 16.82 ton/ac.
- (ii) 1.775 ton/ac.
- (iii) Treatment differences are not significant.
- (iv) Av. yield of sugarcane in ton/ac.

Treatment	Av. yield
1.	16.39
2.	14.98
3.	17.86
4.	16.68
5.	18.21
S.E./mean	=0.887 ton/ac.

Crop :- Sugarcane.  
Zone :- Gorakhpur (Gorakhpur).

Ref :- U.P. 53(257).  
Type :- 'C'.

Object :- To improve Sugarcane yield under late planted conditions.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) *Urd.* (c) N.A. (ii) Sandy loam. (iii) *Neem* cake at 8 md./ac. and A/S at 4 md./ac. (iv) CO.453 (improved). (v) (a) By ordinary plough on 16.9.1952, hoeing in whole field on 31.10.1952, hoeing by *kudali* and weedings. (b) Trench planted. (c) and (d) 10 and 12 rows/plot; no. of buds/plot normal setting 9600, double setting 19200. (e) N.A. (vi) Treatment 1 on 26.1.1953 and others on 21.3.1953. (vii) Irrigated. (viii) and (ix) N.A. (x) 28.2.1954.

2. TREATMENTS :

1. Normal planting in the beginning of February (control).
2. Late planting at the end of March in rows 3' apart, with normal setting.
3. Late planting at the end of March in rows 3' apart with double setting.
4. Late planting at the end of March in rows 2½' apart with normal setting.
5. Late planting at the end of March in rows 2½' apart with double setting.

3. DESIGN :

(i) and (ii) R.B.D. with 4 replications. (iii) (a) 80'×30'. (b) 74'×24' for treatment 1, 2 and 3 and 75'×25' for treatment 4 and 5. (iv) N.A.

## 4. GENERAL :

(i) and (ii) N.A. (iii) Germination, tillers, millable cane and sugarcane yield. (iv) 1951 to 1953.  
 (b) and (c) N.A. (v) N.A. (vi) Nil. (vii) The experiment was conducted by D.S.R. (G) on cultivators' fields.

## 5. RESULTS :

(i) 19.62 ton/ac.  
 (ii) 3.065 ton/ac.  
 (iii) Treatment differences are not significant.  
 (iv) Av. yield of sugarcane in ton/ac.

Treatment	Av. yield
1.	19.34
2.	20.02
3.	20.47
4.	20.35
5.	17.92
S.E./mean	= 1.533 ton/ac.

Crop :- Sugarcane.

Zone:- Pharenda (Gorakhpur).

Ref:- U.P. 51(184).

Type :- 'C'.

Object :- To improve the Sugarcane yield under late planting conditions.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) Fallow. (c) No. (ii) Sandy loam. (iii) N.A. (iv) CO.453 (late) improved. (v) (a) Ploughing by tractor on 12.1.1951, harrowing by tractor on 13.1.1951, hoeing by *kudali* and earthing by spade. (b) N.A. (c) and (d) 10 rows/plot in treatments 1, 2 and 3 and 12 rows/plot in treatment 4 and 5. No. of buds/plot in treatment 1—8760, in treatment 2—8760, in treatment 3—17520, in treatment 4—10512 and in treatment 5—21024. (e) N.A. (vi) As per treatments. (vii) Irrigated. (viii) and (ix) N.A. (x) 27.3.1952.

## 2. TREATMENTS :

1. Normal planting—control (planting in 1st week of February).
2. Late planting at the end of March and in rows 3' distance with normal setting.
3. Late planting at the end of March and in rows 3' distance with double setting.
4. Late planting at the end of March and in rows 2½' distance with normal setting.
5. Late planting at the end of March and in rows 2½' distance with double setting.

## 3. DESIGN :

(i) and (ii) R.B.D. in 4 replications. (iii) (a) 73'×30'. (b) 67'×24' for treatment 1,2 and 3 and 68'×25' for treatment 4 and 5. (iv) N.A.

## 4. GENERAL :

(i) and (ii) N.A. (iii) Germination, tillers, millable cane and sugarcane yield. (iv) (a) 1951 to 1953. (b) and (c) N.A. (v) N.A. (vi) Nil. (vii) The experiment was conducted by D.S.R. (G) on cultivators' fields.

## 5. RESULTS :

(i) 25.37 ton/ac.  
 (ii) 4.806 ton/ac.  
 (iii) Treatment differences are not significant.  
 (iv) Av yield of sugarcane in ton/ac.

Treatment	Av. yield
1.	30.85
2.	25.65
3.	22.98
4.	25.15
5.	22.24
S.E./mean	= 2.403 ton/ac.

Crop :- Sugarcane.

Ref :- U.P.52(235).

Zone :- Gorakhpur (Gorakhpur).

Type :- 'C'.

Object :- To improve Sugarcane yields under late planted condition.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) *Sanai*. (c) No. (ii) Sandy loam. (iii) *Sanai G.M.* at 50 lb./ac. of N; A/S at 3 mds. 3 seers 12 chh./plot and *neem* cake at 5 mds. 25 seers/ac. i.e. at 70 lb./ac. of N. (iv) CO.453 (late variety) improved. (v) (a) Hoeing by *kassi (kudal)*. Earthing up by spade. (b) Trench planting. (c) and (d) 10 and 12 rows/plot. No. of buds planted per plot treatment (1) 2190, (2) 2190, (3) 4380, (4) 2628 and (5) 5256. (e) N.A. (vi) 14.2.1952 for treatment 1 and 28.3.1952 for other treatments. (vii) Irrigated. (viii) and (ix) N.A. (x) 30.4.1953.

## 2. TREATMENTS :

1. Normal planting (February)—control.
2. Late planting at the end of March and in rows 3' apart with normal setting.
3. Late planting at the end of March and in rows 3' apart with double setting.
4. Late planting at the end of March and in rows 2½' apart with normal setting.
5. Late planting at the end of March and in rows 2½' apart with double setting.

## 3. DESIGN :

(i) and (ii) R.B.D. with 4 replications. (iii) (a) 73'×30'. (b) 67'×24' for treatments 1, 2 and 3 and 68'×25' for treatment 4 and 5. (iv) N.A.

## 4. GENERAL :

(i) and (ii) N.A. (iii) Germination, tillers, millable cane and sugarcane yield at harvest (i.e. excluding cane harvested for juice analysis). (iv) (a) 1951—1953. (b) and (c) N.A. (v) N.A. (vi) Nil. (vii) The experiment conducted by D.S.R.(G) on cultivators' fields.

## 5. RESULTS :

- (i) 24.79 ton/ac.
- (ii) 0.856 ton/ac.
- (iii) Treatment differences are highly significant.
- (iv) Av. yield of sugarcane in ton/ac.

Treatment	Av. yield
1.	25.29
2.	22.80
3.	30.20
4.	22.30
5.	23.36
S.E./mean	= 0.428 ton/ac.

Crop :- Sugarcane.

Ref :- U.P. 53(256).

Zone :- Gorakhpur (Gorakhpur).

Type :- 'C'.

Object :- To improve Sugarcane yields under late planted condition.

## 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) Sandy loam. (iii) Nil. (iv) CO.453 (late variety) improved. (v) (a) Ploughings by tractor on 2 and 3 6.1952, 7 ploughings by *desi* plough, 4 ploughings by tractor and 7 hoeings by *kudali*. (b) Trench planting. (c) 8760 buds/plot in treatment 1 and 17520 buds/plot. (d) N.A. (e) Double setting. (vi) 23.2.1953 for treatment 1 and 1.4.1953 for other treatments. (vii) Irrigated. (viii) and (ix) N.A. (x) 13.3.1954.

## 2. TREATMENTS :

1. Normal planting (February)—control.
2. Late planting at the end of March and in row 3' apart with normal setting.
3. Late planting at the end of March and in row 3' apart with double setting.  
Late planting at the end of March and in rows 2½' apart with normal setting.  
Late planting at the end of March and in rows 2½' apart with double setting.

## 3. DESIGN :

(i) and (ii) R.B.D. with 4 replications. (iii) (a) 73'×30'. (b) 67'×24' for treatments 1, 2 and 3 and 68'×25' for treatments 4 and 5. (iv) N.A.

## 4. GENERAL :

(i) and (ii) N.A. (iii) Germinations, tillers, millable cane and sugarcane yield. (iv) (a) 1951—1953. (b) and (c) N.A. (v) N.A. (vi) Nil. (vii) The experiment was conducted by D.S.R. (G) on cultivators' fields.

## 5. RESULTS :

- (i) 14.61 ton/ac.  
 (ii) 1.455 ton/ac.  
 (iii) Treatment differences are highly significant.  
 (iv) Av. yield of sugarcane in ton/ac.

Treatment	Av. yield
1.	15.57
2.	14.98
3.	14.77
4.	11.67
5.	16.07
S.E./mean	=0.728 ton/ac.

Crop :- Sugarcane.

Site :- Mehammadi (Kheri).

Ref :- U.P. 50(159).

Type :- 'C'.

Object :- To find the optimum time of planting Sugarcane in different tracts for obtaining high yields.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) *Sanai* (G.M.) (c) Nil. (ii) Loam. (iii) Castor cake 8 mds+A/S at 2 md/ac. (iv) CO.527. (v) (a) Tractor ploughings. 5 hoeings. Earthing up by tractor. (b) Flat sowing behind ridges. (c) 1911 buds/plot (d) 7 rows/plot. (e) N.A. (vi) As per treatments. (vii) Irrigated. (viii) N.A. (ix) N.A. (x) 4.10.1951.

## 2. TREATMENTS :

- Middle of October 1949 (19.10.1949).
- Middle of November 1949 (20.11.1949).
- Middle of December 1949 (15.12.1949).
- Middle of January 1950 (16.1.1950).
- Middle of February 1950 (9.2.1950).
- Middle of March 1950 (30.3.1950).

## 3. DESIGN :

(i) and (ii) R.B.D. with 6 replications. (iii) (a) 91'×21'. (b) 85'×15'. (iv) N.A.

## 4. GENERAL :

(i) N.A. (ii) N.A. (iii) Germination % and sugarcane yield. (iv) (a) No. (b) No. (c) N.A. (v) N.A. (vi) Nil. (vii) The experiment was conducted by D.S.R. (S) on cultivators' fields.

## 5. RESULTS :

- (i) 8.20 ton/ac.  
 (ii) 2.20 ton/ac.  
 (iii) Treatment differences are highly significant.  
 (iv) Av. yield of sugarcane in ton/ac.

Treatment	Av. yield
1.	11.51
2.	9.00
3.	8.47
4.	7.32
5.	8.79
6.	4.08
S.E./mean	=0.89 ton/ac.

Crop :- Sugarcane.  
Zone :- Kichha (Nainital).

Ref :- U.P. 50(160).  
Type :- 'C'.

Object :- To find the optimum time of planting Sugarcane in two different tracts for obtaining the high yields.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) *Sanai* (G.M.) (ii) Loam (medium). (iii) G.N. cake and A/S on 30.3.1950. (iv) CO.453. (v) (a) 5 hoeings by *kassi*. Ploughing by *desi* plough and ploughing by cultivator plough. Turning *sanai* by cut away athenes on 31.8.1949. Ploughing by harrow plough on 13.10.1949. Ploughing by cut away athenes (twice) on 17.10.1949. (b) Flat sowing. (c) 1440 budds/plot (d) 8 rows/plot. (e) N.A. (vi) As per treatments. (vii) Irrigated. (viii) N.A. (ix) 60°. (x) 18.3.1951.

2. TREATMENTS :

1. Middle of October 1949 (19.10.1949).
2. Middle of November 1949 (31.11.1949).
3. Middle of December 1949 (22.12.1949).
4. Middle of January 1950 (22.1.1950).
5. Middle of February 1950 (14.2.1950).

3. DESIGN :

(i) and (ii) R.B.D. with 4 replications. (iii) (a) 60' x 26'. (b) 54' x 20'. (iv) N.A.

4. GENERAL :

(i) N.A. (ii) N.A. (iii) Germination % and sugarcane yield. (iv) (a) No. (b) N.A. (c) N.A. (v) N.A. (vi) Nil. (vii) The experiment was conducted by D.S.R. (S) on cultivators' fields.

5. RESULTS :

- (i) 35.88 ton/ac.
- (ii) 3.99 ton/ac.
- (iii) Treatment differences are highly significant.
- (iv) Av. yield of sugarcane in ton/ac.

Treatment	Av. yield
1.	45.47
2.	36.17
3.	30.10
4.	35.47
5.	32.18
S.E./mean	2.00 ton/ac.

Crop :- Sugarcane.

Ref :- U.P. 48(1).

Site :- Sugarcane Res. Sub-Stn, Kunraghat.

Type :- 'CV'.

Object :- To study the effect of harvesting Sugarcane on different dates.

1. BASAL CONDITIONS :

(i) (a) G.M. Wheat—G.M. *Sanai*—Sugarcane. (b) *Sanai*. (c) Green manure. (ii) (a) Sandy loam. (b) N.A. (iii) 16 to 18.1.1948. (iv) (a) 9 preparatory ploughings with *desi* and watts plough and 5 harrowings. (b) Sown flat. (c) 55 three budded setts/row. (d) and (e) N.A. (v) G.M. with *sanai*. Top dressing Catsor cake at 25 lb/ac. of N. *Sanai* G.M. sown on 16 and 17.7.1947 and ploughed in 12.9.1947. (vi) As per treatments. (vii) Irrigated. (viii) 11 hoeings and earthings from 25.7.1948 to 16.8.1948. (ix) 49.20°. (x) As per treatments.

2. TREATMENTS :

Main-plot treatments :

4 dates of harvesting :  $D_1=1.1.1949$ ,  $D_2=1.2.1949$ ,  $D_3=1.3.1949$  and  $D_4=1.4.1949$

Sub-plot treatments :

3 varieties :  $V_1=CO.109$ ,  $V_2=CO.313$ ,  $V_3=CO.356$ .

**3. DESIGN :**

(i) Split-plot. (ii) (a) 4 main-plots/replication and 3 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) a 55' x 27'.  
(b) 49' x 21'. (v) 3' border left around the net plot. (vi) Yes.

**4. GENERAL :**

(i) Normal, no lodging. (ii) No. (iii) Tiller, germination, millable canes and sugarcane yield. (iv) (a) 1946-1949. (b) and (c) No. (v) (a) and (b) No. (vi) The experiment was conducted by D.S.R.(G).

**5. RESULTS :**

- (i) 18.31 ton/ac.  
(ii) (a) 4.128 ton/ac.  
(b) 5.299 ton/ac.  
(iii) Main effect of V is highly significant. Main effect of D and interaction D x V are significant.  
(iv) Av. yield of sugarcane in ton/ac.

	V <sub>1</sub>	V <sub>2</sub>	V <sub>3</sub>	Mean
D <sub>1</sub>	22.25	23.57	14.56	20.13
D <sub>2</sub>	21.24	24.79	15.72	20.58
D <sub>3</sub>	19.63	22.84	11.50	17.99
D <sub>4</sub>	19.66	12.50	11.48	14.55
Mean	20.70	20.92	13.32	18.31

S.E. of difference of two

- marginal means of D = 1.685 ton/ac.
- marginal means of V = 1.166 ton/ac.
- V means at a level of D = 2.333 ton/ac.
- D means at a level of V = 2.543 ton/ac.

Crop :- Sugarcane.

Ref :- U.P. 49(2).

Site :- Sugarcane Res. Sub-Stn., Kunraghat.

Type :- 'CV'.

Object :- To study the effect of harvesting Sugarcane on different dates.

**1. BASAL CONDITIONS :**

(i) (a) G.M. Wheat-fallow-Sugarcane. (b) Fallow. (c) Nil. (ii) (a) Sandy loam. (b) N.A. (iii) 17 and 18.2.1949. (iv) (a) 8 preparatory ploughings and 3 harrowings with *desi* and watts plough. (b) Sown in trenches. (c) 60 three banded setts/row. (d) and (e) N.A. (v) Village compost at 60 lb./ac. of N+castor cake at 60 lb./ac. of N+A/S at 30 lb./ac. of N applied in trenches in Dec. 1948 and Jan, 1949 respectively. (vi) As per treatments. (vii) Irrigated. (viii) 3 earthings and 8 hoeings. (ix) 53.11". (x) As per treatments.

**2. TREATMENTS :**

Main-plot treatments :

6 dates of harvest :- D<sub>1</sub>=21.12.1949, D<sub>2</sub>=16.1.1950, D<sub>3</sub>=30.1.1950, D<sub>4</sub>=19.2.1950, D<sub>5</sub>=11.3.1950 and D<sub>6</sub>=31.3.1950.

Sub-plot treatments :

3 varieties : V<sub>1</sub>=CO.313, V<sub>2</sub>=CO.453 and V<sub>3</sub>=CO.109.

D<sub>6</sub> plots were harvested on 16.3.1950 instead of 31.3.1950.

**3. DESIGN :**

(i) Split-plot. (ii) (a) 6 main-plots/replication and 3 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 56' x 24' (main-plot size net 56' x 72'). (b) 50' x 18'. (v) 3' bunds around the net plot was excluded. (vi) Yes.

**4. GENERAL :**

(i) Normal. No lodging. (ii) No. (iii) Germination, tillers, millable cane and sugarcane yield. (iv) (a) 1946-1949. (b) No. (c) N.A. (v) (a) No. (b) N.A. (vi) Nil. (vii) The experiment was conducted by D.S.R.(G).



## 5. RESULTS .

- (i) 18.40 ton/ac.  
 (ii) (a) 4.649 ton/ac.  
 (b) 3.094 ton/ac.  
 (iii) Main effect of V is significant. Main effect of D and interaction D×V are not significant.  
 (iv) Av. yield of sugarcane in ton/ac.

	D <sub>1</sub>	D <sub>2</sub>	D <sub>3</sub>	D <sub>4</sub>	D <sub>5</sub>	D <sub>6</sub>	Mean
V <sub>1</sub>	20.06	18.32	19.61	17.56	13.88	13.93	17.23
V <sub>2</sub>	20.14	21.82	20.40	19.98	18.02	18.11	19.74
V <sub>3</sub>	18.08	21.05	19.10	19.71	15.65	15.81	18.23
Mean	19.43	20.40	19.70	19.08	15.85	15.95	18.40

## S.E. of difference of two

1. marginal means of H = 1.898 ton/ac.  
 2. marginal means of V = 0.8930 ton/ac.  
 2. V means at a level of H = 2.187 ton/ac.  
 4. H means at a level of V = 2.606 ton/ac.

Crop :- Sugarcane.

Ref :- U.P. 52(55).

Site :- Sugarcane Res. Sub-Stn., Kunraghat.

Type :- 'CV'.

Object :- To study the effect of autumn vs spring planting on the yield of late varieties of Sugarcane.

## 1. BASAL CONDITIONS :

- (i) (a) G.M. (b) *Sanai* for G.M. (c) N.A. (ii) (a) Sandy. (b) N.A. (iii) As per treatments. (iv) (a) 3 preparatory ploughings with victory and 2 harrowings with the cultivator. (b) Sown in trenches. (c) 85 three budded setts/row. (d) and (e) N.A. (v) Castor cake at 30 lb./ac. of N. A/S at 40 lb./ac. of N. *Sanai* and G.M. at 50 lb./ac. of N. Top dressing of castor cake and A/S. *Sanai* turned in. (vi) As per treatments. (vii) Irrigated. (viii) Earthing on 14.8.1952 and 9 hoeings. (ix) 2.35°. (x) 26.1.1953 to 4.3.1953.

## 2. TREATMENTS :

## Main-plot treatments :

2 dates of planting : D<sub>1</sub>=Autumn (12.11.1951) and D<sub>2</sub>=Spring (7.2.1952)

## Sub-plot treatments :

10 varieties : V<sub>1</sub>=S. 60, V<sub>2</sub>=CO. 370, V<sub>3</sub>=COS. 410, V<sub>4</sub>=CO. 453, V<sub>5</sub>=COS. 475, V<sub>6</sub>=S. 89, V<sub>7</sub>=COS. 429, V<sub>8</sub>=CO. 419, V<sub>9</sub>=COS. 364 and V<sub>10</sub>=S. 46.

## 3. DESIGN :

- (i) Split-plot. (ii) (a) 2 main-plots/replication and 10 sub-plots/main-plot. (iii) 2. (iv) (a) N.A. (b) 84'×60' (v) 3' along length. (vi) Yes

## 4. GENERAL :

- (i) Normal. No lodging. (ii) Borers attacked and were killed on 12.4.1952 (iii) Germination, tillers millable cane and sugarcane yield. (iv) (a) to (c) No. (v) (a) and (b) No. (vi) Nil. (vii) Experiment conducted by D.S.R.(G).

## 5. RESULTS :

- (i) 18.17 ton/ac.  
 (ii) (a) 1.596 ton/ac.  
 (b) 3.059 ton/ac.  
 (iii) Main effect of V is highly significant. Effect of D and interaction D×V are not significant.

(iv) Av. yield of sugarcane in ton/ac.

	V <sub>1</sub>	V <sub>2</sub>	V <sub>3</sub>	V <sub>4</sub>	V <sub>5</sub>	V <sub>6</sub>	V <sub>7</sub>	V <sub>8</sub>	V <sub>9</sub>	V <sub>10</sub>	Mean
D <sub>1</sub>	26.62	11.17	19.24	16.86	9.99	17.54	18.80	14.72	21.94	17.38	17.61
D <sub>2</sub>	25.43	15.19	17.81	15.75	16.89	23.37	21.73	14.95	21.70	14.59	18.74
Mean	26.02	14.08	18.53	16.30	13.44	20.46	20.26	14.84	21.82	15.99	18.17

S.E. of difference of two

1. marginal means of D = 0.505 ton/ac.
2. marginal means of V = 2.163 ton/ac.
3. V means at a level of D = 3.059 ton/ac.
4. D means at a level of V = 2.946 ton/ac.

Crop :- Sugarcane.

Ref :- U.P. 48(11):

Site :- Sugarcane Res. Sub-Stn., Muzaffarnagar.

Type :- 'CV'.

Object :- To find the optimum time of harvesting different varieties of Sugarcane.

## 1. BASAL CONDITIONS :

(i) G.M.—wheat—Cotton—Sugarcane. (b) G.M. as *sanai* (30 lb./ac. of N). (c) Nil. (ii) (a) Light loam. (b) Refer soil analysis, Muzaffarnagar. (iii) 17.3.1948. (iv) (a) 8 preparatory ploughings. (b) Planted flat. (c) 4200 buds/ac. (d) Rows 3' apart. (e) N.A. (v) Compost at 45.5 lb./ac. of N+top dressing. A/S at 40 lb./ac. of N+A/N at 40 lb./ac. (vi) As per treatments. (vii) Irrigated. (viii) 5 hoeings and earthing up in September. (ix) 34-20°. (x) As per treatments.

## 2. TREATMENTS :

Main-plot treatments :

6 dates of harvesting : D<sub>1</sub>=15.11.1948, D<sub>2</sub>=15.12.1948; D<sub>3</sub>=15.1.1949, D<sub>4</sub>=15.2.1949, D<sub>5</sub>=15.3.1949 and D<sub>6</sub>=15.4.1949.

Sub-plot treatments :

3 varieties : V<sub>1</sub>=CO. 312, V<sub>2</sub>=CO. 421 and V<sub>3</sub>=CO. 453.

## 3. DESIGN :

(i) Split-plot. (ii) (a) 6 main-plots/replication and 2 sub-plots/main-plot. (iii) 3. (iv) (a) and (b) 58'×18'. (v) One row on either side. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Nil. (iii) Germination, tiller, millable cane countings and sugarcane yield. (iv) (a) 1848—1950. (b) and (c) No. (v) (a) and (b) No. (vi) Nil. (vii) Experiment was conducted by D.S.R. (M).

## 5. RESULTS :

(i) 33.60 ton/ac.

(ii) (a) 1.97 ton/ac.

(b) 1.88 ton/ac.

(iii) Main effect of D and V are significant. Interaction is not significant.

(iv) Av. yield of sugarcane in ton/ac.

	D <sub>1</sub>	D <sub>2</sub>	D <sub>3</sub>	D <sub>4</sub>	D <sub>5</sub>	D <sub>6</sub>	Mean
V <sub>1</sub>	32.21	22.42	30.36	31.17	28.64	27.13	29.94
V <sub>2</sub>	34.42	31.23	32.47	34.26	31.95	33.65	33.00
V <sub>3</sub>	40.98	36.56	37.12	37.14	38.31	37.08	37.87
Mean	36.10	32.40	33.32	34.19	32.97	32.62	33.60

S.E. of difference of two

1. marginal means of D = 0.93 ton/ac.
2. marginal means of V = 0.63 ton/ac.
3. V means at a level of D = 1.54 ton/ac.
4. D means at a level of V = 1.56 ton/ac.

Crop :- Sugarcane (Ratoon).

Ref :- U.P. 49(7).

Site :- Sugarcane Res. Sub Stn., Muzaffarnagar.

Type :- 'CV'.

Object :- To study the effect of time of harvest of Sugarcane plant crop on the ratooning capacity of some important varieties.

## 1. BASAL CONDITIONS :

(i) (a) G.M.—Wheat—*Sanai* or *Moong*—Sugarcane—Ratoon. (b) Sugarcane (plant cane). (c) A/S at 60 lb./ac. of N and Ammo. Phos. at 60 lb/ac. of N. (ii) (a) Light loam. (b) Refer soil analysis, Muzaffarnagar. (iii) As per treatments. (iv) (a) 1 ploughing. (b) Sown flat. (d) 3 buds/ft. of a row. (c) Rows 3' apart. (e) Nil. (v) N.A. (vi) As per treatments. (vii) Irrigated. (viii) 2 hocings and earthing up in July. (ix) 20.73". (x) 8.11.1949 to 10.12.1949.

## 2. TREATMENTS :

Main-plot treatments :

6 dates of harvest of plant crops :  $D_1=15.11.1948$ ,  $D_2=15.12.1948$ ,  $D_3=15.1.1949$ ,  $D_4=15.2.1949$  and  $D_5=15.3.1949$  and  $D_6=15.4.1949$ .

Sub-plot treatments :

3 varieties :  $V_1=CO.313$ ,  $V_2=CO.421$  and  $V_3=CO.453$ .

## 3. DESIGN :

(i) Split-plot. (ii) (a) 6 main-plots/replication and 3 sub-plots/main-plot. (b) N.A. (iii) 2. (iv) (a) and (b) 58' x 18'. (v) No. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Nil. (iii) Germination, tiller, millable cane countings and sugarcane yield. (iv) (a) 1949 to 1951. (b) No. (c) N.A. (v) (a) No. (b) N.A. (vi) Nil. (vii) Experiment conducted by D.S.R. (G).

## 5. RESULTS :

(i) 26.27 ton/ac.  
 (ii) (a) 3.51 ton/ac.  
 (b) 3.28 ton/ac.  
 (iii) Main effect of V is highly significant, effect of D is significant and interaction  $D \times V$  is not significant.  
 (iv) Av. yield of sugarcane in ton/ac.

	$D_1$	$D_2$	$D_3$	$D_4$	$D_5$	$D_6$	Mean
$V_1$	25.06	23.02	24.96	24.83	25.35	24.68	24.65
$V_2$	24.63	24.90	26.54	30.94	25.01	30.27	27.05
$V_3$	25.08	24.92	27.62	31.88	29.75	36.03	29.21
Mean	24.92	24.28	26.37	29.22	26.70	30.33	26.97

S.E. of difference of two

- |                            |               |
|----------------------------|---------------|
| 1. marginal means of D     | =1.65 ton/ac. |
| 2. marginal means of V     | =1.09 ton/ac. |
| 3. V means at a level of D | =2.68 ton/ac. |
| 4. D means at a level of V | =2.71 ton/ac. |

Crop :- Sugarcane.

Ref :- U.P. 49(8).

Site :- Sugarcane Res. Sub-Stn., Muzaffarnagar.

Type :- 'CV'.

Object :- To find the optimum time of harvesting different varieties of Sugarcane.

## 1. BASAL CONDITIONS :

(i) (a) G.M.—Wheat—Cotton—Sugarcane or *Urid*. (b) *Urid*. (c) No. (ii) (a) Light loam. (b) Refer soil analysis, Muzaffarnagar. (iii) 25.2.1949. (iv) (a) 9 preparatory ploughings. (b) Sown flat. (c) 3 buds/ft. of a row. (d) Rows 3' apart. (e) N.A. (v) Nil. (vi) As per treatments. (vii) Irrigated. (viii) 5 hocings and earthing up in August. (ix) 26.03". (x) As per treatments.

**2. TREATMENTS :****Main-plot treatments :**

6 dates of harvesting :  $D_1=15.11.1949$ ,  $D_2=15.12.1949$ ,  $D_3=15.1.1950$ ,  $D_4=15.2.1950$ ,  $D_5=15.3.1950$  and  $D_6=15.4.1950$ .

**Sub-plot treatments :**

3 varieties :  $V_1=CO.313$ ,  $V_2=CO.421$  and  $V_3=CO.453$ .

**3. DESIGN :**

(i) Split-plot. (ii) (a) 6 main-plots/replication and 3 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) and (b)  $50' \times 18'$ . (v) No. (vi) Yes.

**4. GENERAL :**

(i) Good. (ii) No. (iii) Germination, tiller, millable cane and sugarcane yield. (iv) (a) 1948 to 1950. (b) and (c) No. (v) (a) and (b) No. (vi) Nil. (vii) Experiment conducted by D.S.R. (M).

**5. RESULTS :**

- (i) 30.31 ton/ac.  
 (ii) (a) 1.91 ton/ac.  
 (b) 2.57 ton/ac.  
 (iii) Main effect of V is highly significant, effect of D is significant. Interaction  $D \times V$  is not significant.  
 (iv) Av. yield of sugarcane in ton/ac.

	$D_1$	$D_2$	$D_3$	$D_4$	$D_5$	$D_6$	Mean
$V_1$	25.04	28.16	27.92	27.38	28.30	22.32	26.52
$V_2$	28.04	30.17	32.30	34.26	29.40	31.40	30.93
$V_3$	32.55	34.48	33.23	34.19	32.69	34.43	33.60
Mean	28.54	30.94	31.15	31.94	30.13	29.38	30.31

**S.E. of difference of two**

1. marginal means of D = 0.90 ton/ac.  
 2. marginal means of V = 0.86 ton/ac.  
 3. V means at a level of D = 2.10 ton/ac.  
 4. D means at a level of V = 1.94 ton/ac.

**Crop :-Sugarcane (Ratoon).**

**Ref :-U.P. 50(31).**

**Site :-Sugarcane Res. Sub-Stn., Muzaffarnagar.**

**Type :-'CV'.**

**Object :-To study the effect of time of harvesting plant Sugarcane on the ratooning capacity of some important varieties.**

**1. BASAL CONDITIONS :**

(i) (a) G.M.—Wheat—*Sanai*—Sugarcane (plant)—Ratoon. (b) Sugarcane (plant). (c) A/S at 60 lb./ac. of N. Amm. Phos. at 60 lb./ac. of N. (ii) (a) Light loam. (b) Refer soil analysis, Muzaffarnagar. (iii) As per treatments. (iv) (a) One preparatory ploughing. (b) Sown flat. (c) 3 buds/ft. of a row. (d) Rows 5' apart. (e) N.A. (v) G.N.C. at 60 md/ac. of N. A/S at 60 lb./ac. of N. (vi) As per treatments. (vii) Irrigated. (viii) 3 hoeings. Earthing up in July. (ix) 61.46". (x) 22.11.1950 to 20.12.1950.

**2. TREATMENTS:****Main-plot treatments :**

6 harvesting dates :  $D_1=Mid. No. v. 1949$ ,  $D_2=Mid. Dec. 1949$ ,  $D_3=Mid. Jan. 1950$ ,  $D_4=Mid. Feb. 1950$ ,  $D_5=Mid. March 1950$  and  $D_6=Mid. April 1950$ .

**Sub-plot treatments :**

3 varieties :  $V_1=CO.314$  (early),  $V_2=CO.421$  (mid-season) and  $V_3=CO.453$  (late).

**3. DESIGN :**

(i) Split-plot. (ii) (a) 6 main-plots/replication and 3 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) and (b) Sub-plot= $38' \times 11'$ . (v) No. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Nil. (iii) Germination, tillers, millable cane counting and sugarcane yield. (iv) (a) 1950—1951. (b) and (c) No. (v) (a) and (b) No. (vi) Nil. (vii) The experiment was conducted by D.S.R. (M).

## 5. RESULTS :

- (i) 21.98 ton/ac.  
 (ii) (a) 4.18 ton/ac.  
 (b) 1.96 ton/ac.  
 (iii) Main effect of V and interaction  $D \times V$  are highly significant. Main effect of D is not significant.  
 (iv) Av. yield of sugarcane in ton/ac.

	D <sub>1</sub>	D <sub>2</sub>	D <sub>3</sub>	D <sub>4</sub>	D <sub>5</sub>	D <sub>6</sub>	Mean
V <sub>1</sub>	22.13	19.18	15.44	20.72	15.30	19.28	18.68
V <sub>2</sub>	21.54	20.72	20.85	25.66	22.25	24.82	22.64
V <sub>3</sub>	20.87	19.97	23.11	27.16	28.01	28.57	24.62
Mean	21.51	19.96	19.80	24.51	21.85	24.22	21.98

S.E. of difference of two

- |                            |               |
|----------------------------|---------------|
| 1. marginal means of D     | =1.90 ton/ac. |
| 2. marginal means of V     | =0.65 ton/ac. |
| 5. V means at a level of D | =1.60 ton/ac. |
| 4. D means at a level of V | =2.30 ton/ac. |

Crop :-Sugarcane.

Ref :-U.P. 50(32).

Site :-Sugarcane Res. Sub-Stn., Muzaffarnagar.

Type :-'CV'.

Object :-To find the optimum time of harvesting different varieties of Sugarcane.

## 1. BASAL CONDITIONS :

(i) (a) G.M.—Wheat—Cotton—Sugarcane. (b) Cotton—Fallow. (c) No. (ii) (a) Light loam. (b) Refer soil analysis, Muzaffarnagar. (iii) 19.2.1950. (iv) (a) 3 preparatory ploughings. (b) Sown flat. (c) N.A. (d) Rows 3' apart. (e) N.A. (v) Basal manuring of compost at 45.5 lb./ac. of N. Top dressing A/S at 40 lb./ac. of N and A/N at 40 lb./ac. of N. (vi) As per treatments. (vii) Irrigated. (viii) 10 hoeings. Earthing up in August. (ix) 41.14'. (x) As per treatments.

## 2. TREATMENTS :

Main-plot treatments :

6 dates of harvesting : D<sub>1</sub>=15.11.1950, D<sub>2</sub>=15.12.1950, D<sub>3</sub>=15.1.1951, D<sub>4</sub>=15.2.1951, D<sub>5</sub>=15.3.1951. and D<sub>6</sub>=15.4.1951.

Sub-plot treatments :

3 varieties :V<sub>1</sub>=CO.313 (early), V<sub>2</sub>=CO.421 (mid-season) and V<sub>3</sub>=CO.453 (late).

## 3. DESIGN :

(i) Split-plot. (ii) (a) 6 main-plots/replication and 3 sub-plots/main-plot. (b) N.A. (iii) (a) and (b) Main plot : 58' × 54', sub plot : 58' × 18'. (v) No. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Nil. (iii) Germination, tillers, millable cane counting and sugarcane yield. (iv) (a) 1948-1950. (b) and (c) No. (v) (a) and (b) No. (vi) Nil. (vii) The experiment was conducted by D.S.R. (M).

## 5. RESULTS :

- (i) 23.42 ton/ac.  
 (ii) (a) 1.84 ton/ac.  
 (b) 2.23 ton/ac.  
 (iii) Main effects of D and V are highly significant and interaction  $D \times V$  is not significant.

(iv) Av. yield of sugarcane in ton/ac.

	D <sub>1</sub>	D <sub>2</sub>	D <sub>3</sub>	D <sub>4</sub>	D <sub>5</sub>	D <sub>6</sub>	Mean
V <sub>1</sub>	20.57	19.68	20.51	21.08	20.96	18.52	20.22
V <sub>2</sub>	19.26	23.86	25.99	25.76	24.35	25.55	24.13
V <sub>3</sub>	23.01	26.40	24.71	26.79	28.62	25.86	25.90
Mean	20.95	23.31	23.74	24.54	24.64	23.31	23.43

S E. of difference of two

1. marginal means of D = 0.87 ton/ac.
2. marginal means of V = 0.74 ton/ac.
3. V means at the level of D = 1.82 ton/ac.
4. D means at the level of V = 1.72 ton/ac.

Crop :-Sugarcane. (Ratoon)

Ref :-U.P. 51(30).

Site :-Sugarcane Res. Sub-Stn., Muzaffarnagar.

Type :-'CV'.

Object :—To study the effect of time of harvesting of plant cane on the ratooning capacity of important varieties.

## 1. BASAL CONDITIONS :

(i) (a) G.M.—Wheat—*Sanai* or *Moong*—Sugarcane—Ratoon. (b) Plant sugarcane. (c) Ammo. Phos. at 60 lb./ac. of N. A/S at 60 lb./ac. of N. (ii) (a) Light loam. (b) Refer soil analysis, Muzaffarnagar. (iii) As per treatments. (iv) (a) 2 preparatory ploughings. (b) Sown flat. (c) 3 buds/ft. of a row. (d) Rows 3' apart. (e) N.A. (v) Nil. (vi) As per treatments. (vii) Irrigated. (viii) 4 hoeings, earthing also. (ix) 26.57%. (x) 19 to 22.11.1951.

## 2. TREATMENTS :

Main-plot treatments :

6 dates of harvest of plant cane : D<sub>1</sub>=15.11.1950, D<sub>2</sub>=15.12.1950, D<sub>3</sub>=15.1.1951, D<sub>4</sub>=15.2.1951, D<sub>5</sub>=15.3.1951 and D<sub>6</sub>=15.4.1951.

Sub-plot treatments :

3 varieties : V<sub>1</sub>=CO.313, V<sub>2</sub>=CO.421 and V<sub>3</sub>=CO.453.

## 3. DESIGN :

(i) Split-plot. (ii) (a) 6 main-plots/replication and 3 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) and (b) 58'×18'. (v) No. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Nil. (iii) Germination, tillers, millable cane and sugarcane yield. (iv) (a) 1949—1951. (b) and (c) No. (v) (a) and (b) No. (vi) Nil. (vii) The experiment was conducted by D.S.R.(M).

## 5. RESULTS :

- (i) 15.16 ton/ac.
- (ii) (a) 3.458 ton/ac.  
(b) 2.916 ton/ac.
- (iii) Main effects of D and V are highly significant. Interaction D × V is not significant.
- (iv) Av. yield of sugarcane in ton/ac.

	D <sub>1</sub>	D <sub>2</sub>	D <sub>3</sub>	D <sub>4</sub>	D <sub>5</sub>	D <sub>6</sub>	Mean
V <sub>1</sub>	11.65	12.24	13.29	11.93	15.63	12.20	12.82
V <sub>2</sub>	14.00	14.08	16.77	13.98	19.68	18.34	16.14
V <sub>3</sub>	11.74	11.38	13.98	16.67	23.28	22.10	16.52
Mean	12.46	12.57	14.68	14.19	19.53	17.55	15.16

## S.E. of difference of two

- |                            |                |
|----------------------------|----------------|
| 1. marginal means of D     | =1.630 ton/ac. |
| 2. marginal means of V     | =0.972 ton/ac. |
| 3. V means at a level of D | =2.381 ton/ac. |
| 4i D means at a level of V | =2.537 ton/ac. |

Crop :- Sugarcane.

Ref :- U.P. 52(197).

Site :- Sugarcane Res. Sub-Strn., Neoli.

Type :- 'CV'.

Object :- To study the different harvesting dates of plant crop for taking ratoon crop.

## 1. BASAL CONDITIONS :

(i) (a) No. (b) *Sanai* (sowing on 22.6.1951). (c) No. (ii) (a) Light sandy loam (*kaddar* soil having alkaline patches). (b) Refer soil analysis, Neoli. (iii) 28.1.1952 (iv) (a) Turning in of *Sanai* on 28.8.1951, ploughing by Neoli plough on 28.8.1951, ploughing with Neoli plough and planking on 25.11.1951, harrowing by tractor on 3 and 27.10.1951, 20.12.1951, 9 and 28.1.1952. (b) N.A. (c) and (d) 71 three budded setts/row and 7 lines/plot. (v) *Sanai* green manuring ; G.N.C. at 11.5 sr./plot applied in furrows on 28.1.1952. Manuring with press mud and spreading on 16 to 20.12.1951. Manuring with the mixture of A/S and G.N.C at 25 srs./plot on 18.7.1952. (vi) As per treatments. (vii) Irrigated. (viii) Mulching after rain with harrow on 5.3.1952. hoeing with *khurpi* on 26 and 27.4.1952, 8.5.1952, hoeing by cultivator on 21.5.1952 and 20.6.1952, hoeing with spade after manuring on 18.7.1952. (ix) N.A. (x) As per treatments.

## 2. TREATMENTS :

Main-plot treatments :

3 harvesting dates :  $D_1=15.1.1953$ ,  $D_2=15.2.1953$  and  $D_3=15.3.1953$ .

Sub-plot treatments :

2 varieties :  $V_1=CO.S. 245$  and  $V_2=CO.453$ .

## 3. DESIGN :

(i) Split-plot. (ii) (a) 3 main-plots/replication and 2 sub-plots/main-plot. (b) N.A. (iii) 5. (iv) (a)  $69' \times 21'$ . (b)  $63' \times 15'$ . (v) 3' all round the net plot. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) N.A. (iii) Germination, tiller counting, millable cane and yield. (iv) (a) 1952-1955. (b) and (c) No. (v) (a) and (b) No. (vi) Nil. (vii) The experiment was conducted by D.S.R.(S).

## 5. RESULTS :

- (i) 9.80 ton/ac.  
(ii) (a) 2.53 ton/ac.  
(b) 1.63 ton/ac.  
(iii) Main effects of D and V are not significant. Interaction  $D \times V$  is significant.  
(iv) Av. yield of sugarcane in ton/ac.

	$D_1$	$D_2$	$D_3$	Mean
$V_1$	9.09	9.52	10.28	9.63
$V_2$	9.65	11.96	8.27	9.96
Mean	9.37	10.74	9.28	9.80

## S.E. of difference of two

- |                            |               |
|----------------------------|---------------|
| 1. marginal means of D     | =1.13 ton/ac. |
| 2. marginal means of V     | =0.59 ton/ac. |
| 3. V means at a level of D | =1.03 ton/ac. |
| 4. D means at a level of V | =1.3 ton/ac.  |

Crop :-Sugarcane.

Ref :-U.P. 53(229).

Site :-Sugarcane Res. Sub-Stn., Neoli.

Type :-'CV'.

Object :-To study the effect of harvesting dates of plant Sugarcane for taking a ratoon crop.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) *Sanai* (sown on 28.6.1952). (c) Nil. (ii) (a) Light sandy loam (*khaddar* soil having alkaline patches). (b) Refer soil analysis, Neoli. (iii) 18.2.1953. (iv) (a) Turning in of *sanai* on 18.8.1952, harrowing by tractor on 17.9.1952, ploughing with *Neoli* plough on 21 and 29.9.1952, harrowing by tractor on 2.10.1952, ploughing by *Neoli* plough on 7.10.1952, ploughing by tractor on 11.2.1953, ploughing by *Neoli* plough on 13.2.1953, harrowing by tractor on 15.2.1953. (b) to (e) N.A. (v) *Sanai* green manured. Application of 10 C.L. of F.Y.M. at 20 mds./C.L. on 4 to 5.2.1953, spreading of manure on 9 and 10.2.1953. Application of mixture of A/S and *mohwa* cake at 2 seers 7 ch./plot on 8.7.1953. (vi) As per treatments. (vii) Irrigated. (viii) Hoeing by cultivator on 5 and 30.4.1953, 12.5.1953 and 19.6.1953 and hoeing by spade on 10.6.1953 and 8.7.1953. (ix) N.A. (x) As per treatments.

## 2. TREATMENTS :

Main-plot treatments :

3 dates of harvest :  $D_1=15.1.1953$ ,  $D_2=15.2.1953$  and  $D_3=15.3.1953$ .

Sub-plot treatments :

2 varieties :  $V_1=CO. 245$  and  $V_2=CO. 453$ .

## 3. DESIGN :

(i) Split-plot. (ii) (a) 3 main-plots/replication and 2 sub-plots/main-plot. (b) N.A. (iii) 6. (iv) (a)  $54' \times 24'$ . (b)  $48' \times 18'$ . (v) Plot to plot distance 3'. (vi) Yes.

## 4. GENERAL :

(i) and (ii) N.A. (iii) Germination, tillers, millable cane and sugarcane yield. (iv) (a) 1952—1955. (b) and (c) No. (v) (a) and (b) No. (vi) Nil. (vii) Experiment was conducted by D.S.R. (S).

## 5. RESULTS :

(i) 13.82 ton/ac.

(ii) (a) 8.91 ton/ac.

(b) 4.66 ton/ac.

(iii) Main effect of V is highly significant. Effect of D and interaction  $D \times V$  are not significant.

(iv) Av. yield of sugarcane in ton/ac.

	$D_1$	$D_2$	$D_3$	Mean
$V_1$	12.91	12.14	7.04	10.70
$V_2$	14.43	20.03	16.35	16.94
Mean	13.67	16.08	11.70	13.82

S.E. of difference of two

1. marginal means of D =3.64 ton/ac.
2. marginal means of V =1.55 ton/ac.
3. V means at a level of D =2.69 ton/ac.
4. D means at a level of V =4.10 ton/ac.

Crop :-Sugarcane.

Ref :-U.P. 48(78).

Site :-Sugarcane Res. Stn., Shahjahanpur.

Type :-'CV'.

Object :-To study the optimum time of harvesting different varieties of Sugarcane.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) Green manuring of *sanai*. (c) No. (ii) (a) Loam. (b) Refer soil analysis, Shahjahanpur. (iii) 24 to 26.2.1948. (iv) (a) 3 ploughings by soil turning plough, 4 ploughings by *desi* plough, plankings—7 times, harrowing and picking of roots twice. (b) N.A. (c) 55 three budded setts/line (d) N.A. (e) —. (v) Green manuring of *sanai* (40 lb./ac.) Castor cake at 43 lb./ac. of N during 17 to 19.2.1948. Top dressing of A/S at 37 lb./ac. of N on 14 and 15.5.1948. (vi) As per treatments. (vii) Irrigated. (viii) Hoeing with spring tooth harrow on 14.3.1948, planking on 15 and 16.3.1948, hoeings by cultivator from 24.3.1948 to 11.6.1948 and earthing from 11 to 18.8.1948. (ix) 40.93%. (x) As per treatments.



## 2. TREATMENTS :

Main-plot treatments :

5 dates of harvesting:  $D_1=15$  to 22.12.1948,  $D_2=15$  to 17.1.1949,  $D_3=15$  to 19.2.1949,  $D_4=17$  to 21.3.1949 and  $D_5=29$ , 31.3.1949 and 3.4.1949.Sugarcane in treatment  $D_5$  actually harvested at the end of March, due to the closure of the factory.

Sub-plot treatments :

3 varieties:  $V_1=CO. 453$  (late),  $V_2=CO. 421$  (medium) and  $V_3=CO. 313$  (early).

## 3. DESIGN :

(i) Split-plot. (ii) (a) 5 main-plots/replication and 3 sub-plots/main-plot. (b) N.A. (iii) 6. (iv) (a)  $55' \times 33'$ . (b)  $49' \times 27'$ . (v) 3' at each side of the gross plot left as non experimental area. (vi) Yes.

## 4. GENERAL :

(i) Good, but due to the lodging of plots of CO. 313, it has been damaged to a great extent. (ii) Nil. (iii) Germination counting, tillers, millable cane and sugarcane yield. (iv) (a) 1948-1950. (b) and (c) No. (v) (a) and (b) No. (vi) The yield of variety CO. 453 in the main-plot treatment of April harvesting was missing and has been estimated for analysis and summary of result. (vii) Experiment was conducted by D.S.R.(S).

## 5. RESULTS :

- (i) 27.35 ton/ac.  
(ii) (a) 3.194 ton/ac.  
(b) 2.417 ton/ac.  
(iii) Main effects of D and V are highly significant. Interaction  $D \times V$  is not significant.  
(iv) Av. yield of sugarcane in ton/ac.

	$V_1$	$V_2$	$V_3$	Mean
$D_1$	31.76	29.57	25.23	28.55
$D_2$	31.90	28.94	23.57	28.14
$D_3$	32.86	30.58	23.97	29.14
$D_4$	31.07	25.44	19.90	25.47
$D_5$	30.54	25.26	19.67	25.16
Mean	31.63	27.96	22.47	27.35

S.E. of difference of two

- marginal means of D (none of the treatment means contains missing value) =1.065 ton/ac.
- marginal means of V (none of the treatment means contains missing value) =0.624 ton/ac.
- V means at a level of D (none of the means contains missing value) =1.396 ton/ac.
- D means at a level of V (none of the means contains missing value) =1.559 ton/ac.
- marginal means of D (one of them contains missing value) =1.080 ton/ac.
- marginal means of V (one of them contains missing value) =0.634 ton/ac.
- V means at a level of D (one of them contains missing value) =1.141 ton/ac.
- D means at a level of V (one of them contains missing value) =1.650 ton/ac.

Crop :- Sugarcane.

Ref :- U.P. 49(58).

Site :- Sugarcane Res. Stn., Shahjahanpur.

Type :- 'CV'.

Object :- To study the optimum time of harvesting different varieties of Sugarcane.

## 1. BASAL CONDITIONS :

(i) (a) Sugarcane-wheat-fallow (or *sanai*). (b) Green manuring (*sanai*). (c) No. (ii) (a) Loam. (b) Refer soil analysis, Shahjahanpur. (iii) 16 to 19.2.1949. (iv) (a) 2 ploughings by victory plough, 8 by *desi* plough, 2 harrows and *pata*. (b) N.A. (c) 55 three budded setts/line. (d) and (e) N.A. (v) G.M. at 60 lb./ac. of N on 13.2.1949, G.N.C. at 45 lb./ac. of N on 4.6.1949 and A/S at 45 lb./ac. of N on 26 and 27.5 1949 and 4.6.1949. (vi) As per treatments. (vii) Irrigated. (viii) Hoeing with cultivator or mixing manure, 4 weedings, picking of roots, earthing and bunding. (ix) 51.22". (x) As per treatments.

## 2. TREATMENTS :

## Main-plot treatments :

5 dates of harvesting :  $D_1=15$  to 17.12.1949,  $D_2=16$  to 18.1.1950,  $D_3=15, 16, 20$  and 26.2.1950.  
 $D_4=2, 3, 13, 16, 17, 22$  and 23.3.1950 and  $D_5=11$  and 15.4.1950.

## Sub-plot treatments :

3 varieties :  $V_1=CO.453$  (late),  $V_2=CO.313$  (early) and  $V_3=COS.186$  (medium).

## 3. DESIGN :

(i) Split-plot. (ii) (a) 5 main-plots/replication and 3 sub-plots/main-plot. (b) N.A. (iii) 6. (iv) (a)  $55' \times 27'$   
 (b)  $49' \times 21'$ . (v) 3' around. (vi) Yes.

## 4. GENERAL :

(i) Good, lodged due to heavy rains in September. (ii) Nil. (iii) Tillers, millable cane and sugarcane yield. (iv) (a) 1948-1950. (b) and (c) No. (v) (a) and (b) No. (vi) There has been some damage to the crop by jackals and human beings especially in varieties CO.313 and COS.186 (some plots only).  
 (vii) Experiment was conducted by D.S.R. (S).

## 5. RESULTS :

(i) 23.30 ton/ac.  
 (ii) (a) 2.531 ton/ac.  
 (b) 2.037 ton/ac.  
 (iii) Only V effect is highly significant.  
 (iv) Av. yield of sugarcane in ton/ac.

	$V_1$	$V_2$	$V_3$	Mean
$D_1$	20.07	23.75	24.56	22.79
$D_2$	20.05	23.93	26.40	23.46
$D_3$	18.38	24.46	26.47	23.10
$D_4$	19.48	25.50	27.33	24.10
$D_5$	18.67	24.53	25.97	23.06
Mean	19.33	24.43	26.15	23.30

## S.E. of difference of two

1. D marginal means = 0.843 ton/ac.
2. V marginal means = 0.526 ton/ac.
3. V means at the same level of D = 1.176 ton/ac.
4. D means at the same level of V = 1.278 ton/ac.

Crop :- Sugarcane.

Ref :- U.P. 50(198).

Site :- Sugarcane Res. Stn., Shahjahanpur.

Type :- 'CV'.

Object :- To find the optimum time of harvesting of different Sugarcane varieties (plant cane).

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) *Guar*. (c) N.A. (ii) (a) Loam. (b) Refer soil analysis, Shahjahanpur. (iii) 17 and 18.3.1949. (iv) (a) Ploughing by victory plough, tractor, *desi* plough and *pata*. (b) N.A. (c) 55 three budded setts/line. (d) N.A. (e) —. (v) Town compost at 30 lb./ac. of N and A/S & Castor cake at 60 lb./ac. of N as top dressing. (vi) As per treatments. (vii) Irrigated. (viii) Hoeing with cultivator earthing, hoeing with harrow and binding. (ix) 39.94%. (x) As per treatments.

## 2. TREATMENTS :

## Main-plot treatments :

5 dates of harvesting :  $D_1=15.12.1949$ ,  $D_2=15.1.1950$ ,  $D_3=15.2.1950$ ,  $D_4=15.3.1950$  and  $D_5=15.4.1950$ .

## Sub-plot treatments :

3 varieties :  $V_1=CO.453$  (late),  $V_2=CO.313$  (early) and  $V_3=COS.186$  (medium).

## 3. DESIGN :

(i) Split-plot. (ii) (a) 5 main-plots/replication and 3 sub-plots/main-plot. (b) N.A. (iii) 5. (iv) (a) 55'×27'. (b) 49'×21'. (v) 3' around. (vi) Yes.

## 4. GENERAL :

(i) Satisfactory. (ii) CO.313, in slightly effected by mosaic disease in July. (iii) Sugarcane yield. (iv) (a) 1949—1950. (b) and (c) No. (v) (a) and (b) No. (vi) The 3 lines of April harvesting have been damaged by jackals. Plots of CO.313 are subjected to heavy damage followed by COS.186. Due to the great damage in April harvesting, April harvesting has been excluded from analysis and summary of result. (vii) Experiment was conducted by D.S.R. (S).

## 5. RESULTS :

- (i) 18.80 ton/ac.  
 (ii) (a) 1.794 ton/ac.  
 (b) 1.813 ton/ac.  
 (iii) Only V effect is highly significant.  
 (iv) Av. yield of sugarcane in ton/ac.

	V <sub>1</sub>	V <sub>2</sub>	V <sub>3</sub>	Mean
D <sub>1</sub>	14.86	18.68	23.92	19.15
D <sub>2</sub>	13.63	18.86	24.88	19.12
D <sub>3</sub>	14.38	18.05	22.97	18.47
D <sub>4</sub>	12.91	19.29	23.13	18.44
Mean	13.94	18.72	23.73	18.80

S.E. of difference of two

1. marginal means of D =0.655 ton/ac.
2. marginal means of V =0.573 ton/ac.
3. V means at the same level of D =1.147 ton/ac.
4. D means at the same level of V =1.143 ton/ac.

Crop :- Sugarcane (Ratoon).

Ref :- U.P. 49(57).

Site :- Sugarcane Res. Stn., Shahjahanpur.

Type :- 'CV'.

Object :—To study the effect of different times of harvesting plant Sugarcane on its ratoon.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Sugarcane. (c) N.A. (ii) (a) Loam. (b) Refer soil analysis, Shahjahanpur. (iii) As per treatments. (iv) (a) to (e) N.A. (v) Top dressing of G.N.C. at 75 lb./ac. of N on 10 to 13.6.1949 and A/S at 75 lb./ac. of N on 10th to 13.6.1949. (vi) As per treatments. (vii) Irrigated. (viii) Hoeing with *kassi* and with cultivator, earthing and bunding. (ix) 49.53°. (x) 16 to 26 12.1949.

## 2. TREATMENTS :

Main-plot treatments :

5 dates of harvesting plant sugarcane : D<sub>1</sub>=15 to 22.12.1948, D<sub>2</sub>=15 to 17.1.1949, D<sub>3</sub>=15 to 19.2.1949, D<sub>4</sub>=17 to 21.3.1949 and D<sub>5</sub>=28 to 31.3.1949 and 3.4.1949.

Sub-plot treatments :

3 varieties : V<sub>1</sub>=CO. 313 (early), V<sub>2</sub>=CO. 421 (late) and V<sub>3</sub>=CO. 453 (late).

## 3. DESIGN :

(i) Split-plot. (ii) (a) 5 main-plots/replication and 3 sub-plots/main-plot. (b) N.A. (iii) 6. (iv) (a) 55'×33'. (b) 49'×27'. (v) 3' around. (vi) Yes.

## 4. GENERAL :

(i) Badly lodged in September by rains followed by stormy wind and hence damaged. (ii) CO. 421 variety has been badly effected by yellow-leaf disease, digging of smut affected shoots on 11.5.49 (iii) Tillers and sugarcane yield. (iv) (a) No. (b) and (c) No. (v) (a) and (b) No. (vi) Nil. (vii) Experiment was conducted by D.S.R. (S).

## 5. RESULTS :

- (i) 29.32 ton/ac.  
 (ii) (a) 3.741 ton/ac.  
 (b) 3.1571 ton/ac.  
 (iii) D effect is significant, V effect is highly significant, while interaction is not significant.  
 (iv) Av. yield of sugarcane in ton/ac.

	V <sub>1</sub>	V <sub>2</sub>	V <sub>3</sub>	Mean
D <sub>1</sub>	24.77	21.44	34.47	26.89
D <sub>2</sub>	25.51	23.81	35.91	28.41
D <sub>3</sub>	28.22	24.42	40.76	31.13
D <sub>4</sub>	26.22	27.27	38.01	30.50
D <sub>5</sub>	26.11	25.97	36.95	29.68
Mean	26.17	24.58	37.22	29.32

## S.E. of difference of two

1. D marginal means =1.247 ton/ac.  
 2. V marginal means =0.815 ton/ac.  
 3. V means at the same level of D =1.822 ton/ac.  
 4. D means at the same level of V =1.941 ton/ac.

Crop :- Sugarcane.

Ref :- U.P. 50(197).

Site :- Sugarcane Res. Stn., Shahjahanpur.

Type :- 'CV'.

Object :- To study the effect of different times of harvesting plant Sugarcane on its ratoon.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) Plant sugarcane. (c) N.A. (ii) (a) Loam. (b) Refer soil analysis, Shahjahanpur. (iii) Plant sugarcane planted on 16, 19.2.1949. (iv) (a) and (b) N.A. (c) 55, three budded setts/line for plant sugarcane. (d) N.A. (e) . (v) Top dressing of Castor cake at 75 lb./ac. of N on 5 and 6.6.1950 and A/S at 75 lb./ac. of N on 6 and 7.7.1950. (vi) As per treatments. (vii) Irrigated. (viii) Hoeing with *kassi*, cultivator and earthing. (ix) 37.57°. (x) 19 to 23.12.1950.

## 2. TREATMENTS :

## Main-plot treatments :

5 dates of harvesting plant sugarcane : D<sub>1</sub>=15 to 17.12.1949, D<sub>2</sub>=15 to 18.1.1950, D<sub>3</sub>=15 to 20.2.1950, D<sub>4</sub>=16 to 22.3.1950 and D<sub>5</sub>=16 to 22.4.1950.

## Sub-plot treatments :

3 varieties : V<sub>1</sub>=CO. 313, V<sub>2</sub>=CO. 186 (medium) and V<sub>3</sub>=CO. 453 (late).

## 3. DESIGN :

(i) Split-plot. (ii) (a) 5 main-plots/replication and 3 sub-plots/main-plot. (b) N.A. (iii) 6. (iv) (a) 55'×27'. (b) 49'×21'. (v) 3' around. (vi) Yes.

## 4. GENERAL :

(i) Satisfactory. (ii) Attack of slight yellow leaf disease in some plots of CO. 313. (iii) Tillers, millable cane and sugarcane yield. (iv) (a) No. (b) and (c) No. (v) (a) and (b) No. (vi) Nil. (vii) Experiment was conducted by D.S.R. (S). April harvesting date (D<sub>5</sub>) has been deleted as the plant sugarcane crop was heavily damaged, So D<sub>5</sub> does not occur in this also [Refer 50(198)].

## 5. RESULTS :

- (i) 15.01 ton/ac.  
 (ii) (a) 2.960 ton/ac.  
 (b) 2.038 ton/ac.  
 (iii) Effect of D is significant and effect of V is highly significant while interaction is not significant.  
 (iv) Av. yield of sugarcane in ton/ac.

	V <sub>1</sub>	V <sub>2</sub>	V <sub>3</sub>	Mean
D <sub>1</sub>	9.92	14.53	13.53	12.66
D <sub>2</sub>	12.07	15.72	18.49	15.43
D <sub>3</sub>	12.80	15.85	18.51	15.72
D <sub>4</sub>	12.50	16.64	19.59	16.24
Mean	11.82	15.68	17.53	15.01

## S.E. of difference of two

1. D marginal means = 0.987 ton/ac.  
 2. V marginal means = 0.588 ton/ac.  
 3. V means at the same level of D = 1.176 ton/ac.  
 4. D means at the same level of V = 1.377 ton/ac.

Crop :- Sugarcane.

Ref :- U.P. 51(127).

Site :- Sugarcane Res. Stn., Shahjahanpur.

Type :- 'CV'.

Object :- To study the effect of different times of harvesting plant Sugarcane of different Sugarcane varieties on its ratoon.

## 1. BASAL CONDITIONS .

(i) (a) N.A. (b) Sugarcane. (c) T.C. at 30 lb./ac. of N, castor cake at 60 lb./ac. of N and A/S at 60 lb./ac. of N. (ii) (a) Loam. (b) Refer soil analysis, Shahjahanpur. (iii) As per treatments. (iv) (a) to (e) N.A. (v) Castorcake at 75 lb./ac. of N and A/S at 75 lb./ac. on 25.5.1951. (vi) As per treatments. (vii) Irrigated. (viii) Hoeing with *kassi* and cultivator, earthing. (ix) 31.98" (x) 11 to 29.12.1951.

## 2. TREATMENTS :

## Main-plot treatments :

5 dates of harvesting plant cane : D<sub>1</sub>=17, 18.12.1951. D<sub>2</sub>=15.1.1952. D<sub>3</sub>=15, 16, 17.2.1952.  
 D<sub>4</sub>=9.3.1952. D<sub>5</sub>=18 to 23.4.1952.

## Sub-plot treatments :

3 varieties : V<sub>1</sub>=CO.313 (early). V<sub>2</sub>=CO.186 (med). V<sub>3</sub>=CO.453 (late).

## 5. DESIGN :

(i) Split-plot. (ii) (a) 5 main-plots/replication and 3 sub-plots/main-plot. (b) N.A. (iii) 5. (iv) (a) 55' x 27'. (b) 49' x 21'. (v) 3' around. (vi) Yes.

## 4. GENERAL :

(i) Satisfactory. (ii) Nil. (iii) Tiller count, millable cane and sugarcane yield. (iv) (a) 1950-1951. (b) and (c) No. (v) (a) and (b) No. (vi) Nil. (vii) The experiment was conducted by D.S.R. (S).

## 5. RESULTS :

- (i) 16.86 ton/ac.  
 (ii) (a) 3.208 ton/ac.  
 (b) 2.984 ton/ac.  
 (iii) Only V effect is highly significant.

(iv) Av. yield of sugarcane in ton/ac.

	V <sub>1</sub>	V <sub>2</sub>	V <sub>3</sub>	Mean
D <sub>1</sub>	12.71	19.86	14.21	15.59
D <sub>2</sub>	14.24	19.52	15.84	16.53
D <sub>3</sub>	14.03	22.09	16.00	17.37
D <sub>4</sub>	15.33	23.47	16.69	18.50
D <sub>5</sub>	13.78	20.08	15.02	16.29
Mean	14.02	21.00	15.55	16.86

S.E. of difference of two

- |                              |                |
|------------------------------|----------------|
| 1. marginal means of D       | =1.171 ton/ac. |
| 2. marginal means of V       | =0.844 ton/ac. |
| 3. V means at the level of D | =1.887 ton/ac. |
| 4. D means at the level of V | =1.935 ton/ac. |

Crop :- Sugarcane.

Ref :- U.P. 48(72).

Site :- Sugarcane Res. Stn., Shahjahanpur.

Type :- 'CV'.

Object :—To study the methods of improving germination of sugarcane with special reference to planting during cold weather.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Sanai*. (c) No. (ii) (a) Loam. (b) Refer soil analysis, Shahjahanpur. (iii) As per treatments (iv) (a) and (b) N.A. (c) 24 three budded setts/row. (d) N.A. (e) —. (v) *Sanai* as B.D. (date of application N.A.) and A/S at 50 lb./ac. of N as top dressing. (vi) As per treatments. (vii) N.A. (viii) N.A. (ix) N.A. (x) N.A.

## 2. TREATMENTS :

Main-plot treatments:

All combinations of (1) and (2)

(1) 6 dates of sowing : S<sub>1</sub>=Oct. 1947, S<sub>2</sub>=Nov. 1947, S<sub>3</sub>=Dec. 1947, S<sub>4</sub>=Jan. 1948, S<sub>5</sub>=Feb. 1948 and S<sub>6</sub>=March 1948.

(2) 2 varieties : V<sub>1</sub>=CO.313 (early) and V<sub>2</sub>=CO.421 (medium).

Sub-plot treatments :

5 seed treatments : seed kept under cowdung for T<sub>1</sub>=1 day, T<sub>2</sub>=2 days, T<sub>3</sub>=3 days, T<sub>4</sub>=4 days and T<sub>5</sub>=control (no treatment).

## 3. DESIGN :

(i) Split-plot. (ii) (a) 12 main-plots/replication and 5 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) and (b) 28' × 9'. (v) Nil. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) N.A. (iii) Sugarcane yield. (iv) (a) to (c) No. (v) (a) and (b) No. (vi) Nil. (vii) The experiment was conducted by D.S.R. (S).

## 5. RESULTS :

(i) 19.32 ton/ac.

(ii) (a) 5.834 ton/ac.

(b) 4.736 ton/ac.

(iii) Effect of S and interaction V × S are highly significant. All others are not significant.

(iv) Av. yield of sugarcane in ton/ac.

	T <sub>1</sub>	T <sub>2</sub>	T <sub>3</sub>	T <sub>4</sub>	T <sub>5</sub>	Mean	V <sub>1</sub>	V <sub>2</sub>
S <sub>1</sub>	19.39	16.67	17.43	17.18	23.41	18.81	17.62	19.59
S <sub>2</sub>	15.01	16.90	16.29	19.36	17.18	16.95	14.16	19.73
S <sub>3</sub>	20.37	21.34	19.94	20.95	23.04	21.13	23.56	18.66
S <sub>4</sub>	23.46	20.37	24.42	18.19	24.96	22.28	25.51	19.05
S <sub>5</sub>	19.66	20.22	23.30	24.11	21.44	21.75	21.06	22.44
S <sub>6</sub>	13.11	14.77	12.85	16.25	18.00	15.00	13.35	16.64
Mean	18.50	18.37	19.04	19.34	21.34	19.32	19.21	19.42
V <sub>1</sub>	18.83	18.94	18.28	19.55	20.47	19.21		
V <sub>2</sub>	18.17	17.80	19.79	19.13	22.20	19.42		

S.E. of difference of two

- |                                     |                |
|-------------------------------------|----------------|
| 1. S marginal means                 | =1.506 ton/ac. |
| 2. V marginal means                 | =1.230 ton/ac. |
| 3. means of the body of S × V table | =2.130 ton/ac. |
| 4. T marginal means                 | =1.116 ton/ac. |
| 5. T means at the same level of S   | =2.735 ton/ac. |
| 6. T means at the same level of V   | =1.579 ton/ac. |
| 7. V means at the same level of T   | =1.658 ton/ac. |
| 8. S means at the same body of T    | =2.872 ton/ac. |

Crop :-Sugarcane.

Ref :-U.P. 52(263).

Zone :-Doiwala (Dehradun).

Type :-'CV'.

Object :-To study the optimum time of harvesting plant of crop of cane for taking ratoon crop.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) Paddy and *Toria*. (c) N.A. (ii) Loam. (iii) 300 mds. compost on 26.2.1952. (iv) As per treatments. (v) (a) 12 ploughings ; hoeing by *kassi* on 19.4.1952, 13.5.1952 and 16.6.1952, Weeding on 12.7.1952. (b) Flat system. (c) and (d) 59, three budded setts/row ; 472, three budded setts/plot ; 8 rows 3' apart. (e) N.A. (vi) 27.3.1952. (vii) Irrigated. (viii) N.A. (ix) N.A. (x) As per treatments.

## 2. TREATMENTS :

Main-plot treatments :

3 dates of harvest : D<sub>1</sub>=15.1.1953, D<sub>2</sub>=15.2.1953 and D<sub>3</sub>=15.3.1953.

Sub-plot treatments :

2 varieties : V<sub>1</sub>=CO.453 and V<sub>2</sub>=CO.356.

## 3. DESIGN :

(i), (ii) Split-plot design with 6 replications. (iii) (a) Main-plot 57'×48'. sub-plot 57'×24'. (b) Main-plot 51'×42', sub-plot 51'×18'. (iv) N.A.

## 4. GENERAL :

(i) N.A. (ii) N.A. (iii) Germination, tillers, millable cane and sugarcane yield. (iv) (a) 1952-1953. (b) and (c) N.A. (v) N.A. (vi) Nil. (vii) The experiment was conducted by D.S.R.(M). on cultivators' fields.

## 5. RESULTS :

- (i) 23.25 ton/ac.  
 (ii) (a) 2.554 ton/ac.  
 (b) 2.192 ton/ac.  
 (iii) None of the effects and their interaction is significant.

(iv) Av. yield of sugarcane in ton/ac.

	D <sub>1</sub>	D <sub>2</sub>	D <sub>3</sub>	Mean
V <sub>1</sub>	23.89	22.95	24.87	23.90
V <sub>2</sub>	22.95	20.54	24.32	22.60
Mean	23.42	21.74	24.60	23.25

S.E. of difference of two

1. marginal means of D =1.043 ton/ac.
2. marginal means of V =0.731 ton/ac.
3. V means at a level of D =0.895 ton/ac.
4. D means at a level of V =1.374 ton/ac.

Crop :-Sugarcane.

Ref :-U.P. 53(278).

Zone :-Doiwala (Dehradun).

Type :-'CV'.

Object :—To study the effect of time of harvesting plant crop of cane on the yield of succeeding ratoon crop.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) Plant cane. (c) 300 mds. compost on 26.2.1952. (ii) Loam. (iii) N.A. (iv) As per treatments. (v) (a) 2 ploughings by *desi* plough, 1 hoeing by spade, 1 hoeing by *khurpi*. (b) (plant cane) Flat system. (c) and (d) 59, three budded setts/row, 472 buds/plot, 8 rows 3' apart. (e) N.A. (vi) As per treatments. (vii) Irrigation by canal. (viii) N.A. (ix) N.A. (x) 24.12.1953.

## 2. TREATMENTS :

Main-plot treatments :

3 dates of harvesting : D<sub>1</sub>=15.1.1953; D<sub>2</sub>=15.2.1953 and D<sub>3</sub>=15.3.1953.

Sub-plot treatments :

2 varieties : V<sub>1</sub>=CO.453 and V<sub>2</sub>=CO.356.

## 3. DESIGN :

(i), (ii) Split-plot design with 6 replications. N.A. (iii) (a) Main-plot 57'×48' and sub-plot 57'×24'. (b) Main-plot 51'×42'. and sub-plot 51'×18'. (iv) N.A.

## 4. GENERAL :

(i) N.A. (ii) N.A. (iii) Tiller count, millable cane and sugarcane yield. (iv) (a) 1952—1953. (b) and (e) N.A. (vi) Nil. (vii) The experiment was conducted by D.S.R.(M) on cultivators' fields..

## 5. RESULTS :

- (i) 21.71 ton/ac.
- (ii) (a) 1.552 ton/ac.  
(b) 0.791 ton/ac.
- (iii) Main effect of V is highly significant and of D is significant.
- (iv) Av. yield of sugarcane in ton/ac.

	D <sub>1</sub>	D <sub>2</sub>	D <sub>3</sub>	Mean
V <sub>1</sub>	21.25	22.19	23.43	22.29
V <sub>2</sub>	20.34	20.85	22.19	21.13
Mean	20.80	21.52	22.81	21.71

S.E. of difference of two

1. marginal means of D =0.634 ton/ac.
2. marginal mean of V =0.264 ton/ac.
3. V means at a level of D =0.457 ton/ac.
4. D means at a level of V =0.711 ton/ac.



Crop :- Sugarcane.  
Zone :- Mohammadi (Kheri).

Ref :- U.P. 52(203).  
Type :- 'CV'.

Object :- To study the optimum time of harvesting Sugarcane for taking a ratoon crop.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) *Sanai* for G.M. (c) No. (ii) Loam. (iii) *Sanai* as G.M. Top-dressing G.N.C. at 10 md./ac. on 25.3.1952. and A/S. 1½ md./ac. on 21.6.1952. (iv) As per treatments. (v) (a) Ploughing by tractor on 5.2.1952, 6.2.1952, furrow making by tractor on 10 and 11.2.1952, earthing up by tractor on 30.6.1952. (b) Flat planting. (c) 1752 buds/plot (d) 8 rows/plot. (e) N.A. (vi) 11.2.1952. (vii) Irrigated. (viii) Hoeings by *kudali* on 25.2.1952. and by cultivator on 18.3.1952, 25.4.1952 and 26.5.1952. (ix) N.A. (x) As per treatments.

2. TREATMENTS :

Main-plot treatments :

3 dates of harvesting :  $D_1=20.1.1953$ ,  $D_2=13.2.1953$  and  $D_3=21.3.1953$ .

Sub-plot treatments :

2 varieties :  $V_1=CO.K.30$  (mid-early) and  $V_2=CO.453$  (late).

3. DESIGN :

(i) and (ii) Split plot with 6 replications, 3 main-plots/replication and 2 sub-plots/main-plot. (iii) (a) 73'×28'. (b) 66'×21'. (vi) N.A.

4. GENERAL :

(i) N.A. (ii) N.A. (iii) Sugarcane yield. (iv) (a) No. (b) and (c) N.A. (v) N.A. (vi) Nil. (vii) The expt. was conducted by D.S.R.(S) on cultivators' fields.

5. RESULTS :

- (i) 11.08 ton/ac.  
(ii) (a) 3.159 ton/ac.  
(b) 2.512 ton/ac.  
(iii) Main effects of D and V and interaction  $D \times V$  are highly significant.  
(iv) Av. yield of sugarcane in ton/ac.

	$V_1$	$V_2$	Mean
$D_1$	12.84	8.12	10.48
$D_2$	8.54	8.25	8.39
$D_3$	18.27	10.49	14.38
Mean	13.22	8.95	11.08

S.E. of difference of two

- marginal means of D = 1.290 ton/ac.
- marginal means of V = 0.838 ton/ac.
- V means at a level of D = 1.451 ton/ac.
- D means at a level of V = 1.648 ton/ac.

Crop :- Sugarcane (Ratoon).  
Zone :- Mohammadi (Kheri).

Ref :- U.P. 52(201).  
Type :- 'CV'.

Object :- To study the effect of time of harvesting of plant crop Sugarcane on the yield of succeeding ratoon crop.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) Plant cane. (c) N.A. (ii) Sandy Loam. (iii) N.A. (iv) As per treatments. (v) (a) to (e) N.A. (vi) As per treatments. (vii) N.A. (viii) N.A. (ix) N.A. (x) 12.1.1953.

**2. TREATMENTS :****Main-plot treatments :**

3 dates of harvesting of plant sugarcane :  $D_1=15.1.1952$ ,  $D_2=15.2.1952$  and  $D_3=15.3.1952$ .

**Sub-plot treatments :**

2 varieties :  $V_1=CO.K.30$  (mid-early) and  $V_2=CO.453$  (late).

**3. DESIGN :**

(i) and (ii) 6 replications in split-plot, 3 main-plots/replication and 2 sub-plots/main-plot. (iii) (a)  $73' \times 24'$   
(b)  $67' \times 18'$ . (iv) N.A.

**4. GENERAL :**

(i) N.A. (ii) N.A. (iii) Sugarcane yield. (iv) (a) No. (b) N.A. (c) N.A. (v) N.A. (vi) Nil. (vii) The expt. was conducted by D.S.R.(S) on cultivators' fields.

**5. RESULTS :**

(i) 3.315 ton/ac.

(ii) (a) 1.507 ton/ac.

(b) 2.674 ton/ac.

(iii) Main effect of V is highly significant, main effect of D and interaction  $D \times V$  are not significant.

(iv) Av. yield of sugarcane is ton/ac.

	$V_1$	$V_2$	Mean
$D_1$	4.970	1.338	3.154
$D_2$	5.700	1.819	3.759
$D_3$	4.871	1.194	3.032
Mean	5.180	1.450	3.31

**S.E. of difference of two**

- |                            |                |
|----------------------------|----------------|
| 1. marginal means of D     | =0.615 ton/ac. |
| 2. marginal means of V     | =0.891 ton/ac. |
| 3. V means at a level of D | =1.544 ton/ac. |
| 4. D mean at a level of V  | =1.253 ton/ac. |

**Crop :- Sugarcane.**

**Zone :- Gologokaranath (Kheri).**

**Ref :- U.P. 53(234).**

**Type :- 'CV'.**

**Object :-** To study the effect of time of harvesting plant crop of Sugarcane on the yield of succeeding ratoon crop.

**1. BASAL CONDITIONS :**

(i) (a) N.A. (b) Plant sugarcane. (c) G.N.C. at 10 md./ac. on 25.3.1952 and at A/S  $1\frac{1}{2}$  md./ac. on 21.6.1952. (ii) Loam. (iii) N.A. (iv) As per treatments. (v) (a) to (e) N.A. (vi) As per treatments. (vii) N.A. (viii) N.A. (ix) 45°. (x) 16 to 18.2.1954.

**2. TREATMENTS :****Main-plot treatments :**

3 dates of harvesting of plant crop :  $D_1=20.1.1953$ ,  $D_2=13.2.1953$  and  $D_3=21.3.1953$ .

**Sub-plot treatments :**

2 varieties :  $V_1=CO.K.30$  (mid-early) and  $V_2=CO.453$  (late).

**3. DESIGN :**

(i, (ii) Split-plot with 6 replications. 3 main-plots/block and 2 sub-plots/main-plot. (iii) (a)  $73' \times 28'$ .  
(b)  $66' \times 21'$ . (iv) N.A.

## 4. GENERAL :

(i) and (ii) N.A. (iii) Tillers, millable cane and sugarcane yield. (iv) (a) No. (b) and (c) N.A. (v) N.A. (vi) Nil. (vii) The experiment was conducted by D.S.R.(S) on cultivators' fields.

## 5. RESULTS :

- (i) 8.78 ton/ac.  
 (ii) (a) 2.65 ton/ac.  
 (b) 3.20 ton/ac.  
 (iii) Main effect of V is highly significant. Main effect of D and interaction D×V are not significant.  
 (iv) Av. yield of sugarcane in ton/ac.

	D <sub>1</sub>	D <sub>2</sub>	D <sub>3</sub>	Mean
V <sub>1</sub>	12.80	9.72	12.22	11.58
V <sub>2</sub>	5.60	6.16	6.19	5.98
Mean	9.20	7.94	9.20	8.78

## S.E. of difference of two

1. marginal means of D = 1.082 ton/ac.  
 3. marginal means of V = 1.067 ton/ac.  
 3. V means at a level of D = 1.848 ton/ac.  
 4. D means at a level of V = 1.696 ton/ac.

Crop :- Sugarcane,

Ref :- U.P. 51(157).

Zone :- Gola (Kheri),

Type :- 'CV'.

Object :- To study the of optimum time of harvesting plant crop of Sugarcane for taking a ratoon crop.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) *Sanai* as G.M.. (c) N.A. (ii) Loam. (iii) *Mohwa* cake. (iv) As per treatments (v) (a) Ploughing 4 times by tractor on 21 and 29.1.1951. Earthing up by tractor on 15.6.1951. 4 hoeings by cultivator and *kudali*. (b) Flat sowing. (c) 3504 buds/plot. (d) rows 3' apart. (e) N.A. (vi) 1 and 2.2.1953. (vii) Irrigated. (viii) N.A. (ix) 47°. (x) As per treatments.

## 2. TREATMENTS :

## Main-plot treatments :

3 dates of harvest : D<sub>1</sub>=15.1.1951, D<sub>2</sub>=15.2.1951 and D<sub>3</sub>=15.3.1951.

## Sub-plot treatments :

2 varieties : V<sub>1</sub>=CO.K.30 and V<sub>2</sub>=CO.453.

## 3. DESIGN :

(i) and (ii) Split-plot with 6 replications. 3 main-plots/replication and 2 sub-plots/main-plot. (iii) (a) 73'×24'. (b) 67'×18'. (iv) N.A.

## 4. GENERAL :

(i) and (ii) N.A. (iii) Germination % and sugarcane yield. (iv) (a) No. (b) and (c) N.A. (v) N.A. (vi) Nil. (vii) The experiment was conducted by D.S.R.(S) on cultivators' fields.

## 5. RELULTS :

- (i) 18.37 ton/ac.  
 (ii) (a) 5.02 ton/ac.  
 (b) 4.16 ton/ac.  
 (iii) Main effect of D alone is significant.

(iv) Av. yield of sugarcane in ton/ac.

	D <sub>1</sub>	D <sub>2</sub>	D <sub>3</sub>	Mean
V <sub>1</sub>	21.59	21.70	13.76	19.02
V <sub>2</sub>	20.18	18.57	14.42	17.72
Mean	20.89	20.13	14.09	18.37

S.E. of difference of two

1. marginal means of D = 2.05 ton/ac.
2. marginal means of V = 1.35 ton/ac.
3. V means at a level of D = 2.40 ton/ac.
4. D means at a level of V = 2.66 ton/ac.

Crop :- Sugarcane.

Ref :- U.P. 50(221).

Zone :- Daurala (Meerut).

Type :- 'CV'.

Object :- To study the optimum time of harvesting plant crop of Sugarcane for taking a ratoon crop.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) Maize. (c) N.A. (ii) Loam. (iii) N.A. (iv) As per treatments. (v) (a) and (b) N.A. (c) 60 three budded setts/row. (d) 18 rows/main-plot. (e) N.A. (vi) 14.3.1950. (vii) to (ix) N.A. (x) As per treatments.

## 2. TREATMENTS :

Main-plot treatments :

3 dates of harvesting : D<sub>1</sub>=15.1.1951, D<sub>2</sub>=15.2.1951 and D<sub>3</sub>=16.3.1951.

Sub-plot treatments :

2 varieties : V<sub>1</sub>=COS. 245 and V<sub>2</sub>=CO. 421.

## 3. DESIGN :

(i) and (ii) Split-plot design with 4 replications. 3 main-plots/block and 2 sub-plots/main-plot (iv) (a) 60'×27'. (b) 54'×21'. (iv) N.A.

## 4. GENERAL :

(i) and (ii) N.A. (iii) Germination and sugarcane yield. (iv) (a) 1950—1952. (b) and (c) N.A. (v) N.A. (vi) Nil. (vii) The experiment conducted by D.S.R.(M) on cultivators' fields.

## 5. RESULTS :

- (i) 29.39 ton/ac.
- (ii) (a) 2.988 ton/ac.
- (b) 0.963 ton/ac.
- (iii) None of the effects and their interaction is significant.
- (iv) Av. yield of sugarcane in ton/ac.

	V <sub>1</sub>	V <sub>2</sub>	Mean
D <sub>1</sub>	31.65	31.01	31.33
D <sub>2</sub>	30.20	29.06	29.63
D <sub>3</sub>	26.72	27.69	27.21
Mean	29.52	29.25	29.39

S.E. of difference of two

1. marginal means of D = 1.494 ton/ac.
2. marginal means of V = 0.393 ton/ac.
3. V means at a level of D = 0.681 ton/ac.
4. D means at a level of V = 1.570 ton/ac.

Crop :- Sugarcane.

Ref :- U.P. 51(205).

Zone :- Daurala (Meerut).

Type :- 'CV'.

Object :- To study the optimum time of harvesting plant crop of Sugarcane for taking ratoon crop.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) *Chari* and *guar*. (c) N.A. (ii) Loam. (iii) N.A. (iv) As per treatments. (v) (a) and (b) N.A. (c) 67 three budded setts/row and 2314 buds/plot. (d) 7 rows/plot. (e) N.A. (vi) 26 and 27.2.1951. (vii) to (ix) N.A. (x) As per treatments.

## 2. TREATMENTS :

Main-plot treatments :

3 dates of harvest :  $D_1=15.1.1952$ ,  $D_2=15.2.1952$  and  $D_3=15.3.1952$ .

Sub-plot treatments :

2 varieties :  $V_1=CO. 245$  and  $CO. 421$ .

## 3. DESIGN :

(i) and (ii) 5 replications in Split-plot. 3 main-plots/block and 2 sub-plots/main-plot (iii) (a)  $65' \times 21'$ . (b)  $59' \times 15'$ . (iv) N.A.

## 4. GENERAL :

(i) and (ii) N.A. (iii) Germination and sugarcane yield. (iv) (a) 1950—1952. (b) and (c) N.A. (v) N.A. (vi) Nil. (vii) The experiment was conducted by D.S.R.(M) on cultivators' fields.

## 5. RESULTS :

- (i) 44.89 ton/ac.  
 (ii) (a) 0.586 ton/ac.  
 (b) 0.575 ton/ac.  
 (iii) None of the effects and their interaction is significant.  
 (iv) Av. yield of sugarcane in ton/ac.

	$V_1$	$V_2$	Mean
$D_1$	44.75	44.84	44.80
$D_2$	44.75	44.62	44.68
$D_3$	44.84	45.56	45.20
Mean	44.78	45.01	44.89

S.E. of difference of two

- |                            |                |
|----------------------------|----------------|
| 1. marginal means of D     | =0.262 ton/ac. |
| 2. marginal means of V     | =0.210 ton/ac. |
| 3. V means at a level of D | =0.363 ton/ac. |
| 4. D means at a level of V | =0.367 ton/ac. |

Crop :- Sugarcane.

Ref :- U.P. 52(257).

Zone :- Daurala (Meerut).

Type :- 'CV'.

Object :- To study the effect of time of harvesting plant crop of Sugarcane on the yield of succeeding ratoon crop.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) Plant sugarcane. (c) N.A. (ii) Loam. (iii) F.Y.M. at 300 md. on 10.4.1952 and A/S at 1 md. 20 seers on 12.5.1952. (iv) As per treatments. (v) Hoeing by cultivator on 19.4.1952, 16.5.1952, hoeing by phawra on 26.5.1952 and 12.6.1952. (b) Flat system of planting. (c) 67 setts/row, 459 setts/plot. (d) 7 rows 3' apart. (e) N.A. (vi) As per treatments (vii) Irrigated (viii) N.A. (ix) N.A. (x) 13.2.1953.

## TREATMENTS :

Main-plot treatments :

3 dates of harvest of plant crop :  $D_1=15.1.1952$ ,  $D_2=15.2.1952$  and  $D_3=15.3.1952$ .

Sub-plot treatments :

2 varieties :  $V_1=CO. 245$  and  $V_2=CO. 421$ .

**3. DESIGN :**

(i) and (ii) Split-plot with 5 replications. 3 main-plots/block and 2 sub-plots/main-plot. (iii) (a) Main-plot : 65'×42' and sub-plot : 65'×21'. (b) Main-plot : 59'×36' and sub-plot : 59'×15'. (iv) N.A.

**4. GENERAL :**

(i) N.A. (ii) N.A. (iii) Sugarcane yield. (iv) (a) No. (b) and (c) N.A. (v) N.A. (vi) Nil. (vii) The experiment was conducted by D.S.R. (M) on cultivators' fields.

**5. RESULTS :**

- (i) 22.54 ton/ac.  
 (ii) (a) 0.609 ton/ac.  
 (b) 0.034 ton/ac.  
 (iii) Main effect of D is highly significant. Others are not significant.  
 (iv) Av. yield of sugarcane in ton/ac.

	V <sub>1</sub>	V <sub>2</sub>	Mean
D <sub>1</sub>	22.24	22.19	22.22
D <sub>2</sub>	23.64	23.60	23.62
D <sub>3</sub>	21.74	21.83	21.78
Mean	22.54	22.54	22.54

## S.E. of difference of two

1. marginal mean of D = 0.273 ton/ac.  
 2. marginal means of V = 0.013 ton/ac.  
 3. V means at a level of D = 0.022 ton/ac.  
 4. D means at a level of V = 0.273 ton/ac.

Crop :- Sugarcane.  
 Zone :- Daurala (Meerut).

Ref :- U.P. 52(260).  
 Type :- 'CV'.

Object :- To study the optimum time of harvesting plant crop of Sugarcane for taking a ratoon crop.

**1. BASAL CONDITIONS :**

(i) (a) N.A. (b) Fallow. (c) Nil. (ii) Loam. (iii) Manuring with *okhla* sledge at 198 mds. on 28.2.1952+ A/S at 1 md. 7 seers 4 chk. on 12.6.1952. (iv) As per treatments. (v) (a) Hoeing by *desi* plough on 8.4.1952, 3.6.1952, hoeing by spade 26.5.1952, 21.6.1952 and earthing by *phawra* on 25.7.1952. (b) Flat system of planting. (c) to (e) N.A. (vi) N.A. (vii) Irrigated. (viii) N.A. (ix) N.A. (x) As per treatments.

**2. TREATMENTS :****Main-plot treatments :**

3 dates of harvest : D<sub>1</sub>=15.1.1953, D<sub>2</sub>=15.2.1953 and D<sub>3</sub>=15.3.1953.

**Sub-plot treatments :**

2 varieties : V<sub>1</sub>=CO. 245 and V<sub>2</sub>=CO. 421.

**3. DESIGN :**

(i) and (ii) Split-plot with 6 replications. 3 main-plots/block and 2 sub-plots/main-plot. (iii) (a) N.A. (b) 1/30.00 ac. (approximately). (iv) N.A.

**4. GENERAL :**

(i) N.A. (ii) N.A. (iii) Sugarcane yield. (iv) (a) 1950-1952. (b) and (c) N.A. (v) N.A. (vi) Nil. (vii) The experiment was conducted by D.S.R. (M) on cultivators' fields.

**5. RESULTS :**

- (i) 10.17 ton/ac.  
 (ii) (a) 3.370 ton/ac.  
 (b) 1.857 ton/ac.  
 (iii) Main effects of D and V and their interaction are not significant.

(iv) Av. yield of sugarcane in ton/ac.

	V <sub>1</sub>	V <sub>2</sub>	Mean
D <sub>1</sub>	9.73	9.19	9.46
D <sub>2</sub>	9.67	9.83	9.75
D <sub>3</sub>	11.54	11.05	11.30
Mean	10.31	10.02	10.17

S.E. of difference of two

1. marginal means of D = 1.376 ton/ac.
2. marginal means of V = 0.619 ton/ac.
3. V means at a level of D = 1.072 ton/ac.
4. D means at a level of V = 1.571 ton/ac.

Crop :- Sugarcane.

Ref :- U.P. 51(204).

Zone :- Simbhaoli (Meerut).

Type :- 'CV'.

Object :- To study the time of harvesting plant crop of Sugarcane for taking a ratoon crop.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) Fallow. (c) No. (ii) Clay loam. (iii) Manuring at 75 lb./ac. of N on 12.5.1951. (iv) As per treatments. (v) (a) Ploughing by *praja* plough and *desi* plough. (b) Planting of sugarcane by *desi* plough, flat system of planting, (c) and (d) 6 rows/plot, 65 setts (three budded)/row, 1170 buds/plot. (vi) 25.2.1951. (vii) Irrigated. (viii) N.A. (ix) N.A. (x) As per treatments.

## 2. TREATMENTS :

Main-plot treatments :

3 dates of harvest : D<sub>1</sub>=15.1.1952, D<sub>2</sub>=15.2.1952 and D<sub>3</sub>=15.3.1952.

Sub-plot treatments :

2 varieties : V<sub>1</sub>=CO.245 and V<sub>2</sub>=CO.421.

## 3. DESIGN :

(i) and (ii) Split-plot with 4 replications. 3 main-plots/block and 2 sub-plot/main-plot. (iii) (a) 63'×18'. (b) 57'×12'. (iv) N.A.

## 4. GENERAL :

(i) N.A. (ii) N.A. (iii) Sugarcane yield. (iv) (a) No. (b) N.A. (c) N.A. (v) N.A. (vi) Nil. (vii) The experiment was conducted by D.S.R. (M) on cultivators' fields.

## 5. RESULTS :

- (i) 55.35 ton/ac.
- (ii) (a) 3.710 ton/ac.
- (b) 3.648 ton/ac.
- (iii) Main effect of D is significant. Main effects of V is highly significant. Interaction is not significant.
- (iv) Av. yield of sugarcane in ton/ac.

	V <sub>1</sub>	V <sub>2</sub>	Mean
D <sub>1</sub>	46.79	60.46	53.62
D <sub>2</sub>	54.97	64.77	59.87
D <sub>3</sub>	49.71	55.41	52.56
Mean	50.49	60.21	55.35

S.E. of difference of two

1. marginal means of D = 1.855 ton/ac.
2. marginal means of V = 1.489 ton/ac.
3. V means at a level of D = 2.579 ton/ac.
4. D means at a level of V = 2.602 ton/ac.

Crop :- Sugarcane (Ratoon).

Ref :- U.P. 52(262).

Zone :- Simbhaoli (Meerut).

Type :- 'CV'.

Object :- To study the effect of time of harvesting plant crop of Sugarcane on the yield of succeeding ratoon crop.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) Plant cane. (c) Manuring at 75 lb./ac. of N as F.Y.M. on 12.5.1951. (ii) Clay loam. (iii) G.N.C. at 45 lb./ac. of N on 14.6.1952. A/S at 15 lb./ac. of N on 5.7.1952. (iv) As per treatments. (v) (a) Ploughing by *praja* plough on 31.3.1952 (for hoeing). Ploughing by *desi* plough on 18.4.1952, 7.5.1952 and 25.5.1952 (for hoeing). (b) Flat system of sowing. (c) and (d) 65 (three budded) setts/row, 590 setts/plot. (e) N.A. (vi) As per treatments. (vii) Irrigated. (viii) N.A. (ix) N.A. (x) 12 to 24.12.1952.

## 2. TREATMENTS :

Main-plot treatments :

3 dates of harvest of plant crop :  $D_1=15.1.1952$ ,  $D_2=15.2.1952$  and  $D_3=15.3.1952$ .

Sub-plot treatments :

2 varieties :  $V_1=CO.245$  and  $V_2=CO.421$ .

## 3. DESIGN :

(i) and (ii) Split-plot with 4 replications. 3 main-plots/block and 2 sub-plot/main-plot. (iii) (a) Main-plot : 63' x 36'. sub-plot : 53' x 18'. (b) Main-plot : 57' x 30', sub-plot : 57' x 12'. (iv) N.A.

## 4. GENERAL :

(i) N.A. (ii) N.A. (iii) Tillers, millable cane and sugarcane yield. (iv) (a) No. (b) and (c) N.A. (v) N.A. (vi) Nil. (vii) The experiment was conducted by D.S.R. (M) on cultivators' fields.

## 5. RESULTS :

(i) 29.69 ton/ac.  
 (ii) (a) 2.786 ton/ac.  
 (b) 1.021 ton/ac.  
 (iii) Main effects of D and V are highly significant. Interaction  $D \times V$  is not significant.  
 (iv) Av. yield of sugarcane in ton/ac.

	$V_1$	$V_2$	Mean
$D_1$	27.49	23.86	25.68
$D_2$	32.31	28.36	30.34
$D_3$	36.26	29.83	33.04
Mean	32.02	27.35	29.69

S.E. of difference of two

- |                            |                |
|----------------------------|----------------|
| 1. marginal means of D     | =1.393 ton/ac. |
| 2. marginal means of V     | =0.417 ton/ac. |
| 3. V means at a level of D | =0.722 ton/ac. |
| 4. D means at a level of V | =1.484 ton/ac. |

Crop :- Sugarcane.

Ref :- U.P. 52(264).

Zone :- Modinagar (Meerut).

Type :- 'CV'.

Object :- To study the optimum time of harvesting plant crop of Sugarcane for taking a ratoon crop.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) *Santai* (G.M.) (c) No. (ii) Sandy loam. (iii) *Santai* (G.M.) (iv) As per treatments. (v) (a) Hoeing by cultivator and spade on 4, 5.4.1952. Hoeing and weeding by cultivator and spade. Hoeing by *kassi* and earthing. (b) Flat system of planting. (c) and (d) 60, three budded setts/row ; 360, three budded setts/plot ; 6 rows 2' apart. (e) N.A. (vi) 24 and 25.2.1952. (vii) Irrigated. (viii) N.A. (ix) N.A. (x) As per treatments.



**2. TREATMENTS :****Main-plot treatments :**3 dates of harvest :  $D_1=15.1.1953$ ,  $D_2=15.2.1953$  and  $D_3=15.3.1953$ .**Sub-plot treatments :**2 varieties :  $V_1=CO.245$  and  $V_2=CO.421$ .**3. DESIGN :**(i), (ii) Split-plot in 4 replications. 3 main-plots/block and 2 sub-plots/main-plot (iii) (a) Main-plot :  $58' \times 36'$ . sub-plot :  $58' \times 18'$ . (b) Main-plot :  $52' \times 30'$ . sub-plot :  $52' \times 12'$ . (iv) N.A.**4. GENERAL :**

(i) N.A. (ii) Stripping of Pyrilla leaves. (iii) Germination, tillers, millable cane and sugarcane yield. (iv) (a) No. (b) and (c) N.A. (v) N.A. (vi) Nil. (vii) The experiment was conducted by D.S.R. (M) on cultivators' fields.

**5. RESULTS :**

(i) . . 32.54 ton/ac.

(ii) (a) 5.809 ton/ac.

(b) 2.979 ton/ac.

(iii) Main effect of V is highly significant. Others are not significant.

(iv) Av. yield of sugarcane in ton/ac.

	$V_1$	$V_2$	Mean
$D_1$	33.06	28.90	30.98
$D_2$	34.97	29.73	32.35
$D_3$	39.33	29.23	34.28
Mean	35.79	29.29	32.54

**S.E. of difference of two**

1. marginal means of D = 2.904 ton/ac.
2. marginal means of V = 1.216 ton/ac.
3. V means at a level of D = 2.107 ton/ac.
4. D means at a level of V = 3.264 ton/ac.

**Crop :-Sugarcane.****Ref :-U.P. 53(277).****Zone :-Modinagar (Meerut).****Type :-'CV'.****Object :-To study the effect of time of harvesting plant crop of Sugarcane on the yield of succeeding ratoon crop.****1. BASAL CONDITIONS :**(i) (a) N.A. (b) Plant cane. (c) *Sanai* (G.M.) (ii) Sandy loam. (iii) N.A. (iv) As per treatments. (v) (a) N.A. (b) Flat system. (c) and (d) 60 setts/row ; 350, three budded setts/plot ; 6 rows/plot 3' apart. (e) N.A. (vi) As per treatments. (vii) N.A. (viii) N.A. (ix) N.A. (x) 6 and 7.12.1953.**2. TREATMENTS :****Main-plot treatments :**3 dates of harvesting of plant crop :  $D_1=15.1.1953$ ,  $D_2=15.2.1953$  and  $D_3=15.3.1953$ .**Sub-plot treatments :**2 varieties :  $V_1=CO.245$  and  $V_2=CO.421$ .**3. DESIGN :**(i), (ii) Split-plot with 4 replications. 3 main-plots/block and 2 sub-plots/main-plot. (iii) Main-plot :  $58' \times 36'$  and sub-plot :  $58' \times 18'$ . (b) Main-plot :  $52' \times 30'$  and sub-plot :  $52' \times 12'$ . (iv) N.A.**4. GENERAL :**

(i) N.A. (ii) N.A. (iii) Tillers, millable cane and sugarcane yield. (iv) (a) No. (b) and (c) N.A. (v) N.A. (vi) Nil. (vii) The experiment was conducted by D.S.R.(M) on cultivators' fields.

## 5. RESULTS :

- (i) 19.67 ton/ac.  
 (ii) (a) 9.541 ton/ac.  
 (b) 4.490 ton/ac.  
 (iii) Main effect of V is highly significant. Interaction  $D \times V$  is significant. Effect of D is not significant.  
 (iv) Av. yield of sugarcane in ton/ac.

	V <sub>1</sub>	V <sub>2</sub>	Mean
D <sub>1</sub>	9.35	25.58	17.46
D <sub>2</sub>	20.14	21.70	20.92
D <sub>3</sub>	15.23	26.02	20.62
Mean	14.91	24.43	19.67

S.E. of difference of two

1. marginal means of D =4.770 ton/ac.  
 2. marginal means of V =1.833 ton/ac.  
 3. V means at a level of D =3.175 ton/ac.  
 4. D means at a level of V =5.272 ton/ac.

Crop :-Sugarcane.

Ref :-U.P. 51(203).

Zone :-Shamli (Muzaffarnagar).

Type :-'CV'.

Object :-To study the optimum time of harvesting plant crop of Sugarcane for taking a ratoon crop.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) *Sanai*. (c) No. (ii) Loam. (iii) *Sanai*+A/S at 45 lb./ac. of N on 21.7.1951. (iv) As per treatments. (v) (a) Ploughing by *desi* plough on 2 and 6.3.1951. Ploughing by tractor on 3 to 5.3.1951, hoeing by *kassi*, cultivator, and *phawra*. (b) Flat system. (c) and (d) 7 rows/sub-plot, 2058 buds/plot. 49 three budded setts/row. (e) N.A. (vi) 6.3.1951. (vii) Irrigated. (viii) Nil. (ix) N.A. (x) As per treatments.

## 2. TREATMENTS :

Main-plot treatments :

3 dates of harvest : D<sub>1</sub>=15.1.1952, D<sub>2</sub>=15.2.1952 and D<sub>3</sub>=15.3.1952.

Sub-plot treatments :

2 varieties : V<sub>1</sub>=CO.421 and V<sub>2</sub>=CO.245.

## 3. DESIGN :

(i) and (ii) Split-plot with 4 replications, 3 main-plots/block and 2 sub-plots/main-plot. (iii) (a) 47'×21'. (b) 41'×15'. (iv) N.A.

## 4. GENERAL :

(i) and (ii) N.A. (iii) Germination, tillers, millable cane and sugarcane yield. (iv) (a) 1951-1952. (b) and (c) N.A. (v) N.A. (vi) Nil. (vii) The experiment was conducted by D.S.R.(M) on cultivators' fields.

## 5. RESULTS :

- (i) 25.95 ton/ac.  
 (ii) (a) 1.977 ton/ac.  
 (b) 2.176 ton/ac.  
 (iii) None of the effects and their interaction is significant.  
 (iv) Av. yield of sugarcane in ton/ac.

	V <sub>1</sub>	V <sub>2</sub>	Mean
D <sub>1</sub>	24.20	27.55	25.88
D <sub>2</sub>	25.86	24.82	25.34
D <sub>3</sub>	26.44	26.83	26.64
Mean	25.50	26.40	25.95

S.E. of difference of two

1. marginal means of D =0.989 ton/ac.  
 2. marginal means of V =0.888 ton/ac.  
 3. V means at a level of D =1.539 ton/ac.  
 4. D means at a level of V =1.470 ton/ac.

Crop :-Sugarcane.  
Zone :-Shamli (Muzaffarnagar).

Ref :-U.P. 52(259).  
Type :-'CV'.

Object :—To study the optimum time of harvesting of plant crop of Sugarcane for taking a ratoon crop.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) Paddy. (c) N.A. (ii) Loam. (iii) *Sanaï* G.M. at 75 lb./ac. of N+A/S at 25 lb./ac. N on 20.7.1952 and 2J lb./ac. of N on 18.8.1952. (iv) As per treatments. (v) (a) Ploughings by tractor, disc plough and *desi* plough, hoeings by *kassi* and cultivator. (b) Flat system of planting. (c) and (d) 52, three budded setts/row and 260 three budded setts/plot. (e) N.A. (vi) 4.4.1952. (vii) Irrigated. (viii) N.A. (ix) N.A. (x) As per treatments.

2. TREATMENTS :

Main-plot treatments :

3 dates of harvest :  $D_1=15.1.1953$ ,  $D_2=15.2.1953$  and  $D_3=15.3.1953$ .

Sub-plot treatments :

2 varieties :  $V_1=CO.421$  and  $V_2=CO.S.245$ .

3. DESIGN :

(i) and (ii) Split-plot with 4 replications. 3 main-plots/blok ; 2 sub-plots/main-plot. (iii),(a) Main-plot :  $50' \times 30'$  and sub-plot :  $50' \times 15'$ . (b) Main-plot :  $44' \times 24'$  and sub-plot :  $44' \times 9'$ . (iv) N.A.

4. GENERAL :

(i) and (ii) N.A. (iii) Germination, tillers, millable cane and sugarcane yield. (iv) (a) 1951—1952. (b) and (c) N.A. (v) N.A. (vi) Nil. (vii) The experiment was conducted by D.S.R.(M) on cultivators' fields.

5. RESULTS :

- (i) 32.36 ton/ac.  
(ii) (a) 2.734 ton/ac.  
(b) 2.840 ton/ac.  
(iii) Only main effect of V is highly significant.  
(iv) Av. yield of sugarcane in ton/ac.

	$V_1$	$V_2$	Mean
$D_1$	29.09	35.16	32.12
$D_2$	31.11	34.30	32.70
$D_3$	29.25	35.26	32.26
Mean	29.82	34.91	32.36

S.E. of difference of two

1. marginal means of D =1.367 ton/ac.  
2. marginal means of V =1.160 ton/ac.  
3. V means at a level of D =1.008 ton/ac.  
4. D means at a level of V =1.971 ton/ac.

Crop :-Sugarcane (Ratoon).  
Zone :-Shamli (Muzaffarnagar).

Ref :-U.P. 51(202).  
Type :-'CV'.

Object :—To study the effect of time of harvesting plant crop of Sugarcane on the yield of succeeding ratoon crop.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) Plant sugarcane. (c) N.A. (ii) Loam. (iii) 60 lb./ac. of N as A/S on 28.6.1951 and 60 lb./ac. of N as A/S on 22.7.1951. (iv) As per treatments. (v) (a) Hoeing by *phawara* on 3.4.1951, 9.5.1951 and 19.6.1951. (b) N.A. (c) 18 rows/plot. (d) and (e) N.A. (vi) As per treatments. (vii) Irrigated. (viii) and (ix) N.A. (x) 3 and 4.12.1951.

**2. TREATMENTS :****Main-plot treatments :**

3 dates of harvest of plant crop :  $D_1=15.1.1951$ ,  $D_2=15.2.1951$  and  $D_3=15.3.1951$ .

**Sub-plot treatments :**

2 varieties :  $V_1=CO. 421$ , and  $V_2=CO. 245$ .

**3. DESIGN :**

(i) and (ii) Split-plot with 4 replications. 3 main-plots/block and 2 sub-plots/main-plot. (iii) (a)  $60' \times 27'$ .  
(b)  $54' \times 21'$ . (iv) N.A.

**4. GENERAL :**

(i) and (ii) N.A. (iii) Millable cane and sugarcane yield. (iv) (a) 1951 -1953. (b) and (c) N.A. (v) N.A. (vi) Nil. (vii) The experiment was conducted by D.S.R.(M) on cultivators' fields.

**5. RESULTS :**

(i) 18.93 ton/ac.

(ii) (a) 3.777 ton/ac.

(b) 1.360 ton/ac.

(iii) Main effects of D and V and their interaction are not significant.

(iv) Av. yield of sugarcane in ton/ac.

	$V_1$	$V_2$	Mean
$D_1$	16.60	15.86	16.23
$D_2$	18.84	18.45	18.64
$D_3$	22.66	21.18	21.92
Mean	19.37	18.50	18.93

**S.E. of difference of two**

1. marginal means of D =1.889 ton/ac.
2. marginal means of V =0.555 ton/ac.
3. V means at a level of D =0.961 ton/ac.
4. D means at a level of V =2.007 ton/ac.

**Crop :-Sugarcane (Ratoon).**

**Zone :-Shamli (Muzaffarnagar).**

**Ref :-U.P. 52(258).**

**Type :-'CV'.**

**Object :-**To study the effect of time of harvesting of plant crop of Sugarcane on the yield of succeeding ratoon crop.

**1. BASAL CONDITIONS :**

(i) (a) No. (b) Plant sugarcane. (c) *Sanal*+manuring by A/S at 45 lb./ac. of N on 21.7.1951. (ii) Loam. (iii) A/S at 60 lb./ac. of N on 16.7.1952 and at 60 lb./ac. of N on 17.8.1952. (iv) (a) As per treatments. (v) (a) N.A. (b) Flat system of planting. (c) and (d) 49 three budded setts/row, 343 setts/plot, 7 rows 3' apart. (e) N.A. (vi) As per treatments. (vii) Irrigated. (viii) and (ix) N.A. (x) 12 and 13.1.1953.

**2. TREATMENTS :****Main-plot treatments :**

3 dates of harvest of plant sugarcane :  $D_1=15.1.1952$ ,  $D_2=15.2.1952$  and  $D_3=15.3.1952$ .

**Sub-plot treatments :**

2 varieties :  $V_1=CO. 421$  and  $V_2=CO.S. 245$ .

**3. DESIGN :**

(i) and (ii) Split-plot with 4 replications. 3 main-plots/block and 2 sub-plots/main-plot (iii) (a) Main-plot :  $47' \times 42'$  and sub-plot :  $47' \times 21'$ . (b) Main-plot :  $41' \times 36'$  and sub-plot :  $41' \times 15'$ . (iv) N.A.

**4. GENERAL :**

(i) and (ii) N.A. (iii) Millable cane and sugarcane yield. (iv) (a) 1951-1953. (b) and (c) N.A. (v) N.A. (vi) Nil. (vii) The experiment was conducted by D.S.R.(M) on cultivators' fields.

**5. RESULTS :**

(i) 19.50 ton/ac.

(ii) (a) 1.608 ton/ac.

(b) 1.042 ton/ac.

(iii) Main effects of D and V are highly significant. Interactions  $D \times V$  is not significant.

(iv) Av. yield of sugarcane in ton/ac.

	V <sub>1</sub>	V <sub>2</sub>	Mean
D <sub>1</sub>	14.44	17.17	15.80
D <sub>2</sub>	18.41	21.89	20.15
D <sub>3</sub>	20.33	24.78	22.56
Mean	17.73	21.28	19.50

S.E. of difference of two

1. marginal means of D = 0.804 ton/ac.
2. marginal means of V = 0.426 ton/ac.
3. V means at a level of D = 0.737 ton/ac.
4. D means at a level of V = 0.958 ton/ac.

Crop :- Sugarcane (Ratoon).

Ref :- U.P. 53(279).

Zone :- Shamli (Muzaffarnagar).

Type :- 'CV'.

Object :- To study the effect of time of harvesting plant crop of sugarcane on the yield of succeeding ratoon crop.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) Plant sugarcane. (c) Sanai at 75 lb./ac. of N+A/S. at 25 lb./ac. of N on 20.7.1953 and at 20. lb./ac. of N on 18.8.1952. (ii) Loam. (iii) Top dressing 60 lb./ac. of N as castor cake on 29.5.1953 and top dressing 60 lb./ac. of N as A/S on 11.7.1953. (iv) As under treatments. (v) (a) Hoeing by spade and M.C. cultivator on 17.4. 18.5.1953 and 18.5.1953. (b) Flat system (c) 52 three budded setts/row 260 setts/plot. 5 rows 3' apart. (vi) As per treatments. (vii) Irrigated. (viii) N.A. (ix) N.A. (x) 8.12.1953 to 10.12.1953.

## 2. TREATMENTS :

Main-plot treatments :

3 dates of harvesting plant sugarcane : D<sub>1</sub>=15.1.1953, D<sub>2</sub>=15.2.1953, and D<sub>3</sub>=15.3.1953.

Sub-plot treatments :

2 varieties : V<sub>1</sub>=CO.421 and V<sub>2</sub>=CO.245.

## 3. DESIGN :

(i) and (b) Split-plot with 4 replications. 3 main/plots block ; 2 sub-plots/main-plot. (iii) (a) Main-plot : 50'×30' and sub-plot : 50'×15'. (b) Main-plot : 44'×24' and sub-plot : 44'×9'. (iv) N.A.

## 4. GENERAL :

(i) N.A. (ii) N.A. (iii) Tillers, millable cane and sugarcane yield. (iv) (a) 1951—1953. (b) N.A. (c) N.A. (v) N.A. (vi) Nil. (vii) The expt. was conducted by D.SR.(M) on cultivators' fields.

## 5. RESULTS :

(i) 18.23 ton/ac.

(ii) (a) 5.131 ton/ac.

(b) 2.194 ton/ac.

(iii) Main effect of V is significant, others are not the significant.

(iv) Av. yield of sugarcane in ton/ac.

	V <sub>1</sub>	V <sub>2</sub>	Mean
D <sub>1</sub>	15.53	18.44	16.98
D <sub>2</sub>	16.28	18.51	17.40
D <sub>3</sub>	17.13	23.49	20.31
Mean	16.31	20.15	18.23

S.E. of difference of two.

1. marginal means of D	=2.566 ton/ac.
2. marginal means of V	=0.896 ton/ac.
3. V means at a level of D	=1.552 ton/ac.
4. D means at a level of V	=2.790 ton/ac.

Crop :- Sugarcane.  
Zone :- Maholi (Sitapur).

Ref :- U.P. 52(206).  
Type :- 'CV'.

Object :- To study the optimum time of harvesting plant crop of Sugarcane for taking a ratoon crop.

### 1. BASAL CONDITIONS :

(i) (a) N.A. (b) *Sanai* for G.M- (c) No. (ii) Loam. (iii) F.Y.M. at 12 C.L./ac. on 29.1.1952. (iv) As per treatments. (v) (a) Ploughing by tractor, earthing up by tractor and hoeings by *kudali*. (b) Flat planting. (c) and (d) 1752 buds/plot., 8 rows/plot. (e) N.A. (vi) 1.3.1952. (vii) Irrigated. (viii) N.A. (ix) 35°. (x) As per treatments.

### 2. TREATMENTS :

Main-plot treatments :

3 dates of harvest :  $D_1=26.1.1953$ ,  $D_2=28.2.1953$  and  $D_3=9.3.1953$ .

Sub-plot treatments :

$V_1=COK. 30$  (mid-early)  $V_2=CO.453$ (late).

### 3. DESIGN :

(i) and (ii) split-plot with 6 replications. 3 main-plots/replications and 2 sub-plots/main-plot. (iii) (a) 73' x 24'. (b) 66' x 18'. (iv) N.A.

### 4. GENERAL :

(i) N.A. (ii) N.A. (iii) Sugarcane yield. (iv) (a) No. (b) N.A. (c) N.A. (v) N.A. (vi) Nil. (vii) The expt. was conducted by D.S.R.(S) on cultivators' fields.

### 5. RESULTS :

(i) 37.95 ton/ac.

(ii) (a) 3.451 ton/ac.

(b) 4.897 ton/ac.

(iii) Main effects of D and V are not significant, interaction  $D \times V$  is highly significant.

(iv) Av. yield of sugarcane in ton/ac.

	$V_1$	$V_2$	Mean
$D_1$	29.43	44.59	37.01
$D_2$	43.38	32.92	38.15
$D_3$	37.91	39.44	38.68
Mean	35.91	38.98	37.95

S.E. of difference of two

1. marginal means of D	=1.409 ton/ac.
2. marginal means of V	=1.632 ton/ac.
3. V means at a level of D	=2.827 ton/ac.
4. D means at a level of V	=2.446 ton/ac.

Crop :- Sugarcane.  
Zone :- Maholi (Sitapur),

Ref :- U.P. 53(233).  
Type :- 'CV'.

Object :—To study the effect of time of harvesting plant crop of Sugarcane on the yield of succeeding ratoon crop.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) F.Y.M. at 12 C.L./ac. on 29.1.1952. (ii) Loam. (iii) N.A. (iv) As per treatments. (v) (a) and (b) N.A. (c) and (d) 8 rows at 3' distance. (e) N.A. (vi) As per treatments. (vii) N.A. (viii) N.A. (ix) 45°. (x) -6, 27.12.1953.

2. TREATMENTS :

Main-plot treatments :

3 dates of harvest of plant sugarcane ;  $D_1=26.1.1953$ ,  $D_2=18.2.1953$  and  $D_3=9.3.1953$ .

Sub-plot treatments :

2 varieties :  $V_1=COK.30$  (mid-early) and  $V_2=CO. 453$  (late).

3. DESIGN :

(i) and (ii) Split-plot with 6 replication, 3 main-plots/block, 2 sub-plots/main-plot. (iii) (a) 73'x24'. (b) 67'x18'. (iv) N.A.

4. GENERAL :

(i) N.A. (ii) N.A. (iii) Tillers, millable cane and sugarcane yield. (iv) (a) No. (b) and (c) N.A. (v) N.A. (vi) Nil. (vii) The experiment was conducted by D.S.R. (S) on cultivators' fields.

5. RESULTS :

- (i) 28.48 ton/ac.  
(ii) (a) 2.09 ton/ac.  
(b) 2.78 ton/ac.  
(iii) Main effect of D is significant, main effect of V and interaction  $D \times V$  are not significant.  
(iv) Av. yield of sugarcane in ton/ac.

	$V_1$	$V_2$	Mean
$D_1$	27.36	29.30	28.33
$D_2$	29.93	30.37	30.15
$D_3$	27.07	26.82	26.95
Mean	28.12	28.83	28.48

S.E. of difference of two

1. marginal means of D = 0.92 ton/ac.  
2. marginal means of V = 0.93 ton/ac.  
3. V means at a level of D = 1.60 ton/ac.  
4. D means at a level of V = 1.42 ton/ac.

Crop :- Sugarcane.  
Zone :- Haldwani (Nainital).

Ref :- U.P. 51(153).  
Type :- 'CV'.

Object :—To study the optimum time of planting Sugarcane in different tracts.

BASAL CONDITIONS :

(i) (a) N.A. (b) G.M., *sanal* (failed). (c) N.A. (ii) Clay loam. (iii) G.N.C. at 60 lb.+A/S at 20 lb./ac. at the time of planting and 40 lb./ac. of A/S top dressed. (iv) CO. 453 and CO. 421. (v) (a) Ploughing by Athens and harrow on 3.10.1950, ploughing by *desi* on 11.10.1950, ploughing by furrow on 12.10.1950 and *pata* on 13.10.1950, 3 hoeings by *kassi* on 26, 27.4.1951, hoeing by cultivator on 8.5.1951 and hoeing by *kassi* on 26.5.1951. (b) Flat sowing. (c) 1440 buds/plot. (d) and (e) N.A. (vi) As per treatments. (vii) Irrigated. (viii) N.A. (ix) 50°. (x) 19 to 21.3.1952.

**2. TREATMENTS :****Main-plot treatments :**

5 dates of sowing :  $D_1$ =Middle of October, 1950,  $D_2$ =Middle of November, 1950,  $D_3$ =Middle of January, 1951,  $D_4$ =Middle of February, 1951 and  $D_5$ =Middle of March, 1951.

**Sub-plot treatments :**

2 varieties :  $V_1$ =CO. 421 and  $V_2$ =CO. 453.

**3. DESIGN :**

(i) and (ii) Split-plot with 6 replications, 5 main-plots/replication and 2 sub-plots/main-plot. (iii) (a) 60'×24'. (b) 54'×18'. (iv) N.A.

**4. GENERAL :**

(i) N.A. (ii) N.A. (iii) Germination % and sugarcane yield. (iv) (a) to (c) N.A. (v) N.A. (vi) Nil. (vii) The experiment was conducted by D.S.R. (S) on cultivators' fields.

**5. RESULTS :**

- (i) 27.01 ton/ac.  
 (ii) (a) 5.51 ton/ac.  
 (b) 5.70 ton/ac.  
 (iii) Main effects of D and V are highly significant, interaction D×V is not significant.  
 (iv) Av. yield of sugarcane in ton/ac.

	$D_1$	$D_2$	$D_3$	$D_4$	$D_5$	Mean
$V_1$	33.45	32.09	27.24	14.65	11.38	23.76
$V_2$	41.71	33.62	30.46	29.33	16.19	30.26
Mean	37.58	32.85	28.85	21.99	13.78	27.01

S.E. of difference of two

1. marginal means of D =2.249 ton/ac.
2. marginal means of V =1.472 ton/ac.
3. V means at a level of D =3.291 ton/ac.
4. D means at a level of V =3.380 ton/ac.

**Crop :-Sugarcane.**

**Ref :-U.P. 52(205).**

**Zone :-Kichha (Nainital).**

**Type :-'CV'.**

**Object :-To study the optimum time of harvesting plant crop of Sugarcane for taking a ratoon crop.**

**1. BASAL CONDITIONS :**

(i) (a) N.A. (b) *Dhaincha* for G.M. (c) No. (ii) Clayey loam. (iii) Top dressing of G.N.C. at 40 lb./ac. of N on 21.5.1952 and A/S at 45 lb./ac. of N on 14.6.1952. (iv) As per treatments. (v) (a) Turning in of *Dhaincha* by disc plough on 23 to 25.9.1951, Ploughing by Athens plough on 19.12.1951, ploughing by disc plough on 6, 7.1.1952. By disc harrow on 23.1.1952. By ransom on 12.1.1952. *Pata* on 20.12.1951, 23.1.1952 and 14.2.1952. Picking of grass on 12.1.1952. Hoeing by *kassi* and cultivator. (b) Flat planting ridges drawn by diar ridger. (c) and (d) 1314 buds/plot. 73 three budded setts/line and 6 rows/plot. (e) N.A. (vi) 12.2.1952. (vii) Irrigated. (viii) N.A. (ix) N.A. (Av. annual rainfall : 50". (x) As per treatments.

**2. TREATMENTS :****Main-plot treatments :**

3 dates of harvesting :  $D_1$ =Mid January.  $D_2$ =Mid February.  $D_3$ =Mid March.

**Sub-plot treatments :**

2 varieties :  $V_1$ =CO.421 and  $V_2$ =CO.453.

**3. DESIGN :**

(i) and (ii) 6 replications in split-plot. 3 main-plots/replication and 2 sub-plots/main-plot. (iii) (a) 90'×18' (b) 84'×12'. (iv) N.A.

**4. GENERAL :**

(i) N.A. (ii) N.A. (iii) Germination % and sugarcane yield. (iv) (a) No. (b) N.A. (c) N.A. (v) N.A. (vi) Nil. (vii) The experiment was conducted by D.S.R. (S) on cultivators' fields.



## 5. RESULTS :

- (i) 29.27 ton/ac.  
 (ii) (a) 3.759 ton/ac.  
 (b) 5.815 ton/ac.  
 (iii) Main effect of D is highly significant. Main effect of V and interaction D×V are not significant.  
 (iv) Av. yield of sugarcane in ton/ac.

	V <sub>1</sub>	V <sub>2</sub>	Mean
D <sub>1</sub>	31.65	33.73	32.69
D <sub>2</sub>	28.58	31.19	29.88
D <sub>3</sub>	25.91	24.56	25.24
Mean	28.71	29.83	29.27

## S.E. of difference of two

1. marginal means of D = 1.534 ton/ac.  
 2. marginal means of V = 1.939 ton/ac.  
 3. V means at a level of D = 3.358 ton/ac.  
 4. D means at a level of V = 2.829 ton/ac.

Crop :-Sugarcane.

Ref :-U.P. 52(200).

Zone :-Kichha (Nainital).

Type :-'CV'.

Object :—To study the effect of time of harvesting plant crop of Sugarcane on the yield of succeeding ratoon crop.

## 1. BASAL CONDITIONS :

- (i) (a) N.A. (b) Plant cane. (c) N.A. (ii) Clayey loam. (iii) G.N.C. at 40 lb./ac. of N on 14.5.1952.  
 (iv) As per treatments. (v) (a) Hoeing by tractor on 28.4.1952 by cultivator on 3.5.1952. and by *kassi* on 6.5.1952. Hoeing by *kassi* in Jan. plots on 28.1.1952. and in 6, 7.3.1952, on Feb. plots (b) N.A.  
 (c) 9 rows/plot. (d) and (e) N.A. (vi) As per treatments. (vii) Irrigated. (viii) N.A. (ix) (Av. rainfall 50"). (x) 20 to 24.1.1953.

## 2. TREATMENTS :

Main-plot treatments :

3 dates of harvesting plant cane : D<sub>1</sub>=Mid January, D<sub>2</sub>=Mid February and D<sub>3</sub>=Mid March. 1952.

Sub-plot treatments :

2 varieties : V<sub>1</sub>=CO.421 and V<sub>2</sub>=CO.453.

## 3. DESIGN :

- (i) and (ii) 4 replications in split-plot. 3 main-plots/replication and 2 sub-plots/main-plot. (iii) (a) 67'×27'.  
 (b) 61'×21'. (iv) N.A.

## 4. GENERAL :

- (i) N.A. (ii) N.A. (iii) Sugarcane yield. (iv) (a) No. (b) N.A. (c) N.A. (v) N.A. (vi) Nil. (vii)  
 The experiment was conducted by D.S.R. (S) on cultivators' fields.

## 5. RESULTS :

- (i) 18.52 ton/ac.  
 (ii) (a) 4.828 ton/ac.  
 (b) 3.720 ton/ac.  
 (iii) Main effects of D and V are significant. Interaction D×V is not significant.

(iv) Av. yield of sugarcane in ton/ac.

	V <sub>1</sub>	V <sub>2</sub>	Mean
D <sub>1</sub>	14.33	12.12	13.22
D <sub>2</sub>	18.34	23.36	20.85
D <sub>3</sub>	17.72	25.26	21.49
Mean	16.80	20.25	18.52

S.E. of difference of two

1. marginal means of D =2.414 ton/ac.
2. marginal means of V =1.519 ton/ac.
3. V means at a level of D =2.630 ton/ac.
4. D means at a level of V =3.047 ton/ac.

Crop :-Sugarcane.

Ref :-U.P. 53(235).

Zone :-Haldwani (Nainital).

Type :-'CV'.

Object :-To study the optimum time of harvesting plant crop of cane for taking a ratoon crop.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) *Sanai* G.M. (c) Nil. (ii) Clayey loam. (iii) Nil. (iv) As per treatments. (v) (a) Ridges drawn by tractor, turning in of *Sanai* by Athens p'ough on 8.9.1952. Ploughing by Athens plough on 10.5.1952, 11.6.1952. 5 to 7.2.1953 by 19 B harrow on 20.10.1952, 8.2.1953, by *desi* plough on 12, 13.12.1952, 27 to 29.1.1953, *pata* on 1.2.1953. (b) Flat sowing. (c) and (d) 1344 buds/plot in 7 rows. (e) N.A. (vi) 11 and 12.2.1953. (vii) Irrigated. (viii) N.A. (ix) Av. annual rainfall 35". (x) As per treatments.

## 2. TREATMENTS :

Main-plot treatments :

3 dates of harvesting ; D<sub>1</sub>=Mid January 1954, D<sub>2</sub>=Mid February 1954 and D<sub>3</sub>=Mid March 1954.

Sub-plot treatments :

2 varieties : V<sub>1</sub>=CJ.453 and V<sub>2</sub>=CO.510.

## 3. DESIGN :

(i), (ii) Split-plot with 5 replications. 3 main-plots/block and 2 sub-plots/main-plot. (iii) (a) and (b) 64'×21'. (iv) N.A.

## 4. GENERAL :

(i) N.A. (ii) N.A. (iii) Sugarcane yield. (iv) (a) No. (b) and (c) N.A. (v) N.A. (vi) Nil. (vii) The expt. was conducted by D.S.R(S) on cultivators' fields.

## 5. RESULTS :

- (i) 23.96 ton/ac.
- (ii) (a) 3.39 ton/ac.  
(b) 2.58 ton/ac.
- (iii) Main effect of V and interaction D×V are highly significant. Main effect of D is not significant.
- (iv) Av. yield of sugarcane in ton/ac.

	V <sub>1</sub>	V <sub>2</sub>	Mean
D <sub>1</sub>	23.60	21.40	22.50
D <sub>2</sub>	23.86	27.83	25.84
D <sub>3</sub>	20.15	26.92	23.53
Mean	22.54	25.38	23.96

S.E. of difference of two

1. marginal means of D =1.384 ton/ac.
2. marginal means of V =0.860 ton/ac.
3. V means at a level of D =1.489 ton/ac.
4. D means at a level of V =1.742 ton/ac.

Crop :- Sugarcane.

Ref :- U.P. 51(158).

Zone :- Haldwani (Nainital).

Type :- 'CV'.

Object :- To study the optimum time of harvesting plant crop of cane for taking a ratoon crop.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) *Sanai* G.M. (c) Nil. (ii) Clayey loam. (iii) F.Y.M.+50 lb./ac. of N on 11.1.1951. Top dressing *mohwa* cake mixture applied at 50 lb./ac. of N on 7.5.1951. (iv) As per treatments. (v) (a) Ploughing by *desi* on 26 and 27.12.1950. Harrow plough on 25 and 26.2.1951, *pata* 28.3.1951, hoeing with *kassi* on 9.4.1951 and 4.5.1951, hoeing by cultivator on 17.5.1951, hoeing by *kassi* on 26.5.1951. (b) Flat sowing (Furrows by ridges). (c) and (d) 9 rows. (e) N.A. (vi) 20 and 21.3.1951. (vii) Irrigated. (viii) N.A. (ix) Av. annual rainfall 50". (x) As per treatments.

## 2. TREATMENTS :

Main-plot treatments :

3 dates of harvest :  $D_1=15.1.1951$ ,  $D_2=15.2.1951$  and  $D_3=15.3.1951$ .

Sub-plot treatments :

2 varieties :  $V_1=CO.421$  and  $V_2=CO.453$ .

## 3. DESIGN :

(i), (ii) Split-plot with 6 replications. 3 main-plots/replication ; 2 sub-plots/main-plot. (iii) (a) 67'x27'. (b) 61'x21'. (iv) N.A.

## 4. GENERAL :

(i) N.A. (ii) N.A. (iii) Germination and sugarcane yield. (iv) (a) No. (b) and (c) N.A. (v) N.A. (vi) Nil. (vii) The expt. was conducted by D.S.R.(S) on cultivators' fields.

## 5. RESULTS :

- (i) 25.08 ton/ac.  
 (ii) (a) 4.29 ton/ac.  
 (b) 2.06 ton/ac.  
 (iii) Main effect of V and interactions  $D \times V$  are highly significant. Main effect of D is not significant.  
 (iv) Av. yield of sugarcane in ton/ac.

	$D_1$	$D_2$	$D_3$	Mean
$V_1$	18.24	24.37	20.32	20.98
$V_2$	28.90	28.44	30.19	29.18
Mean	23.57	26.41	25.25	25.08

S.E. of difference of two

1. marginal means of D = 1.752 ton/ac.  
 2. marginal means of V = 0.687 ton/ac.  
 3. V means at a level of D = 1.189 ton/ac.  
 4. D means at a level of V = 1.943 ton/ac.

Crop :- Sugarcane.

Ref :- U.P. 52(59).

Site :- Sugarcane Res. Sub-Stn., Kunraghat.

Type :- 'CM'.

Object :- To see the effect of harvesting plant Sugarcane planted flat and in trenches on its subsequent ratoon and to find out the proper time of application of manure to the ratoon crop.

## 1. BASAL CONDITIONS :

(i) (a) G.M.—Wheat. (b) *Dhaincha*. (c) G.M. (ii) (a) Sandy loam. (b) N.A. (iii) 25 and 27.2.1952. (iv) (a) N.A. (b) As per treatments. (c) 85 three budded setts/row. (d) and (e) N.A. (v) F.Y.M at 50 lb./ac. of N, Castor cake at 30 lb./ac. of N and A/S at 40 lb./ac. of N top dressing— (vi) CO.453. (vii) Irrigated. (viii) 5 earthings and hoeings. (ix) 34.40". (x) 23.1.1953 to 20.2.1953.

**2. TREATMENTS :**

Main-plot treatments :

All combinations of (1) and (2)

(1) 2 methods of harvest :  $H_1$ =at ridge level and  $H_2$ =at ground level.(2) 2 methods of planting :  $P_1$ =flat planting and  $P_2$ =trench planting.

Sub-plot treatments :

4 manures to ratoon crop :  $M_0$ =no manure (control),  $M_1$ =120 lb./ac. of N to ratoon soon after harvesting the plant crop,  $M_2$ =120 lb./ac. of N to ratoon at commencement of rains and  $M_3$ =120 lb./ac. of N in to two doses.  $\frac{1}{2}$  as in  $M_1$  and  $\frac{1}{2}$  as in  $M_2$ .

**3. DESIGN :**

(i) Split-plot. (ii) (a) 4 main-plots/replication and 4 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) 85' x 24'. (b) 79 x 18'. (v) 3' border around the gross plot was excluded. (vi) Yes.

**4. GENERAL :**

(i) Normal. No lodging. (ii) Attack of borers, which were killed on 16 and 20.5.1952 to 18.7.1952. (iii) Germination, tillers, millable cane and sugarcane yield. (iv) (a) 1952 to 1955. (b) and (c) No. (v) (a) Muzaffarnagar and Shahjahanpur. (b) N.A. (vi) Nil. (vii) Experiment conducted by D.S.R.(G).

**5. RESULTS :**

(i) 19.20 ton/ac.

(ii) (a) 7.49 ton/ac.

(b) 2.91 ton/ac.

(iii) Main effect of M is highly significant. Main effect of P is significant. Other effects and interactions are not significant.

(iv) Av. yield of sugarcane in ton/ac.

	$M_0$	$M_1$	$M_2$	$M_3$	Mean	$H_1$	$H_2$
$P_1$	11.91	17.53	17.30	19.08	16.46	18.53	14.38
$P_2$	16.50	24.42	24.87	21.62	21.95	22.58	21.33
Mean	14.40	20.98	21.08	20.35	19.20	20.56	17.85
$H_1$	15.58	22.00	22.85	21.80			
$H_2$	13.22	19.96	19.32	18.90			

S.E. of difference of two

1. P or H marginal means

=2.16 ton/ac.

2. M marginal means

=1.19 ton/ac.

3. M means at the same level of P or H

=1.68 ton/ac.

4. P or H means at the same level of M

=2.60 ton/ac.

S.E. for any mean in body of table H x R

=2.16 ton/ac.

Crop :- Sugarcane.

Ref :-U.P. 53(169).

Site :- Sugarcane Res. Sub-Stn., Kunraghat.

Type :- 'CM'.

Object :-To see the effect of harvesting plant Sugarcane planted flat and in trenches on its subsequent ratoon and to find out the proper time of application of manure to the ratoon crop.

**1. BASAL CONDITIONS :**

(i) (a) G.M.—wheat G.M.—plant sugarcane. (b) Sugarcane (plant sugarcane). (b) 10 srs. G.N.C./full row of 180' and A/S at 4 srs. 12 chh/plot. (ii) (a) Sandy loam. (b) N.A. (iii) Plant sugarcane 25 and 27.2.1952 and harvesting planting sugarcane 23.1.1953 to 6.3.1953. (iv) (a) N.A. (b) Trench and flat planting as per treatments. (c) 1 three budded setts per foot of a row. (d) Rows 3' apart (e) N.A. (v) Nil. (vi) CO.453. (vii) Irrigated. (viii) Hoeings—6 i.e. after each irrigation and earthings on 16 and 22 to 26.8.1953. (ix) 50.21%. (x) 17.12.1953 to 5.2.1954.

## 2. TREATMENTS :

## Main-plot treatments :

All combinations of (1) and (2)

(1) 2 methods of harvesting :  $H_1$ =at ridge level and  $H_2$ =at ground level.(2) 2 methods of planting :  $P_1$ =Flat planting and  $P_2$ =trench planting.

## Sub-plot treatments :

4 manurings of ratoon crop :  $M_0$ =No manure (control),  $M_1$ =120 lb./ac. of N to ratoon soon after harvesting the plant crop,  $M_2$ =120 lb./ac. of N to ratoon at commencement of rains and  $M_3$ =120 lb./ac. of N in two doses  $\frac{1}{2}$  as in  $M_1$  and  $\frac{1}{2}$  as in  $M_2$ .

## 3. DESIGN :

(i) Split-plot. (ii) (a) 4 main-plots/replication and 4 sub-plots/main-plot. (b) N.A. (iii) 5. (iv) (a) 85' x 24'. (b) 79' x 18'. (v) 3' border was excluded around the gross plot. (vi) Yes.

## 4. GENERAL :

(i) Normal. No lodging. (ii) Attack of borers. (iii) Germination, tillers, millable cane and sugarcane yield. (iv) (a) 1952 to 1955. (b) and (c) No. (v) (a) Muzaffarnagar and Shahjahanpur. (b) N.A. (vi) Nil. (vii) Experiment conducted by D.S.R. (G).

## 5. RESULTS :

(i) 21.45 ton/ac.

(ii) (a) 2.01 ton/ac.

(b) 1.91 ton/ac.

(iii) Main effects of P and M are highly significant. Other effect and interactions are not significant.

(iv) Av. yield of sugarcane in ton/ac.

	$M_0$	$M_1$	$M_2$	$M_3$	Mean	$P_1$	$P_2$
$H_1$	16.75	23.12	22.75	23.99	21.65	20.40	22.91
$H_2$	17.36	22.85	23.00	21.82	21.26	19.02	23.50
Mean	17.05	22.98	22.88	22.90	21.45	19.71	23.20
$P_1$	15.15	21.16	21.13	21.38			
$P_2$	18.95	24.81	24.62	24.43			

## S.E. of difference of two

- |  |               |
|--|---------------|
| 1. P or H marginal means               | =0.58 ton/ac. |
| 2. M marginal means                    | =0.78 ton/ac. |
| 3. M means at the same level of P or H | =1.10 ton/ac. |
| 4. P or H means at the same level of M | =1.12 ton/ac. |
| S.E. for any mean in body of table     | =0.58 ton/ac. |

Crop :-Sugarcane (Ratoon).

Ref :-U.P. 52(62)-

Site :-Sugarcane Res. Sub-Stn., Muzaffarnagar.

Type :-'CM'.

Object :-To see the effect of harvesting plant cane, planted flat and in trenches, on its subsequent ratoon and to find out the proper time of application of manures to the ratoon crop.

## 1. BASAL CONDITIONS :

(i) (a) G.M.—wheat—*sanai* or *moong*—sugarcane—ratoon. (b) Sugarcane (plantcane). (c) 1. Compost at 80 lb./ac. of N. 2. Castor cake at 20 lb./ac. of N. 3. A/S at 60 lb./ac. of N. (ii) (a) Light loam. (b) Refer soil analysis, Muzaffarnagar. (iii) plant cane harvested from 20.2.1952 to 15.3.1952. (iv) (a) Trash was burnt. The ridges were dismantled after harvesting plant cane by soil turning plough and remaining ridges broken down by spade. (b) to (e) N.A. (v) Nil. (vi) CO.S.245 (mid-season) (vii) Irrigated. (viii) 7 hoeings and earthing up in August. (ix) 24.62". (x) 29.11.1952 to 5.12.1952.

## 2. TREATMENTS :

## Main-plot treatments :

## All combinations of (1) and (2)

- (1) 2 methods of harvesting :  $H_1$ =at ridge level and  $H_2$ =at ground level.  
 (2) 2 methods of planting :  $P_1$ =Flat planting and  $P_2$ =Trench planting.

## Sub-plot treatments :

- 4 manuring to ratoon crop :  $M_0$ =No manure (control).  $M_1$ =120 lb./ac. of N to ratoon soon after harvesting the plant crop.  $M_2$ =120 lb./ac. of N to ratoon at commencement of rains.  $M_3$ =120 lb./ac. of N in 2 doses :  $\frac{1}{2}$  as in  $M_1$  and  $\frac{1}{2}$  as in  $M_2$ .

## 3. DESIGN :

- (i) Split-plot. (ii) (a) 4 main-plots/replication and 4 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 90' x 21'. (b) 84' x 15'. (v) One row on each side and 3' border on each end of plot. (vi) Yes.

## 4. GENERAL :

- (i) Good. (ii) Nil. (iii) Germination, tillers, millable cane and sugarcane yield. (iv) (a) 1952-1954 (b) N.A. (c) N.A. (v) (a) and (b) N.A. (vi) Nil. (vii) The experiment was conducted by D.S.R. (M).

## 5. RESULTS :

- (i) 16.32 ton/ac.  
 (ii) (a) 2.04 ton/ac.  
 (b) 1.52 ton/ac.  
 (iii) Main effect of M is highly significant. Main effect of P is significant. Other effect and interactions are not significant.  
 (iv) Av. yield of sugarcane in ton/ac.

	$M_0$	$M_1$	$M_2$	$M_3$	Mean	$H_1$	$H_2$
$P_1$	12.63	17.65	18.85	18.93	17.02	14.98	16.27
$P_2$	11.87	15.83	18.14	16.65	15.62	16.56	17.47
Mean	12.25	16.74	18.49	17.79	16.32	15.77	16.87
$H_1$	12.18	17.55	18.96	18.48			
$H_2$	12.02	15.92	18.02	17.10			

## S.E. of difference of two

- |  |               |
|--|---------------|
| 1. P or H marginal means               | =0.51 ton/ac. |
| 2. M marginal means                    | =0.54 ton/ac. |
| 3. M means at the same level of P or H | =0.76 ton/ac. |
| 4. P or H means at the same level of M | =0.83 ton/ac. |
| 5. means in the body of table P x H    | =0.38 ton/ac. |

Crop :- Sugarcane (Ratoon).

Ref :- U.P. 53(179).

Site :- Sugarcane Res. Sub-Stn., Muzaffarnagar.

Type :- 'CM'.

Object :- To see the effect of harvesting plant cane, planted flat and in trenches on its subsequent ratoon and to find out the proper time of application of manures to ratoon crop.

## 1. BASAL CONDITIONS :

- (i) (a) G.M. - wheat—*sanal* or *moong*—sugarcane ratoon. (b) Sugarcane (plant cane). (c) 1. Compost at 80 lb./ac. of N. 2. Castor cake at 20 lb./ac. of N. 3. A/S at 60 lb./ac. of N. (ii) (a) Light loam. (b) Refer soil analysis, Muzaffarnagar. (iii) Plant cane harvested from 5 to 11.3.1953. (iv) Trash was burnt. The ridges were dismantled after harvesting plant cane by soil turning plough and remaining ridges broken down by spade. (b) to (e) N.A. (v) Nil. (vi) CO.S. 245 (mid-season) (vii) Irrigated. (viii) 5 hoeings. Earthing up in July. (ix) 28.33°. (x) 13 to 35.11.1953.

## 2. TREATMENTS :

## Main-plot treatments :

All combinations of (1) and (2)

(1) 2 methods of harvesting :  $H_1$ =At ridge level and  $H_2$ =at ground level.(2) 2 methods of planting :  $P_1$ =Flat planting and  $P_2$ =Trench planting.

## Sub-plot treatments :

4 manuring of ratoon crop :  $M_0$ =No manure (control),  $M_1$ =120 lb./ac. of N to ratoon soon after harvesting the plant crop,  $M_2$ =120 lb./ac. of N to ratoon at commencement of rains and  $M_3$ =120 lb./ac. of N in 2 doses :  $\frac{1}{2}$  as in  $M_1$  and  $\frac{1}{2}$  as in  $M_2$ .

## 3. DESIGN :

(i) Split plot. (ii) (a) 4 main-plots/replication and 4 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 90'×21'. (b) 84'×15'. (v) One row on each side and 3' border at each end. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Nil. (iii) Germination, tillers, millable cane and sugarcane yield. (iv) (a) 1952 to 1954 (b) and (c) No. (v) (a) and (b) Nil. (vi) Nil. (vii) The experiment was conducted by D.S.R. (M).

## 5. RESULTS :

- (i) 25.30 ton/ac.  
 (ii) (a) 2.66 ton/ac.  
 (b) 1.86 ton/ac.  
 (iii) Sub-plot treatments are highly significant. Main-plot treatments and interactions are not significant.  
 (iv) Av. yield of sugarcane in ton/ac.

	$M_0$	$M_1$	$M_2$	$M_3$	Mean	$H_1$	$H_2$
$P_1$	16.17	28.43	26.27	29.64	25.13	25.72	24.54
$P_2$	17.43	29.30	26.79	28.34	25.46	25.83	25.10
Mean	16.80	28.86	26.53	28.99	25.30	25.77	24.82
$H_1$	16.82	29.04	27.42	29.81			
$H_2$	16.78	28.69	25.64	28.16			

## S.E. of difference of two

- |  |               |
|--|---------------|
| 1. M marginal means                    | =0.94 ton/ac. |
| 2. P or H marginal means               | =0.66 ton/ac. |
| 3. M means at the same level of P or H | =0.93 ton/ac. |
| 4. H or P means at the same level of M | =1.04 ton/ac. |
| 5. means in P×H table                  | =0.93 ton/ac. |

Crop :-Sugarcane.

Ref :-U.P. 52(237).

Site :-Sugarcane Res. Stn., Shahjahanpur.

Type :-'CM'.

Object :-To find out the effect of placement of A/S in different doses to Sugarcane planted under different spacings between rows.

## 1. BASAL CONDITIONS :

- (i) (a) N.A. (b) *Sanal*. (c) No. (ii) (a) Loam. (b) Refer soil analysis, Shahjahanpur. (iii) 5 and 6.4.1952. (iv) (a) Ploughings by victory plough and *dest* plough and planking. (b) N.A. (c) 44 three budded setts/row. (d) As per treatments. (e) N.A. (v) *Sanal* turned in on 17.9.1952, spreading of press mud on 11 and 12.7.1952. (vi) CO.K.30 (medium). (vii) Irrigated. (viii) Hoeing with *kassi* and binding. (ix) 32.14". (x) 17, 18 and 21.2.1953.

## 2. TREATMENTS :

Main-plot treatments :

All combinations of (1) and (2)

(1) 2 placements of A/S :  $M_1$ =Broadcast and  $M_2$ =In furrow.(2) 2 doses of A/S :  $N_1$ =40 and  $N_2$ =120 lb./ac. of N.

Sub-plot treatments :

2 spacings between rows :  $S_1$ =2',  $S_2$ =3' and  $S_3$ =4'.

Gross plot size is 42'×16', 42'×18' and 42'×20' respectively.

## 3. DESIGN :

(i) Split-plot. (ii) (a) 4 main-plots/replication and 3 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) As per treatments. (b) 36'×12'. (v) One row on each side and 3' at either end of the plot. (vi) Yes.

## 4. GENERAL :

(i) Good. Crop lodged in October. (ii) N.A. (iii) Sugarcane yield. (iv) (a) 1952—1954. (b) and (c) No. (v) (a) and (b) No. (vi) Replication III was damaged by the rats in October and November. (vii) The expt. was conducted by D.S.R.(S).

## 5. RESULTS :

- (i) 25.09 ton/ac.  
 (ii) (a) 3.23 ton/ac.  
 (b) 2.44 ton/ac.  
 (iii) Main effect of S is highly significant. Main effect of M and interactions  $N \times S$  are significant. Others are not significant.  
 (iv) Ay. yield of sugarcane in ton/ac.

	$S_1$	$S_2$	$S_3$	Mean	$N_1$	$N_2$
$M_1$	21.92	27.64	24.80	26.79	26.30	27.28
$M_2$	27.18	23.18	19.82	23.39	24.67	22.11
Mean	27.55	25.41	22.31	25.09	25.48	24.69
$N_1$	26.24	26.71	23.50			
$N_2$	28.86	24.11	21.11			

S.E. of difference of two

1. M or N marginal means =1.077 ton/ac.
2. means of the body of  $M \times N$  table =1.523 ton/ac.
3. S marginal means =0.994 ton/ac.
4. S means at the same level of M or N =1.406 ton/ac.
5. M or N means at the same level of S =1.574 ton/ac.

Crop :-Sugarcane.

Ref :-U.P. 53(175.)

Site :-Sugarcane Res. Stn., Shahajanpur.

Type :-'CM'.

Object :-To study the effect of placement of A/S in different doses to Sugarcane planted under different spacings between rows.

## 1. BASAL CONDITIONS :

(i) (a) G.M.—Wheat—Moong—Sugarcane. (b) Wheat. (c) G.M. (details N.A.) (ii) (a) Light loam. (b) Refer soil analysis, Shahajanpur. (iii) 11 and 12.3.1953. (iv) (a) N.A. (b) Flat planting. (c) 3 budded setts/line. (d) As per treatments. (e) N.A. (v) Nil. (vi) CO.K. 30 (mid-season). (vii) Irrigated. (viii) One hoeing after each irrigation. (ix) 45.73°. (x) 24.2.1954.

## 2. TREATMENTS :

Main-plot treatments :

All combination of (1) and (2)

(1) 2 placement of A/S :  $M_1$ =Broadcast and  $M_2$ =In furrows along rows.(2) 2 doses of N :  $N_1$ =40 and  $N_2$ =120 lb./ac. of N.

Sub-plot treatments :

3 spacings between rows :  $S_1$ =2',  $S_2$ =3' and  $S_3$ =4'.



## 3. DESIGN :

(i) Split-plot. (ii) (a) 4 main-plots/replication and 3 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a)  $S_1=47' \times 16'$   $S_2=47' \times 18'$  and  $S_3=47' \times 20'$ . (b)  $41' \times 12'$ . (v) One row on either side of the gross plot and 3' at the ends. (vi) Yes.

## 4. GENERAL :

(i) No lodging. (ii) No. (iii) Germination, tillering, millable cane and sugarcane yield. (iv) (a) 1952—1954. (b) and (c) No. (v) (a) and (b) No. (vi) Nil. (vii) The experiment was conducted by D.S.R.(S).

## 5. RESULTS :

- (i) 17.54 ton/ac.  
 (ii) (a) 1.724 ton/ac.  
 (b) 2.635 ton/ac.  
 (iii) On y interaction  $N \times M$  is significant.  
 (iv) Av. yield of sugarcane in ton/ac.

	$S_1$	$S_2$	$S_3$	Mean	$N_1$	$N_2$
$M_1$	17.48	19.07	15.84	17.46	15.96	18.96
$M_2$	17.33	17.48	18.04	17.62	18.02	17.21
Mean	17.41	18.28	16.94	17.54	16.99	18.08
$N_1$	18.27	16.78	15.94			
$N_2$	16.55	19.77	17.94			

## S.E. of difference of two

1. M or N marginal means =0.575 ton/ac.
2. means of body of  $M \times N$  table =0.813 ton/ac.
3. S marginal means =1.076 ton/ac.
4. S means at a level of M or N =1.521 ton/ac.
5. M or N means at a level of S =1.368 ton/ac.

Crop :- Sugarcane.

Ref :- U.P. 48(73).

Site :- Sugarcane Res. Stn., Shahjahanpur.

Type :- 'CM'.

Object :- To find out the utilization of night soil in Sugarcane cultivation.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) *Guar*. (c) N.A. (ii) (a) Loam. (b) Refer soil analysis, Shahjahanpur. (iii) 12, 13.3.1948. (iv) (a) 4 ploughings with soil turning plough and 7 ploughings with *desi* plough and 3 plankings. (b) As per treatments. (c) 70 three tilled setts/ac. (d) N.A. (e) —. (v) N.A. (vi) CO. 421 (medium). (vii) Irrigated. (viii) Planking, hoeing with *kassi* and cultivator, binding of sugarcane. (ix) 40.22". (x) 30.1.1949 and 7 and 19.2.1949.

## 2. TREATMENTS :

Main-plot treatments :

2 methods of planting :  $M_1$ =trench planted and  $M_2$ =flat planted.

Sub-plot treatments :

4 manurial treatments :  $T_0$ =no manure,  $T_1$ =town compost at 100 lb./ac. of N,  $T_2$ =poudrette (night soil compost) at 100 lb./ac. of N and  $T_3$ =A/S at 100 lb./ac. of N.

Method of Applications :—Night soil was dropped in trenches in much the same manner as was done in the previous years experiment. The trenches were filled in and covered completely in the flat planted treatments. In the plots where trench planting was to be done, the trenches were widened at the top, leaving the night soil covered at the bed of the trench. Town compost was applied on 9 to 11.1.1948 as basal treatment. Night soil from 1 to 11.1.1948 and A/S at planting time on 12, 13.3.1948 as top dressing.

## 3. DESIGN :

(i) Split-plot. (ii) (a) 2 main-plots/replication and 4 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a)  $79' \times 21'$ . (b)  $63' \times 15'$ . (v) 3' around. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Yellow disease in August, increased in September, no incidence in October. (iii) Germination, tillers, millable cane and yield of sugarcane. (iv) (a) 1947-1948. (b) and (c) No. (v) (a) and (b) No. (vi) Nil. (vii) Experiment conducted by D.S.R. (S).

## 5. RESULTS :

- (i) 24.33 ton/ac.  
 (ii) (a) 1.746 ton/ac.  
 (b) 1.512 ton/ac.  
 (iii) T effect is highly significant, while M effect and interaction T × M are significant.  
 (iv) Av. yield of sugarcane in ton/ac.

	T <sub>0</sub>	T <sub>1</sub>	T <sub>2</sub>	T <sub>3</sub>	Mean
M <sub>1</sub>	20.58	27.00	26.34	17.68	22.90
M <sub>2</sub>	24.67	26.43	29.69	22.29	25.77
Mean	22.62	26.71	28.02	19.98	24.33

## S.E. of difference of two

1. marginal means of M = 0.617 ton/ac.
3. marginal means of T = 0.756 ton/ac.
3. T means at the same level of M = 1.069 ton/ac.
4. M means at the same level of T = 1.113 ton/ac.

Crop :- Sugarcane.

Ref :- U.P. 52(17).

Site :- Sugarcane Res. Stn., Shahjahanpur.

Type :- 'CM'.

Object :- To find the effect of incorporation of sugarcane trash directly into soil on Sugarcane planted in different seasons.

## 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Loam. (b) Refer soil analysis, Shahjahanpur. (iii) As per treatments. (iv) (a) 2 ploughings with *victory* plough, 1 *dest* plough for October planting, 2 ploughings by *victory* plough and 2 *dest* ploughings for February planting and 3 ploughings. (b) N.A. (c) 68 three budded setts/row. (d) N.A. (e) —. (v) Nil. (vi) CO. 453 (late). (vii) Irrigated. (viii) Hoeings with *kassi* and cultivator, harrowing and earthing. (ix) 34.60°. (x) 8 to 10.12.1952.

## 2. TREATMENTS :

## Main-plot treatments :

2 times of planting : T<sub>1</sub> = Autumn planting (19.10.1951) and T<sub>2</sub> = Spring planting (10.2.1952).

## Sub-plot treatments :

9 manurial treatments : M<sub>1</sub> = control (no manure), M<sub>2</sub> = trash at 75 mds./ac. applied in July, M<sub>3</sub> = trash at 75 md./ac. + 1 md./ac. of A/S applied in July, M<sub>4</sub> = trash at 75 md./ac. applied in July + 1 md./ac. of A/S applied 1½ months before planting, M<sub>5</sub> = trash at 75 md./ac. + 1 md./ac. of A/S + 100 lb./ac. of P<sub>2</sub>O<sub>5</sub> + 10 lb./ac. of magnesium sulphate applied in July, M<sub>6</sub> = trash at 75 md./ac. applied in July + 1 md./ac. of A/S + 100 lb./ac. of P<sub>2</sub>O<sub>5</sub> + 10 lb./ac. of magnesium sulphate applied about 1½ months before planting, M<sub>7</sub> = 1 md./ac. of A/S at planting, M<sub>8</sub> = 1 md./ac. of A/S + 100 lb./ac. of P<sub>2</sub>O<sub>5</sub> + 10 lb./ac. of magnesium sulphate at planting and M<sub>9</sub> = trash compost made out of 75 md./ac. of trash applied 1½ months before planting.

Dates of application : trash compost in July : 31.7.1952, 30.10.1952 and 28.2.1953.

1½ months before planting : 28.9.1952, 10.2.1952 and at planting 19.10.1952.

## 3. DESIGN :

(i) Split-plot. (ii) (a) 2 main-plots/replication and 9 sub-plots/main-plot. (b) N.A. (iii) (a) 68' × 18'. (b) 62' × 12'. (v) 3' around. (vi) Yes.

## 4. GENERAL :

(i) Satisfactory. (ii) No. (iii) Germination count, tillers, millable cane and sugarcane yield. (iv) (a) 1952—1953. (b) and (c) No. (v) (a) and (b) No. (vi) Nil. (vii) Experiment conducted by D.S.R. (S).

## 5. RESULTS :

- (i) 17.45 ton/ac.  
 (ii) (a) 1.828 ton/ac.  
 (b) 3.341 ton/ac.  
 (iii) None of the effects is significant.  
 (iv) Av. yield of sugarcane in ton/ac.

	M <sub>1</sub>	M <sub>2</sub>	M <sub>3</sub>	M <sub>4</sub>	M <sub>5</sub>	M <sub>6</sub>	M <sub>7</sub>	M <sub>8</sub>	M <sub>9</sub>	Mean
T <sub>1</sub>	19.36	19.71	18.39	19.03	14.52	21.35	16.75	18.44	18.66	18.47
T <sub>2</sub>	14.03	18.07	16.53	14.11	14.71	16.67	17.53	19.44	16.67	16.42
Mean	16.70	18.89	17.46	16.57	14.62	19.01	17.16	18.94	17.66	17.45

## S.E. of difference of two

1. T marginal means =0.609 ton/ac.  
 2. M marginal means =2.363 ton/ac.  
 3. M means at the same level of T =3.341 ton/ac.  
 4. T means at the same level of M =3.209 ton/ac.

Crop :- Sugarcane.

Ref :- U.P. 53(173).

Site :- Sugarcane Res. Stn., Shahjahanpur.

Type :- 'CM'.

Object :- To find out the utility of incorporating sugarcane trash directly into the soil.

## 1. BASAL CONDITIONS :

(i) (a) G.M.—Wheat—Fallow—Sugarcane. (b) Wheat. (c) G.M. (ii) (a) Light loam. (b) Refer soil analysis, Shahjahanpur. (iii) As per treatments. (iv) (a) N.A. (b) Flat planting. (c) 3 budded setts/row. (d) Rows 3' apart. (e) —. (v) Nil. (vi) CO.453 (mid-late). (vii) Irrigated. (viii) 4 hoeings and 3 hoeings for autumn and spring plantings respectively and earthing up during rains. (ix) 45.43'. (x) Last week of December 1953.

## 2. TREATMENTS :

## Main-plot treatments :

2 times of planting : T<sub>1</sub>=autumn planting on 6.10.1952 and T<sub>2</sub>=spring planting on 9.2.53.

## Sub-plot treatments :

9 manurial treatments : M<sub>1</sub>=control (no manure), M<sub>2</sub>=trash at 75 md./ac. applied in July, M<sub>3</sub>=trash at 75 md./ac. + 1 md./ac. of A/S applied in July, M<sub>4</sub>=trash at 75 md./ac. applied in July + 1 md./ac. of A/S applied 1½ months before planting, M<sub>5</sub>=trash at 75 md./ac. + 1 md./ac. of A/S + 100 lb./ac. of P<sub>2</sub>O<sub>5</sub> + 10 lb./ac. of magnesium sulphate applied in July, M<sub>6</sub>=trash at 75 md./ac. applied in July + 1 md./ac. of A/S + 100 lb./ac. of P<sub>2</sub>O<sub>5</sub> + 10 lb./ac. of magnesium sulphate applied about 1½ months before planting, M<sub>7</sub>=1 md./ac. of A/S at planting, M<sub>8</sub>=1 md. ac./of A/S + 100lb./ac. of P<sub>2</sub>O<sub>5</sub> + 10 lb./ac. of magnesium sulphate at planting and M<sub>9</sub>=trash compost made out of 75 md./ac. of trash applied 1½ months before planting.

## 3. DESIGN :

(i) Split-plot. (ii) (a) 2 main-plots/replication and 9 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) Main-plot 65' × 162' and sub-plot 65' × 18'. (b) 59' × 12'. (v) 3' allround. (vi) Yes.

## 4. GENERAL :

(i) Fair. No lodging. (ii) No. (iii) Germination, tillering, millable cane and sugarcane yield. (iv) (a) 1952—1953. (b) and (c) No. (v) (a) and (b) No. (vi) Nil. (vii) Experiment conducted by D.S.R.(S).

## 5. RESULTS :

- (i) 16.57 ton/ac.  
 (ii) (a) 4.404 ton/ac.  
 (b) 3.104 ton/ac.  
 (iii) None of the effects is significant,  
 (iv) Av. yield of sugarcane in ton/ac.

	M <sub>1</sub>	M <sub>2</sub>	M <sub>3</sub>	M <sub>4</sub>	M <sub>5</sub>	M <sub>6</sub>	M <sub>7</sub>	M <sub>8</sub>	M <sub>9</sub>	Mean
T <sub>1</sub>	17.46	21.56	21.49	18.83	20.94	15.24	18.15	16.50	17.01	18.58
T <sub>2</sub>	15.97	17.21	14.24	15.82	13.39	14.97	14.54	11.68	13.28	14.57
Mean	16.72	19.38	17.86	17.32	17.16	15.10	16.34	14.09	15.14	16.57

## S.E. of difference of two

1. T marginal means = 1.199 ton/ac.  
 2. M marginal means = 1.792 ton/ac.  
 3. M means at the same level of T = 2.535 ton/ac.  
 4. T means at the same level of M = 2.674 ton/a c

Crop :- Sugarcane.

Ref :- U.P. 51(130).

Site :- Sugarcane Res. Stn., Shahjahanpur.

Type :- 'CM'.

Object :—To study the effect of quality of seed on the yield of Sugarcane crop.

## 1. BASAL CONDITIONS :

- (i) (a) Nil. (b) *Sanai* for G.M. (c) No. (ii) (a) Loam. (b) Refer soil analysis, Shahjahanpur. (iii) 2.3.1951. (iv) (a) 2 ploughings by victory plough, ploughing by harrow, by *desi* plough and *5 pata*. (b) N.A. (c) 28 three budded setts/row. (d) N.A. (e) —. (v) Turning in of *sanai*. (vi) CO.617 (medium-late). (vii) Irrigated. (viii) 3 hoeing with cultivator and 1 with *desi* plough. (ix) 31.02°. (x) 27.3.1952.

## 2. TREATMENTS :

## Main-plot treatments :

2 levels of N : N<sub>1</sub>=120 and N<sub>2</sub>=200 lb./ac. of N.

## Sub-plot treatments :

2 qualities of sugarcane seed : Q<sub>1</sub>=thick sugarcane—1.5 to 2.5 cm. diameter and Q<sub>2</sub>=thin sugarcane .0.5 to 1.6 cm. diameter.In N<sub>1</sub>, G.M.=40, F.Y.M.=20, Cake=30 and A/S=30 lb./ac. of N. In N<sub>2</sub>, G.M.=40, F.Y.M.=20, Cake=70 and A.S=70 lb./ac. of N.Turning in of green manure (*sanai*) on 29.8.1951. Spreading of F.Y.M. on 1.1.1952, Spreading of castor cake on 18.2.1952. A/S on 15.5.1951.

## 3. DESIGN :

- (i) Split-plot. (ii) (a) 2 main-plots/replication and 2 sub-plots/main-plot. (b) N.A. (iii) 2. (iv) (a) and (b) 28 × 12'. (v, No. (vi) Yes.

## 4. GENERAL :

- (i) Satisfactory. (ii) No. (iii) Germination, millable cane counts and sugarcane yield. (iv) (a) 1951 to 1953. (b) and (c) No. (v) (a) and (b) No. (vi) Nil. (vii) Experiment conducted by D.S.R.(S).

## 5. RESULTS :

- (i) 10.46 ton/ac.  
 (ii) (a) 2.904 ton/ac.  
 (b) 1.936 ton/ac.  
 (iii) None of the effects is significant.

(iv) Av. yield of sugarcane in ton/ac.

	Q <sub>1</sub>	Q <sub>2</sub>	Mean
N <sub>1</sub>	11.01	5.12	8.06
N <sub>2</sub>	13.75	11.96	12.86
Mean	12.38	8.54	10.46

S.E. of difference of two

1. N marginal means =2.0540 ton/ac.
2. Q marginal means =1.3695 ton/ac.
3. Q means at the same level of N =1.936 ton/ac.
4. N means at the same level of Q =2.468 ton/ac.

Crop :- Sugarcane.

Ref :- U.P. 52(178).

Site :- Sugarcane Res. Stn., Shahjahanpur.

Type :- 'CM'.

Object :- To find out the effect of quality of seed on the yield of Sugarcane crop.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Sanal*. (c) No. (ii) (a) Loam. (b) N.A. (iii) 16.3.1952. (iv) (a) Ploughing with victory plough on 29.11.1951. Ploughing with *desi* plough on 6.12.1951, 4, 18.1.1952, 17, 19, 21, 28.2.1952, cultivator on 9.1.1952 and spring harrow planking on 29.11.1951, 6.12.1951, 5, 8, 9 and 19.1.1951, 17, 19 and 21.2.1952 and 1.3.1952. (b) N.A. (c) 40 three budded setts/row. (d) and (e) N.A. (v) Nil. (vi) CO. 617 (mid-late). (vii) Irrigated. (viii) Hoeing with cultivator and earthing. (ix) 33.30°. (x) 23.1.1953 and 23, 24.2.1953.

## 2. TREATMENTS :

Main-plot treatments :

2 levels of N : N<sub>1</sub>=120 and N<sub>2</sub>=200 lb./ac. of N.

Sub-plot treatments :

2 qualities of sugarcane seed : Q<sub>1</sub>=thick sugarcane -1.5 to 2.5 cm. diameter and Q<sub>2</sub>=thin sugarcane -0.5 to 1.5 cm. diameter.In N<sub>1</sub>, G.M.=40, F.Y.M.=20, Cake=30 and A/S=30 lb./ac. of N. In N<sub>2</sub>, G.M.=40, F.Y.M.=20, Cake=70 and A/S=70 lb./ac. of N.Turning in of G.M. (*sanal*) on 30.7.1952. Spreading of F.Y.M. on 18.1.1952. G.N.C. and A/S on 3.5.1952.

## 3. DESIGN :

(i) Split-plot. (ii) (a) 2 main-plots/replication and 2 sub-plots/main-plot. (iii) 4 (iv) (a) 40'×21' (b) 34'×15'. (v) around (vi) Yes.

## 4. GENERAL :

(i) There was very poor germination in block I and hence it has been rejected. (ii) Nil. (iii) Germination, millable cane and sugarcane yield. (iv) (a) 1951 to 1954. (b) and (c) No. (v) (a) and (b) No. (vi) Nil. (vii) Experiment conducted by D.S.R.(S).

## 5. RESULTS :

(i) 27.80 ton/ac.

(ii) (a) 0.275 ton/ac.

(b) 2.101 ton/ac.

(iii) N effect is highly significant. Q effect is significant, while interaction is not significant.

(iv) Av. yield of sugarcane in ton/ac.

	Q <sub>1</sub>	Q <sub>2</sub>	Mean
N <sub>1</sub>	28.47	24.50	26.48
N <sub>2</sub>	30.67	27.58	29.12
Mean	29.57	26.04	27.80

S.E. of difference of two	
1. N marginal means	=0.159 ton/ac.
2. Q marginal means	=1.213 ton/ac.
3. Q means at the same level of N	=1.715 ton/ac.
4. N means at the same level of Q	=1.223 ton/ac.

Crop :- Sugarcane.

Ref :- U.P. 53(176).

Site :- Sugarcane Res. Stn., Shahjahanpur.

Type :- 'CM'.

Object :- To find out the effect of quality of seed on Sugarcane yield.

### 1. BASAL CONDITIONS :

(i) (a) G.M.—Wheat—Fallow—Sugarcane. (b) Wheat. (c) G.M. (ii) (a) Light loam. (b) Refer soil analysis, Shahjahanpur. (iii) 22.2.1953. (iv) (a) N.A. (b) Flat planting. (c) Three budded setts/foot in a row. (d) Rows 3' apart. (e) N.A. (v) Nil. (vi) CO. 617 (mid-season). (vii) Irrigated. (viii) Two hoeings after each irrigation and earthing up during rains. (ix) 45.73". (x) 4.3.1954.

### 2. TREATMENTS :

Main-plot treatments :

2 levels of N :  $N_1=120$  and  $N_2=200$  lb./ac. of N.

Sub-plot treatments :

2 qualities of sugarcane seed :  $Q_1$ =thick sugarcane and  $Q_2$ =thin sugarcane.

### 3. DESIGN :

(i) Split-plot. (ii) (a) 2 main-plots/replication and 2 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 48'×21'. (b) 41'×15'. (v) 3' around. (vi) Yes.

### 4. GENERAL :

(i) Normal. No. loding. (ii) No. (iii) Germination, tillering, millable cane and sugarcane yield. (iv) (a) 1951—1953. (b) and (c) No. (v) (a) and (b) No. (vi) Nil. (vii) Experiment conducted by D.S.R.(S).

### 5. RESULTS :

- (i) 20.01 ton/ac.  
(ii) (a) 2.483 ton/ac.  
(b) 1.751 ton/ac.  
(iii) Only Q effect is significant.  
(iv) Av. yield of sugarcane in ton/ac.

	$Q_1$	$Q_2$	Mean
$N_1$	20.15	15.54	17.84
$N_2$	23.62	20.72	22.17
Mean	21.88	18.13	20.01

S.E. of difference of two

1. N marginal means	=1.241 ton/ac.
2. Q marginal means	=0.875 ton/ac.
3. Q means at a level of N	=1.238 ton/ac.
4. N means at a level of Q	=1.519 ton/ac.

Crop :- Sugarcane (Ratoon).

Ref :- U.P. 53(174).

Site :- Sugarcane Res. Stn., Shahjahanpur.

Type :- 'CM'.

Object :- To study the effect of cultural operations and manures on ratoon.

## 1. BASAL CONDITIONS :

(i) (a) G.M.—Wheat—G.M. of *sanai*—Sugarcane (plant cane)—Sugarcane (ratoon). (b) Sugarcane (plant-canes). (c) G.M. of *sanai*. (ii) (a) Light loam. (b) Refer soil analysis, Shahjahanpur. (iii) 7.2.1953. (iv) (a) N.A. (b) As per treatments. (c) 3 one budded sett per foot of a row. (d) rows 3' apart. (e) —. (v) Nil. (vi) CO. 453 (mid-late). (vii) Irrigated. (viii) 4 hoeings during pre-monsoon period followed by earthing up during rains. (ix) 42.46°. (x) 12 to 17.12.1953.

## 2. TREATMENTS :

Main-plot treatments :

All combinations of (1) and (2)

(1) 2 methods of harvesting :  $H_1$  = Ground level and  $H_2$  = Ridge level.(2) 2 methods of planting :  $P_1$  = Flat planting and  $P_2$  = Trench planting.

Sub-plot treatments :

4 manurial doses :  $M_0$  = no manure (control),  $M_1$  = 120 lb./ac. of N to ratoon soon after harvesting the plant crop,  $M_2$  = 120 lb./ac. of N to ratoon at the commencement of rains and  $M_3$  = 120 lb./ac. of N in 2 equal doses :  $\frac{1}{2}$  as in  $M_1$  and  $\frac{1}{2}$  as in  $M_2$ .

N as A/S+G.N.C in 1 : 1 ratio.

## 3. DESIGN :

(i) Split-plot. (ii) (a) 4 main-plots/replication and 4 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 61' x 21'. (b) 55' x 15'. (v) 3' around. (vi) Yes.

## 4. GENERAL :

(i) Normal, no lodging. (ii) No. (iii) Tillers, millable cane and yield of sugarcane. (iv) (a) 1952-1954. (b) and (c) No. (v) (a) Muzaffarnagar and Gorakhpur. (b) N.A. (vi) Nil. (vii) The experiment was conducted by D.S.R. (S).

## 5. RESULTS :

(i) 23.33 ton/ac.  
 (ii) (a) 2.644 ton/ac.  
 (b) 2.143 ton/ac.  
 (iii) Only the effect of H is highly significant.  
 (iv) Av. yield of sugarcane in ton/ac.

	$M_0$	$M_1$	$M_2$	$M_3$	Mean	$P_1$	$P_2$
$H_1$	16.00	25.77	24.87	26.29	23.23	22.71	23.75
$H_2$	17.30	26.88	24.42	25.09	23.42	23.30	23.54
Mean	16.65	26.32	24.64	25.69	23.33	23.01	23.65
$P_1$	15.95	26.28	24.08	25.72			
$P_2$	17.35	26.37	25.21	25.66			

S.E. of the difference of two

1. H or P marginal means = 0.661 ton/ac.
2. M marginal means = 0.758 ton/ac.
3. M means at the level of H or P = 1.072 ton/ac.
4. H or P means at the same level of M = 1.139 ton/ac.
5. means of the body of P x H table = 0.935 ton/ac.

Crop :-Sugarcane.

Ref :-U.P. 48(112).

Site :-Govt. Agri. School Farm, Bulandshahr.

Type :-'P'.

Object :—To study the effect of varying frequencies and depths of irrigation on Sugarcane yield.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) *Sanai* and *Lobia*. (c) N.A. (ii) (a) Loam. (b) N.A. (iii) 15, 16.3.1948. (iv) (a) After taking *sanai* and *lobia* the plots were filled with compost manure, 12 ploughings were given before planting by soil turning and *desi* plough. (b) Flat system. (c) N.A. (d) N.A. (e) —. (v) *Sanai* and *lobia* were sown for green fodder and green manuring. 15 carts (225 md.) of compost manure per acre was applied. (vi) CO.421. (vii) Irrigated. (viii) Weeding, hoeing and earthing (ix) 43.78". (x) 22.12.1948 to 6.3.1949.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 4 depths of irrigation :  $L_1=3"$ ,  $L_2=4"$ ,  $L_3=5"$  and  $L_4=6"$ .(2) 5 intervals of irrigation :  $I_1=2$ ,  $I_2=3$ ,  $I_3=4$ ,  $I_4=5$  and  $I_5=6$  weeks.

## 3. DESIGN :

(i) 4x5 Fact. in R.B.D. (ii) (a) 20. (b) N.A. (iii) 3. (iv) (a) 53'x21'. (b) 48'x15'. (v) 2½'x3' (vi) Yes.

## 4. GENERAL :

(i) Germination good and tilling fair. Growth was poor in three plots which received water at intervals of 5 and 6 weeks. (ii) No. (iii) Sugarcane yield. (iv) (a) 1945-1948. (b) No. (c) Nil. (v) (a) No. (b) Nil. (vi) Nil. (vii) The experiment was conducted by I.R.I.

## 5. RESULTS :

- (i) 32.72 ton/ac.  
(ii) 8.256 ton/ac.  
(iii) None of the effects is significant.  
(iv) Av. yield of sugarcane in ton/ac.

	$I_1$	$I_2$	$I_3$	$I_4$	$I_5$	Mean
$L_1$	34.71	29.76	34.21	29.19	32.76	32.13
$L_2$	35.65	40.56	37.73	22.89	30.82	33.53
$L_3$	36.56	33.48	29.60	30.35	29.06	33.41
$L_4$	35.02	33.02	34.04	33.13	34.82	33.41
Mean	35.48	33.46	33.90	28.89	31.86	32.72

S.E. of marginal means of L =2.132 ton/ac.

S.E. of marginal means of I =2.383 ton/ac.

S.E. of body of table =4.767 ton/ac.

Crop :-Sugarcane.

Ref :-U.P. 52(211).

Zone :-Lakshmiganj (Deoria).

Type :-'P'.

Object :—To study the water requirement of Sugarcane crop.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) Sugarcane. (c) N.A. (ii) *Bhat* soil. (iii) Press mud 6 carts; Ammo. Phos. 1 md. (iv) CO. 356 (mid-late) improved. (v) (a) Ploughings by tractor on 13.1.1952 and 29.2.1952, harrowing, disc plough by tractor—cross ploughing on 6.3.1952. (b) Flat sowing. (c) 1200 buds/plot. (d) Rows 3' apart. (e) —. (vi) 7 to 8.3.1952. (vii) As per treatments. (viii) Hoeing by *kudali* on 17.3.1952, 12 (ix) 35". (x) 27.3.1953.



## 2. TREATMENTS :

1. No irrigation.
2. One irrigation.
3. Two irrigations.

## 3. DESIGN :

(i) and (ii) R.B.D. with 4 replications. (iii) (a) 50'×24'. (b) 44'×18'. (iv) N.A.

## 4. GENERAL :

(i) and (ii) N.A. (iii) Germination, tillers, millable cane and sugarcane yield. (iv) 1952—1953. (b) and (c) N.A. (v) N.A. (vi) Nil. (vii) The experiment was conducted by D.S.R. (G) on cultivators' fields.

## 5. RESULTS :

- (i) 15.06 ton/ac.
- (ii) 3.030 ton/ac.
- (iii) Treatment differences are significant.
- (iv) Av. yield of sugarcane in ton/ac.

Treatment	Av. yield
1.	11.12
2.	15.58
3.	18.49
S.E./mean	=1.515 ton/ac.

Crop :- Sugarcane.

Zone :- Lakshmiganj (Deoria).

Ref :- U.P. 53(239).

Type :- 'P'.

Object:—To study the water requirements of Sugarcane crop.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) Sugarcane. (c) N.A. (ii) Loam. (iii) Press mud at 100 mds./ac. on 21.1.1953. Top dressing by Castor cake at 8 md./ac. on 22.2.1953. A/S at 2 md./ac. on 22.2.1953. (iv) CO. 617 (medium) improved. (v) (a) 4 ploughings by tractor. (b) Flat planting with spade. (c) 1680 fuds/plot. (d) N.A. (e) —. (vi) 22.2.1953. (vii) Irrigated. (viii) Hoeing by *kudali* on 7.3.1953, 18.4.1953, 22.5.1953 and 10.6.1953. (ix) 40°. (x) 17.2.1954.

## 2. TREATMENTS :

1. No irrigation.
2. One irrigation in mid May.
3. Two irrigation in 1st week of May and June.

Due to unfavourable weather condition, treatment 3 could get only one irrigation and hence 2 and 3 are same.

## 3. DESIGN :

(i) and (ii) R.B.D. with 4 replications. (iii) (a) 80'×21'. (b) 74'×15'. (iv) N.A.

## 4. GENERAL :

(i) and (ii) N.A. (iii) Germination, tillers, millable cane and sugarcane yield. (iv) (a) 1952—1953. (b) and (c) N.A. (v) N.A. (vi) Nil. (vii) The experiment was conducted by D.S.R. (G) on cultivators' fields.

## 5. RESULTS :

- (i) 6.330 ton/ac.
- (ii) 1.280 ton/ac.
- (iii) Treatment difference is significant.
- (iv) Av. yield of sugarcane in ton/ac.

Treatment	Av. yield
1.	7.210
2.	5.890
S.E./mean treatment (1)	=0.640 ton/ac.
S.E./mean treatment (2)	=0.452 ton/ac.

Crop :- Sugarcane.  
Zone :- Tamkohi (Deohia).

Ref :- U.P. 51(161).  
Type :- 'P'.

Object :- To study the water requirements of Sugarcane crop.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) Paddy. (c) N.A. (ii) *Bhat* soil. (iii) 5 C.L. of F.Y.M. at sowing. (iv) CO.356 (medium-late). (v) (a) Ploughing by *desi* plough, ploughing by victory plough with planking and ploughing by tractor and levelling. (b) Trench planted. (c) 11 rows/plot and 2178 buds/plot. (d) N.A. (e) —. (vi) 5.3.1951. (vii) Irrigated. (viii) 3 hoeings by *kassi* and earthing by spade and *kassi*. (ix) N.A. (x) 19.3.1952.

2. TREATMENTS :

1. One irrigation in the middle of May.
2. Two irrigations, first in the middle of May and second in the middle of June.

3. DESIGN :

(i) and (ii) R.B.D. with 2 replications. (iii) (a) 66' x 33'. (b) 60' x 27'. (iv) N.A.

4. GENERAL :

(i) and (ii) N.A. (iii) Germination, millable cane, tillers and sugarcane yield. (iv) (a) No. (b) and (c) N.A. (v) N.A. (vi) Nil. (vii) The experiment was conducted by D.S.R. (G) on cultivator's fields.

5. RESULTS :

- (i) 14.27 ton/ac.  
(ii) 1.309 ton/ac.  
(iii) Treatment difference is not significant.  
(iv) Av. yield of sugarcane in ton/ac.

Treatment	Av. yield
1.	13.61
2.	14.94
S.E./mean	= 0.925 ton/ac.

Crop :- Sugarcane.  
Zone :- Lakshmiganj (Deoria).

Ref :- U.P. 51(160).  
Type :- 'P'.

Object :- To study the water requirements of Sugarcane crop.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) *Sanat* as G.M. sown on 19.6.1950. (c) Nil. (ii) *Bhat* soil. (iii) 120 md. of F.Y.M. (iv) CO.513 (early) improved. (v) (a) 2 ploughings by victory plough followed by planking, 7 ploughings by *desi* plough, making furrows by victory plough on 19.2.1951 (b) Flat planting system. (c) 1314 buds/plot. (d) N.A. (e) —. (vi) 20 to 22.2.1951. (vii) As per treatments. (viii) 3 hoeings by *kassi*. (ix) N.A. (x) 24.2.1952.

2. TREATMENTS :

1. No irrigation.
2. One irrigation in the middle of May.
3. Two irrigations, first in the middle of May and second in the middle of June.

3. DESIGN :

(i) and (ii) R.B.D. with 4 replications. (iii) (a) 73' x 18'. (b) 67' x 12'. (iv) N.A.

4. GENERAL :

(i) and (ii) N.A. (iii) Germination, tillers, millable cane and sugarcane yield. (iv) (a) No. (b) and (c) N.A. (v) N.A. (vi) Nil. (vii) The experiment was conducted by D.S.R. (G) on cultivators' fields.

5. RESULTS :

- (i) 17.59 ton/ac.  
(ii) 2.787 ton/ac.  
(iii) Treatment differences are not significant.

(iv) Av. yield of sugarcane in ton/ac.

Treatment	Av. yield
1.	18.29
2.	17.93
3.	16.56
S.E./mean	= 1.394 ton/ac.

**Crop :- Sugarcane.****Ref :- U P. 52(212).****Zone :- Ghugli (Gorakhpur).****Type :- 'I'.****Object :-**To study the water requirements of Sugarcane crop.**1. BASAL CONDITIONS :**

(i) (a) N.A. (b) Sugarcane and *chari* for fodder. (c) N.A. (ii) *Bhat* soil. (iii) 4½ md. of *mohwa* cake mixture (50% of A/S and cake each) on 29.2.1952. (iv) CO. 356 (mid-late) improved. (v) (a) 2 ploughings by tractor, 1 ploughing by *desi* plough (b) Flat sowing. (c) 1800 buds/plot. (d) N.A. (e) —. (vi) 29.2.1952. (vii) Irrigated (viii) 6 hoeings by *kudali* in all plots. (ix) 35.1". (x) 24 to 29.1.1953.

**2. TREATMENTS :**

1. No irrigation.
2. One irrigation in April.
3. Two irrigations, one in April and one in May.

**3. DESIGN :**

(i) and (ii) R.B.D. with 4 replications. (iii) (a) 60'×30'. (b) 60'×30'. (iv) N.A.

**4. GENERAL :**

(i) N.A. (ii) N.A. (iii) Germination, tillers, millable cane and sugarcane yield. (iv) (a) No. (b) and (c) N.A. (v) N.A. (vi) Nil. (vii) The experiment was conducted by D.S.R. (G) on cultivators' fields.

**5. RESULTS :**

- (i) 20.75 ton/ac.
- (ii) 1.617 ton/ac.
- (iii) Treatment differences are significant.
- (iv) Av. yield of sugarcane in ton/ac.

Treatment	Av. yield
1.	22.89
2.	20.97
3.	18.40
S.E./mean	=0.808 ton/ac.

**Crop :- Sugarcane.****Ref :- U.P. 48(58).****Zone :- Ghugli (Gorakhpur).****Type :- 'I'.****Object :-**To study the water requirements of Sugarcane crop.**1. BASAL CONDITIONS :**

(i) (a) N.A. (b) Ratoon sugarcane. (c) N.A. (ii) Heavy loam. (iii) 50 md. of F.Y.M. at the preparation of field, top dressing castor cake at 4 mds. at the time of planting. (iv) CO. 453 (mid-late), improved. (v) (a) Ploughing by *desi* plough 8 times from 1 to 27.11.1947, (b) Trench planting. (c) 1728 buds/plot. (d) N.A. (e) —. (vi) 9, 10.2.1948. (vii) Irrigated. (viii) Hoeing by *kudali* on 9 and 10 March, 1.5.1948, 29.5.1948, 24 and 25.7.1948 and earthing up by *kudali* on 10.8.1948. (ix) 45.47". (x) 10, 29.1.1949.

**2. TREATMENTS :**

1. Irrigation.
2. No irrigation

**3. DESIGN :**

(i) and (ii) R.B.D. with 4 replications. (iii) (a) 72'×24': (b) 66'×18'. (iv) N.A.

**4. GENERAL :**

(i) N.A. (ii) N.A. (iii) Germination, tillers, millable cane and sugarcane yield. (iv) (a) No. (b) and (c) N.A. (v) N.A. (vi) Nil. (vii) The experiment was conducted by D.S.R. (G).

**5. RESULTS :**

- (i) 16.86 ton/ac.  
 (ii) 0.73 ton/ac.  
 (iii) Treatment difference is highly significant.  
 (iv) Av. yield of sugarcane in ton/ac.

Treatment	Av. yield
1.	18.93
2.	14.78
S.E /mean	=0.37 ton/ac.

Crop :- Sugarcane.

Ref :- U.P. 49 (162).

Site :- Sugarcane Res. Stn., Shahjahanpur.

Type :- 'IV'.

Object :- To study the effect of deficient and normal irrigation on the growth of varieties of Sugarcane.

**1. BASAL CONDITIONS :**

(i) (a) Nil. (b) *Sanai* as G.M. (c) No. (ii) (a) Loam. (b) Refer soil analysis, Shahjahanpur. (iii) 5.4.1949. (iv) (a) and (b) N.A. (c) 35 three budded setts/row. (d) N.A. (e) —. (v) *Sanai* as G.M. at 60 lb./ac. of N and top dressing of A/S at 40 lb./ac. of N. (vi) As per treatments. (vii) Irrigated. (viii) to (x) N.A.

**2. TREATMENTS :**

Main-plot treatments :

2 levels of irrigation :  $I_1$ =normal—5 irrigations in the pre-monsoon season and  $I_2$ =deficient—2 irrigations in the pre-monsoon season.

Sub-plot treatments :

6 varieties :  $V_1$ =CO.453 (late),  $V_2$ =CO.421 (medium),  $V_3$ =CO.313 (early),  $V_4$ =CO.K.26 (medium),  $V_5$ =CO.S.186 (medium) and  $V_6$ =CO.622 (early).

**3. DESIGN :**

(i) Split-plot (ii) (a) 2 main-plots/replication and 6 sub-plots/main-plot. (b) N.A. (iii) 3 (iv) (a) N.A. (v) 35'×21'. (vi) N.A. (vii) Yes.

**4. GENERAL :**

(i) and (ii) N.A. (iii) Tillers, millable cane and sugarcane yield. (iv) (a) 1949—1950. (b) and (c) No. (v) (a) and (b) No. (vi) Due to faulty layout replication s.s. is pooled with error (a) to give 4 d.f. in the analysis. (vii) Experiment conducted by D.S.R.(S).

**5. RESULTS :**

- (i) 12.80 ton/ac.  
 (ii) (a) 7.981 ton/ac.  
 (b) 2.06 ton/ac.  
 (iii) Main effect of V alone is highly significant.  
 (iv) Av. yield of sugarcane in ton/ac.

	$V_1$	$V_2$	$V_3$	$V_4$	$V_5$	$V_6$	Mean
$I_1$	16.95	7.73	13.29	16.14	16.05	8.24	13.07
$I_2$	19.20	6.65	11.14	13.28	15.65	9.30	12.54
Mean	18.08	7.19	12.22	14.71	15.85	8.77	12.80

## S.E. of difference of two

1. I marginal means =2.660 ton/ac.
2. V marginal means =1.273 ton/ac.
3. V means at the same level of I =1.801 ton/ac.
4. I means at the same level of V =3.127 ton/ac.

Crop :- Sugarcane.

Ref :- U.P. 50(152).

Site :- Sugarcane Res. Stn., Shahjahanpur.

Type :- 'IV'.

Object :- To investigate the effect of normal and deficient irrigation on the growth of varieties of Sugarcane.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) *Sanai* as G.M. (c) No. (ii) (a) Loam. (b) Refer soil analysis, Shahjahanpur. (iii) 1.3.1950. (iv) (a) and (b) N.A. (c) 35, three budded setts/row. (d) N.A. (e) —. (v) G.M. as B.D. and A/S at 100 lb./ac. of N as top dressing. (vi) As per treatments. (vii) Irrigated. (viii) N.A. (ix) 38.72°. (x) 22 and 25.2.1951.

## 2. TREATMENTS :

## Main-plot treatments :

2 irrigations :  $I_1$  = one pre-monsoon irrigation (excluding pre-sowing) and  $I_2$  = five pre-monsoon irrigations (excluding pre-sowing).

## Sub-plot treatments :

6 varieties :  $V_1$  = CO.453 (late),  $V_2$  = CO.421 (medium),  $V_3$  = CO.313 (early),  $V_4$  = CO.K.26 (medium),  $V_5$  = CO.186 (medium) and  $V_6$  = CO.622 (early).

## 3. DESIGN :

(i) Split-plot. (ii) (a) 2 main-plots/replication and 6 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 34' x 27'. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) and (ii) N.A. (iii) Tillers, millable cane and sugarcane yield. (iv) (a) 1949—1950. (b) and (c) No. (v) (a) and (b) No. (vi) Nil. (vii) Experiment conducted by D.S.R. (S).

## 5. RESULTS :

- (i) 19.20 ton/ac.
- (ii) (a) 1.926 ton/ac.  
(b) 2.130 ton/ac.
- (iii) Main effects of I and V are highly significant. Interaction  $I \times V$  is significant.
- (iv) Av. yield of sugarcane in ton/ac.

	$V_1$	$V_2$	$V_3$	$V_4$	$V_5$	$V_6$	Mean
$I_1$	25.43	12.20	12.24	21.52	19.12	14.28	17.46
$I_2$	31.17	16.17	15.97	23.01	18.74	20.60	20.94
Mean	28.30	14.18	14.10	22.27	18.93	17.44	19.20

## S.E. of difference of two

1. marginal means of I =0.556 ton/ac.
2. marginal means of V =1.065 ton/ac.
3. V means at the same level of I =1.506 ton/ac.
4. I means at the same level of M =1.483 ton/ac.

Crop :- Sugarcane.

Ref :- U.P. 51(186).

Site :- Sugarcane Res. Stn., Shahjahanpur.

Type :- 'IV'.

Object :- To investigate the effect of normal and deficient irrigation during the pre-monsoon period on the growth, yield and juice quality of Sugarcane varieties.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Sanal*. (c) No. (ii) (a) Loam. (b) Refer soil analysis, Shahjahanpur. (iii) 13.2.1951. (iv) (a) and (b) N.A. (c) 35, three budded setts/row. (d) N.A. (e) —. (v) *Sanal* and top dressing of A/S at 100 lb./ac. of N on 7.5.1951. (vi) As per treatments. (vii) Irrigated. (viii) 4 hoeings on 9.4.1951 and 27.5.1951 and 21.6.1951, earthing on 24.8.1951 and weeds on 10.11.1951. (ix) N.A. (x) 27.2.1952.

## 2. TREATMENTS :

Main-plot treatments :

2 irrigations :  $I_1=2$  pre-monsoon irrigations (including *palewa*) and  $I_2=5$  pre-monsoon irrigations (excluding *palewa*).

Sub-plot treatments :

4 varieties :  $V_1=CO.453$  (late),  $V_2=CO.622$  (early),  $V_3=CO.617$  (medium) and  $V_4=CO.S.510$  (medium early).

## 3. DESIGN :

(i) Split-plot. (ii) (a) 2 main-plots/replication and 4 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) N.A. (b)  $35' \times 27'$ . (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) The drought during summer adversely affected the growth of sugarcane plants particularly under deficient irrigations. (ii) N.A. (iii) Tillers, millable cane and sugarcane yield. (iv) (a) to (c) No. (v) (a) and (b) No. (vi) Yield of  $I_1$  treatments of  $V_3$  and  $V_4$  were estimated for analysis and summary of results. (vii) Experiment conducted by D.S.R. (S).

## 5. RESULTS :

(i) 20.42 ton/ac.  
 (ii) (a) 13.434 ton/ac.  
 (b) 4.425 ton/ac.  
 (iii) None of the effects is significant.  
 (iv) Av. yield of sugarcane in ton/ac.

	$V_1$	$V_2$	$V_3$	$V_4$	Mean
$I_1$	21.77	14.04	17.17	18.91	17.97
$I_2$	27.67	21.87	18.92	23.02	22.87
Mean	24.72	17.96	18.04	20.96	20.42

## S.E. of difference of two

1. marginal means of I = 5.558 ton/ac.
2. marginal means of  $V_1$  and  $V_3$  = 2.557 ton/ac.
3. marginal means of V one of them contains missing value = 2.759 ton/ac.
4. marginal means of  $V_3$  and  $V_4$  (with missing values) = 3.129 ton/ac.
5. V means at the same level of I (without missing value) = 3.613 ton/ac.
6. V means at the same level of I (one with missing value and the other without missing value) = 3.902 ton/ac.
7. V means at the same level of I (both are with missing values) = 4.425 ton/ac.
8. I means at the same level of V (without a missing value) = 6.14 ton/ac.
9. I means at the same level of  $V_4$  (one is having a missing value and the other not) = 6.650 ton/ac.

Crop :-Sugarcane.

Ref :-U.P. 53(224).

Site :- Sugarcane Res. Stn., Shahjahanpur.

Type :-'IV'.

Object :-To investigate the effect of normal and deficient irrigations during the pre-monsoon period on the growth, yield and juice quality of Sugarcane varieties.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) *Sanai*. (c) No. (ii) (a) Loam. (b) Refer soil analysis, Shahjahanpur. (iii) 9.2.1953. (iv) (a) to (e) N.A. (v) *Sanai* at 40 lb./ac. Top dressing 60 lb./ac. of N as A/S on 21.4.1953 (at tillering time). (vi) As per treatments. (vii) Irrigated. (viii) 5[hoeings with cultivator and *kassi*. (ix) 45.73°. (x) 9.2.1954.

## 2. TREATMENTS :

## Main-plot treatments :

2 irrigations : I<sub>1</sub>=Two pre-monsoon irrigations (deficient irrigation) and I<sub>2</sub>=Five pre-monsoon irrigations (normal irrigation).

## Sub-plot treatments

6 varieties : V<sub>1</sub>=CO. 452 (late), V<sub>2</sub>=CO. 622 (early), V<sub>3</sub>=CO. 617 (medium), V<sub>4</sub>=CO.S. 321 (early), V<sub>5</sub>=CO.S. 510 (mid-early) and V<sub>6</sub>=CO.S. 443 (medium).

## 3. DESIGN :

(i) Split-plot. (ii) (a) 2 main-plots/replication and 6 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 40' x 27'. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) Nil. (iii) Tillers, millable cane and sugarcane yield. (iv) (a) 1953—1954. (b) and (c) No. (v) (a) and (b) No. (vi) One replication omitted for analysis. (vii) Experiment was conducted by D.S.R. (S).

## 5. RESULTS :

(i) 25.26 ton/ac.

(ii) (a) 3.00 ton/ac.

(b) 3.06 ton/ac.

(iii) Main effect of I is significant and main effect of V is highly significant. Interaction is not significant.

(iv) Av. yield of sugarcane in ton/ac.

	V <sub>1</sub>	V <sub>2</sub>	V <sub>3</sub>	V <sub>4</sub>	V <sub>5</sub>	V <sub>6</sub>	Mean
I <sub>1</sub>	27.11	20.43	21.37	23.35	22.18	23.95	23.06
I <sub>2</sub>	30.47	21.37	27.07	30.21	29.93	25.75	27.47
Mean	28.79	20.90	24.22	26.78	26.06	24.85	25.26

## S.E. of difference of two

1. I marginal means =1.000 ton/ac.
2. V marginal means =1.767 ton/ac.
3. V means at the same level of I =2.499 ton/ac.
4. I means at the same level of V =2.824 ton/ac.

Crop :-Sugarcane.

Ref :-U.P. 48(50).

Site :-Sugarcane Res. Stn., Shahjahanpur.

Type :-'IV'.

Object :-To study the effect of irrigation on Sugarcane and sugar yield.

## 1. BASAL CONDITIONS:

(i) (a) to (c) N.A. (ii) (a) Loam. (b) Refer soil analysis, Shahjahanpur. (iii) 19.3.1948. (iv) (a) and (b) N.A. (c) 50 three budded setts row. (d) N.A. (e) —. (v) *Sanai* as B.D. and Castor cake. top dressing at 50 lb./ac. of N. (vi) As per treatments. (vii) Irrigated. (viii) N.A. (ix) N.A. (x) N.A.

## 2. TREATMENTS :

## Main-plot treatments :

2 irrigations :  $I_1$ =Palewa and one irrigation of nursery and  $I_2$ =Palewa on 12.3.1948, and one irrigation each in April, in early May, in late May and in mid June.

## Sub-plot treatments :

6 varieties :  $V_1$ =CO. 313 (early),  $V_2$ =CO. 421 (medium),  $V_3$ =CO. 331 (late),  $V_4$ =CO. 527 (early),  $V_5$ =CO. 453 (late) and  $V_6$ =CO. 557 (medium).

## 3. DESIGN :

(i) Split-plot. (ii) (a) 2 main-plots/replication and 6 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) N.A. (b) 40'x27'. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) N.A. (iii) Germination, tiller counts and sugarcane yield. (iv) (a) 1946—1948. (b) and (c) No. (v) (a) and (b) No. (vi) Nil. (vii) Experiment conducted by D.S.R.(S).

## 5. RESULTS :

- (i) 20.82 ton/ac.  
 (ii) (a) 6.462 ton/ac.  
 (b) 3.440 ton/ac.  
 (iii) Only V effect is highly significant.  
 (iv) Av. yield of sugarcane in ton/ac.

	$V_1$	$V_2$	$V_3$	$V_4$	$V_5$	$V_6$	Mean
$I_1$	16.56	17.54	21.26	13.80	26.84	21.54	19.59
$I_2$	16.29	18.77	25.40	15.85	30.47	25.47	22.04
Mean	16.42	18.16	23.33	14.82	28.66	23.50	20.82

## S.E. of difference of two

1. marginal means of I =2.154 ton/ac.  
 2. marginal means of V =1.986 ton/ac.  
 3. V means at the same level of I =2.808 ton/ac.  
 4. I means at the same level of V =3.349 ton/ac.

Crop :-Sugarcane.

Ref :-U.P. 49(1).

Site :-Sugarcane Res. Sub-Strn., Kunraghat.

Type :-'IM'.

Object :-To find out the optimum level of irrigation and time of application of N to Sugarcane.

## 1. BASAL CONDITIONS :

(i) (a) Wheat—Fallow—Sugarcane. (b) Fallow. (c) Nil. (ii) (a) Sandy loam. (b) N.A. (iii) 23.1.1949. (iv) (a) 8 preparatory ploughings and 3 harrowing with *desi* and Watt's plough. (b) Flat sowing. (c) 60 three budded setts. (d) N.A. (e) —. (v) Village compost at 60 lb./ac. of N applied in trenches in Dec. 1948. (vi) CO.453 (late). (vii) Irrigated. (viii) 7 hoeings and 1 earthing. (ix) 52.65°. (x) 2 to 6.2.1950.

## 2. TREATMENTS :

## Main-plot treatments :

2 levels of irrigations : $I_1$ =4 times,  $I_2$ =6 times and  $I_3$ =8 times.

## Sub-plot treatments :

4 application of N as A/S :  $M_0$ =No nitrogen,  $M_1$ =120 lb./ac. of N at planting,  $M_2$ =120 lb./ac. of N at planting and at germination in two equal doses and  $M_3$ =120 lb./ac. of N in six equal doses during planting and tillering.

## 3. DESIGN :

(i) Split-plot. (ii) (a) 3 main-plots/replication and 4 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) 56'x18'. (b) 50'x12'. (v) 3' border around the plot. (vi) Yes.



## 4. GENERAL :

(i) Normal, no lodging. (ii) No. (iii) Germination, tillers, millable cane and sugarcane yield. (iv) (a) 1949-1951. (b) No. (c) N.A. (v) (a) No. (b) N.A. (vi) Nil. (vii) The experiment was conducted by D.S.R. (G).

## 5. RESULTS :

- (i) 25.95 ton/ac.  
 (ii) (a) 5.986 ton/ac.  
 (b) 4.074 ton/ac.  
 (iii) Only main effect of M is significant.  
 (iv) Av. yield of sugarcane in ton/ac.

	M <sub>0</sub>	M <sub>1</sub>	M <sub>2</sub>	M <sub>3</sub>	Mean
I <sub>1</sub>	22.05	26.22	30.38	28.34	26.75
I <sub>2</sub>	22.02	25.51	26.27	27.00	25.20
I <sub>3</sub>	21.60	28.43	26.98	26.60	25.90
Mean	21.89	26.72	27.88	27.31	25.95

## S.E. of difference of two

1. marginal means of I = 2.444 ton/ac.  
 2. marginal means of M = 1.920 ton/ac.  
 3. M means at the same level of I = 3.326 ton/ac.  
 4. I means at the same level of M = 3.777 ton/ac.

Crop :- Sugarcane.

Ref :- U.P. 50(26)/49(1).

Site :- Sugarcane Res. Sub-Stn., Kunraghat.

Type :- 'IM'.

Object :- To find out the optimum level of irrigation and time of application of N to Sugarcane.

## 1. BASAL CONDITIONS :

(i) (a) G.M.—Wheat—*Jowar* for fodder—Sugarcane. (b) *Dhalncha* and *urid* for seed. (c) Nil. (ii) (a) Sandy loam. (b) N.A. (iii) 13, 14.2.1950. (iv) (a) 3 preparatory ploughings and harrowings with Watt's plough. (b) Sown in trenches. (c) 60 three budded setts/row. (d) N.A. (e) —. (v) Nil. (vi) CO.453 (late). (vii) Irrigated. (viii) 7 hoeings and earthing. (ix) 44.96°. (x) 13.1.1951 to 10.2.1951.

## 2. TREATMENTS :

Main-plot treatments :

2 levels of irrigations I<sub>1</sub>=4 times, I<sub>2</sub>=6 times and I<sub>3</sub>=8 times.

Sub-plot treatments :

4 applications of N as A/S : M<sub>0</sub>=No nitrogen, M<sub>1</sub>=120 lb./ac. of N at planting, M<sub>2</sub>=120 lb./ac. of N at planting and at germination in two equal doses and M<sub>3</sub>=120 lb./ac. of N in six equal doses during planting and tillering.

## 3. DESIGN :

(i) Split-plot. (ii) (a) 3 main-plots/replication and 4 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 56'×21'. (b) 50'×15'. (v) 3' border around the plot. (vi) Yes.

## 4. GENERAL :

(i) Normal, no lodging. (ii) Borers attacked and were killed. (iii) Germination, tillers, millable cane and sugarcane yield. (iv) (a) 1949-1951. (b) and (c) No. (v) (a) and (b) No. (vi) Nil. (vii) The experiment was conducted by D.S.R. (G).

## 5. RESULTS :

- (i) 21.27 ton/ac.  
 (ii) (a) 4.221 ton/ac.  
 (b) 2.779 ton/ac.  
 (iii) Main effect of I is significant and that of M is highly significant. Interaction is not significant.

(iv) Av. yield of sugarcane in ton/ac.

	M <sub>0</sub>	M <sub>1</sub>	M <sub>2</sub>	M <sub>3</sub>	Mean
I <sub>1</sub>	13.10	18.00	19.42	22.52	18.26
I <sub>2</sub>	16.04	24.08	24.37	24.51	22.25
I <sub>3</sub>	17.58	24.35	24.86	26.38	23.29
Mean	15.57	22.14	22.88	24.47	21.27

## S.E. of difference of two

1. marginal means of I = 1.492 ton/ac.
2. marginal means of M = 1.135 ton/ac.
3. M means at the same level of I = 1.965 ton/ac.
4. I means at the same level of M = 2.264 ton/ac.

Crop :- Sugarcane.

Ref :- U.P. 51(18)/50(26)/49(1)

Site :- Sugarcane Res. Sub-Stn., Kunraghat.

Type :- 'IM'.

Object :- To find out the optimum level of irrigation and time of application of N to Sugarcane,

## BASAL CONDITIONS :

(i) (a) G.M.—Wheat, *Jowar* fodder—Sugarcane. (b) *Jowar* for fodder. (c) Nil. (ii) (a) Sandy loam. (b) N.A. (iii) 29 and 30.1.1951. (iv) (a) 6 preparatory ploughing with *desi* and victory plough. (b) Sown in trenches. (c) 60 three budded setts/row. (d) N.A. (e) —. (v) *Neem* cake and A/S each applied at 60 lb./ac. of N. (vi) CO. 453. (vii) Irrigated. (viii) 8 hoeings and 4 earthings (ix) 27.50". (x) 31.12.1951 to 4.3.1952.

## TREATMENTS :

## Main-plot treatments :

3 levels of irrigations : I<sub>1</sub>=4 times, I<sub>2</sub>=6 times and I<sub>3</sub>=8 times.

## Sub-plot treatments :

4 applications of N as A/S : M<sub>0</sub>=No nitrogen, M<sub>1</sub>=120 lb./ac. of N at planting, M<sub>2</sub>=120 lb./ac. of N at planting and at germination in two equal doses and M<sub>3</sub>=120 lb./ac. of N in six equal doses during planting and tillering.

## DESIGN :

(i) Split-plot. (ii) (a) 3 main-plots/replication and 4 sub-plots/main-plot. (iii) 4. (iv) (a) 56'×21. (b) 51'×15. (v) 3' border around the plot. (vi) Yes.

## GENERAL :

(i) Normal, no lodging. (ii) No. (iii) Germination, tillers, millable cane and sugarcane yield. (iv) (a) 1949–1951. (b) and (c) No. (vi) Nil. (vii) Experiment conducted by D.S.R. (G).

## RESULTS :

- (i) 19.40 ton/ac.
- (ii) (a) 3.197 ton/ac.
- (b) 3.165 ton/ac.
- (iii) Only main effect of M is highly significant.
- (iv) Av. yield of sugarcane in ton/ac.

	M <sub>0</sub>	M <sub>1</sub>	M <sub>2</sub>	M <sub>3</sub>	Mean
I <sub>1</sub>	14.39	17.44	18.44	20.43	17.68
I <sub>2</sub>	16.42	20.58	22.83	22.12	20.49
I <sub>3</sub>	14.62	21.82	22.98	20.67	20.02
Mean	15.14	19.95	21.42	21.07	19.40

## S.E. of difference of two

1. marginal means of I	=1.130 ton/ac.
2. marginal means of M	=1.292 ton/ac.
3. M means at the same level of I	=2.238 ton/ac.
4. I means at the same level of M	=2.244 ton/ac.

Crop :- Sugarcane.

Ref :- U.P. 50(25).

Site :- Sugarcane Res. Sub-Stn., Kunraghat.

Type :- 'IM'.

Object :- To find out the optimum level of irrigation and N to Sugarcane.

## 1. BASAL CONDITIONS :

(i) (a) G.M.—Wheat. (b) *Dhaincha* for seed. (c) G.M. (ii) (a) Sandy loam. (b) N.A. (iii) 12 and 13.2.1950.  
 (iv) (a) 5 preparatory ploughings with *desi* and Watt's plough. (b) Sown in trenches. (c) and (d) N.A.  
 (e)—. (v) Nil. (vi) CO. 453. (viii) Irrigated. (vii) Earthing from 30.7.1950 to 3.8.1950 and 12 hoeings.  
 (ix) 45.00". (x) 22 to 28.2.1951.

## 2. TREATMENTS :

## Main-plot treatments :

3 levels of irrigations :  $I_1=4$ ,  $I_2=8$  and  $I_3=12$  irrigations.

## Sub-plot treatments :

4 levels of N :  $N_0=0$ ,  $N_1=100$ ,  $N_2=200$  and  $N_3=300$  lb./ac.

N was top dressed as A/S.

## 3. DESIGN :

(i) Split-plot. (ii) (a) 3 main-plots/replication and 4 sub-plots/main-plot. (iii) 3. (iv) (a) 56'×18'. (b) 50'×12'. (v) 3' border left around the plot. (vi) Yes.

## 4. GENERAL :

(i) Normal, no lodging. (ii) No. (iii) Germination, tillers, millable cane and sugarcane yield. (iv) (a) 1950—1952. (b) and (c) No. (v) (a) and (b) No. (vi) Nil. (vii) Experiment conducted by D.S.R. (G).

## 5. RESULTS :

- (i) 19.41 ton/ac.  
 (ii) (a) 2.894 ton/ac.  
 (b) 2.164 ton/ac.  
 (iii) Only main effect of N is highly significant.  
 (iv) Av. yield of sugarcane in ton/ac.

	$N_0$	$N_1$	$N_2$	$N_3$	Mean
$I_1$	12.77	16.92	18.78	20.64	17.28
$I_2$	17.40	20.75	23.09	22.86	21.02
$I_3$	14.28	20.46	22.90	22.04	19.92
Mean	14.82	19.38	21.59	21.85	19.41

## S.E. of difference of two

1. marginal means of I	=1.182 ton/ac.
2. marginal means of N	=1.020 ton/ac.
3. N means at the same level of I	=1.767 ton/ac.
4. I means at the same level of N	=1.933 ton/ac.

Crop :-Sugarcane.

Ref :-U.P. 51(20)/50(25).

Site :-Sugarcane Res. Sub-Stn., Kunraghat.

Type :-'IM'.

Object :-To find out the optimum level of irrigation and N to Sugarcane.

## 1. BASAL CONDITIONS :

(i) (a) G.M.—Barley and Cotton—Sugarcane. (b) Cotton. (c) Nil. (ii) Sandy loam. (b) N.A. (iii) 10.2.1951. (iv) (a) 3 preparatory ploughings with victory plough. (b) Sown in trenches. (c) 45 three budded setts/row. (d) N.A. (e) —. (vi) CO. 453 (late). (vii) Irrigated. (viii) 9 hoeings and 2 earthings (ix) 27.19°. (x) 1.1.1952 to 2.2.1952.

## 2. TREATMENTS :

Main-plot treatments :

3 levels of irrigation :  $I_1=4$ ,  $I_2=8$  and  $I_3=12$  irrigations.

Sub-plot treatments :

4 levels of N :  $N_0=0$ ,  $N_1=100$ ,  $N_2=200$  and  $N_3=300$  lb./ac. of N.

Neem cake and A/S used at 50 : 50 ratio on N basis. Neem cake applied in furrows just before planting. A/S applied in two instalments i.e.  $\frac{1}{2}$  at germination and  $\frac{1}{2}$  at tillering.

## 3. DESIGN :

(i) Split-plot. (ii) (a) 3 main-plots/replication and 4 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) 41'×21'. (b) 35'×15'. (d) 3' border around the plot. (vi) Yes.

## 4. GENERAL :

(i) Normal. No lodging. (ii) Attack of borers. (iii) Germination, tiller, millable cane and sugarcane yield. (iv) (a) 1950—1952. (b) and (c) No. (v) (a) and (b) No. (vi) Nil. (vii) Experiment conducted by D.S.R. (G).

## 5. RESULTS :

- (i) 21.65 ton/ac.  
 (ii) (a) 5.904 ton/ac.  
 (b) 2.928 ton/ac.  
 (iii) Only main effect of N is highly significant.  
 (iv) Av. yield of sugarcane in ton/ac.

	$N_0$	$N_1$	$N_2$	$N_3$	Mean
$I_1$	11.83	19.28	20.48	21.85	18.36
$I_2$	14.08	24.83	23.73	29.00	22.91
$I_3$	16.39	23.12	27.46	27.75	23.68
Mean	14.10	22.41	23.89	26.20	21.65

S.E. of difference of two

1. marginal mean of I =2.410 ton/ac.  
 2. marginal mean of N =1.380 ton/ac.  
 3. N means at the same level of I =2.391 ton/ac.  
 4. I means at the same level of N =3.178 ton/ac.

Crop :-Sugarcane.

Ref :-U.P. 52(57)/51(20)/50(25).

Site :-Sugarcane Res. Sub-Stn., Kunraghat.

Type :-'IM'.

Object :-To find out the optimum level of irrigation and N to Sugarcane.

## 1. BASAL CONDITIONS :

(i) (a) Green manure—Wheat. (b) *Guar* for seed. (c) Green manure (amount N.A.). (ii) (a) Sandy loam. (b) N.A. (iii) 13 and 14.2.1952. (iv) (a) 5 preparatory ploughings with *desi* and victory ploughs. (b) Sown in trenches. (c) 45 three buded setts/row. (d) N.A. (e) —. (v) Nil. (vi) CO 453. (vii) Irrigated. (viii) 7 hoeings one after each irrigation. (ix) 34.40°. (x) 22.1.1953 to 4.3.1953.

**2. TREATMENTS :****Main-plot treatments :**3 levels of irrigation :  $I_1=4$ ,  $I_2=8$  and  $I_3=12$  irrigations.**Sub-plot treatments :**4 levels of N :  $N_0=0$ ,  $N_1=100$ ,  $N_2=200$  and  $N_3=300$  lb./ac. of N.

Castor cake and A/S used on equal nitrogen basis and applied to give the levels of N. Castor cake applied in furrows just before planting and A/S applied in two equal doses at germination and at tillering.

**3. DESIGN :**(i) Split-plot. (ii) (a) 3 main-plots/replication and 4 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) Main-plot:  $41' \times 84'$  and Sub-plot:  $41' \times 21'$ . (b)  $35' \times 15'$ . (vi) 3' border around the gross plot. (vi) Yes.**4. GENERAL :**

(i) Normal. No lodging. (ii) Attack of borers controlled. (iii) Germination, tillers, millable cane and sugarcane yield. (iv) (a) 1950—1952. (b) and (c) No. (v) (a) and (b) No. (vi) Nil. (vii) Experiment was conducted by D.S.R.(G).

**5. RESULTS :**

(i) 28.66 ton/ac.

(ii) (a) 4.050 ton/ac.

(b) 3.417 ton/ac.

(iii) Main effect of I is significant and main effect of N is highly significant while interaction is not significant.

(iv) Av. yield of sugarcane in ton/ac.

	$N_0$	$N_1$	$N_2$	$N_3$	Mean
$I_1$	17.14	22.65	28.74	32.56	25.27
$I_2$	23.61	25.20	29.94	36.29	28.74
$I_3$	22.97	29.40	33.95	41.51	31.96
Mean	21.24	25.75	30.88	36.79	28.66

**S.E. of difference of two**

1. marginal means of I = 1.653 ton/ac.
2. marginal means of N = 1.611 ton/ac.
3. N means at the same level of I = 2.790 ton/ac.
4. I means at the same level of N = 2.928 ton/ac.

**Crop :- Sugarcane.****Ref :- U.P. 52(63).****Site :- Sugarcane Res. Sub-Stn., Muzaffarnagar.****Type :- 'IM'.****Object :-**To assess the response of variety COS.321 under heavy manuring and irrigation conditions.**1. BASAL CONDITIONS :**

(i) (a) G.M.—Wheat—Cotton—Sugarcane. (b) Cotton. (c) Nil. (ii) (a) Light loam. (b) Refer soil analysis, Muzaffarnagar. (iii) 29.2.1952. (iv) (a) 10 preparatory ploughings. (c) Flat planted. (c) 60 md. seed sugarcane and 4200 buds/ac. (d) Rows 3' apart. (e) —. (v) Nil. (vi) COS.321 (early). (vii) Irrigated. (viii) 6 hoeings in general before 1st irrigation and afterwards according to irrigational treatments one or two hoeings after each irrigation. Earthing up in July and August. (ix) 26.79°. (x) 7 and 8.3.1953.

**2. TREATMENTS :****Main-plot treatments :**3 levels of irrigation :  $I_1=5$ ,  $I_2=7$  and  $I_3=9$  irrigation.**Sub-plot treatments :**3 levels of N :  $N_0=0$  nitrogen,  $N_1=100$  and  $N_2=200$  lb./ac. of N.Nitrogen was applied as A/S and Castor cake in equal nitrogen basis. In all the  $I_1, I_2, I_3$ , 2 irrigations are given post-monsoon while the rest are given pre-monsoon.

**3. DESIGN :**

(i) Split-plot. (ii) (a) 3 main-plots/replication and 3 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 55'x27'. (b) 49'x21'. (v) 1 row on each side and 3' border at each end of plot. (vi) Yes.

**4. GENERAL :**

(i) Good. (ii) Nil. (iii) Germination, tiller and millable cane counting and sugarcane yield. (iv) (a) Yes. 1952 to 1954. (b) and (c) No. (v) (a) and (b) Nil. (vi) Nil. (vii) Experiment was conducted by D.S.R. (M).

**5. RESULTS :**

(i) 18.78 ton/ac.  
 (ii) (a) 2.567 ton/ac.  
 (b) 2.063 ton/ac.  
 (iii) Only main effect of N is highly significant.  
 (iv) Av. yield of sugarcane in ton/ac.

	N <sub>0</sub>	N <sub>1</sub>	N <sub>2</sub>	Mean
I <sub>1</sub>	13.52	19.25	20.82	17.86
I <sub>2</sub>	14.64	22.19	21.49	19.44
I <sub>3</sub>	12.43	20.97	23.72	19.04
Mean	13.53	20.80	22.01	18.78

S.E. of difference of two

- |                                   |                |
|-----------------------------------|----------------|
| 1. marginal means of I            | =1.048 ton/ac. |
| 2. marginal means of N            | =0.842 ton/ac. |
| 3. N means at the same level of I | =1.459 ton/ac. |
| 4. I means at the same level of N | =1.586 ton/ac. |

Crop :-Sugarcane.

Ref :-U.P. 53(181).

Site :- Sugarcane Res. Sub-Stn., Muzaffarnagar.

Type :-'IM'.

Object :-To assess the response of variety CO.S.321 under heavy manuring and irrigation conditions.

**1. BASAL CONDITIONS :**

(i) (a) G.M.—Wheat—Cotton—Sugarcane. (b) Cotton. (ii) (a) Light loam. (b) Refer soil analysis, Muzaffarnagar. (iii) 14.3.1953. (iv) (a) 10 preparatory ploughings. (b) Flat planted. (c) 60 md. seed cane and 4200 buds/ac. (d) Rows 3' apart. (e) —. (v) Nil. (vi) CO.S.321 (early). (vii) Irrigated. (viii) 2 hoeings in general before first irrigation. Afterwards according to irrigational treatments *i.e.* one or two hoeings after each irrigation. Earthing up in August. (ix) 28.34". (x) 2 and 7.12.1953.

**2. TREATMENTS :**

Main-plot treatments :

3 levels of irrigation : I<sub>1</sub>=4, I<sub>2</sub>=6 and I<sub>3</sub>=8 irrigations.

Sub-plot treatments :

3 levels of N : N<sub>0</sub>=0, N<sub>1</sub>=100 and N<sub>2</sub>=200 lb./ac. of N.

Nitrogen was applied as A/S and G.N.C. in equal nitrogen basis in the month of May after irrigation. In each of I<sub>1</sub>, I<sub>2</sub> and I<sub>3</sub>, 2 irrigations are given post-monsoon while the rest are given pre-monsoon.

**3. DESIGN :**

(i) Split-plot. (ii) (a) 3 main-plots/replication and 5 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 55'x27' (b) 49'x21'. (v) 1 row on each side 3' border at each end of plot. (vi) Yes.

**4. GENERAL :**

(i) Good. (ii) Mild top borer attack. No control measure was possible. (iii) Germination, tillers, millable cane and sugarcane yield. (iv) (a) Yes. 1952 to 1954. (b) and (c) No. (v) (a) and (b) Nil. (vi) Nil. (vii) Experiment was conducted by D.S.R. (M).

## 5. RESULTS :

- (i) 19.59 ton/ac.  
 (ii) (a) 2.459 ton/ac.  
 (b) 1.537 ton/ac.  
 (iii) Main effect of N is highly significant. I is significant while interaction is not significant.  
 (iv) Av. yield of sugarcane in ton/ac.

	N <sub>0</sub>	N <sub>1</sub>	N <sub>2</sub>	Mean
I <sub>1</sub>	15.12	18.77	20.41	18.10
I <sub>2</sub>	15.90	20.35	22.18	19.48
I <sub>3</sub>	16.23	23.13	24.20	21.19
Mean	15.75	20.75	22.26	19.59

## S.E. of difference of two

1. I marginal means = 1.004 ton/ac.  
 2. N marginal means = 0.627 ton/ac.  
 3. N means at the same level of I = 1.087 ton/ac.  
 4. I means at the same level of N = 1.479 ton/ac.

Crop :- Sugarcane.

Ref :- U.P. 49(11).

Site :- Sugarcane Res. Sub-Stn., Muzaffarnagar.

Type :- 'IMV'.

Object :- To study the response of Sugarcane varieties to irrigation and manuring.

## 1. BASAL CONDITIONS :

(i) (a) Fallow—Sugarcane. (b) Fallow. (c) Nil. (ii) (a) Light loam. (b) Refer soil analysis, Muzaffarnagar. (iii) 10, 11.3.1949. (iv) (a) 16 preparatory ploughings. (b) Sown flat. (c) 80 md. seed cane, 4200 buds/ac. (d) Rows 3' apart. (e) —. (v) Nil. (vi) As per treatments. (vii) Irrigated. (viii) 8 hoeings. Earthing up in September. (ix) 23.09". (x) 6.1.1950 to 25.2.1950.

## 2. TREATMENTS :

## Main-plot treatments :

3 levels of irrigation : I<sub>1</sub>=1 pre-sowing *palewa*, 2 pre-monsoon irrigations at an interval of 7 weeks and a post-monsoon irrigation, I<sub>2</sub>=1 pre-sowing *palewa*, 3 monsoon irrigations at an interval of 5 weeks and 2 post-monsoon irrigations in Oct. and Dec. and I<sub>3</sub>=1 pre-sowing *palewa*, 4 pre-monsoon irrigations at an interval of 3 weeks and 3 postmonsoon irrigations in Oct., Nov. and Dec.

## Sub-plot treatments :

All combinations of (1) and (2)

(1) 2 varieties : V<sub>1</sub>=CO.S. 245 and V<sub>2</sub>=CO.S. 421.(2) 3 levels of N : N<sub>0</sub>=0, N<sub>1</sub>=100 and N<sub>2</sub>=200 lb./ac. of N.

N applied as A/S and G.N.C. on equal nitrogen basis. One extra post-monsoon irrigation had to be given in all the treatments due to exceptionally dry weather.

## 3. DESIGN :

(i) Split-plot. (ii) (a) 3 main-plots/replication and 6 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 50' x 24'. (b) 46' x 18'. (v) One row on each side of plot and 3' border at each end of plot. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Nil. (iii) Germination, tillers, millable cane counting and sugarcane yield. (iv) (a) 1949-1950. (b) and (c) No. (v) (a) and (b) No. (vi) Nil. (vii) The experiment was conducted by D.S.R. (M).

## 5. RESULTS :

- (i) 21.52 ton/ac.  
 (ii) (a) 1.591 ton/ac.  
 (b) 2.056 ton/ac.  
 (iii) Main effects of I, V and N are all highly significant. No other effect is significant.

(iv) Av. yield of sugarcane in ton/ac.

	N <sub>0</sub>	N <sub>1</sub>	N <sub>2</sub>	Mean	V <sub>1</sub>	V <sub>2</sub>
I <sub>1</sub>	13.32	21.75	24.11	19.73	20.70	18.76
I <sub>2</sub>	14.89	23.30	26.22	21.47	22.19	20.75
I <sub>3</sub>	16.68	25.66	27.72	23.35	24.41	22.29
Mean	14.96	23.57	26.02	21.52		
V <sub>1</sub>	15.31	25.22	26.77	22.43		
V <sub>2</sub>	14.62	21.92	25.27	20.60		

S.E. of difference of two

1. I marginal means =0.459 ton/ac.
2. N marginal means =0.594 ton/ac.
3. V marginal means =0.485 ton/ac.
4. N means at the same level of I =1.028 ton/ac.
5. I means at the same level of N =0.957 ton/ac.
6. V means at the same level of I =0.839 ton/ac.
7. I means at the same level of V =0.751 ton/ac.
8. means of the body of N×V table =0.839 ton/ac.

Crop :-Sugarcane.

Ref :-U.P. 50(35).

Site :-Sugarcane Res. Sub-Stn., Muzaffarnagar.

Type :-'IMV'.

Object : -To study the response of Sugarcane varieties to irrigation and manuring.

## 1. BASAL CONDITIONS :

(i) (a) Fallow—Sugarcane. (b) Fallow. (c) Nil. (ii) (a) Light loam. (b) Refer soil analysis, Muzaffarnagar. (iii) 8, 9.3.1950. (iv) (a) 11 preparatory ploughings. (b) Sown flat. (c) N.A. (d) Rows 3' apart. (e) —. (v) Nil. (vi) As per treatments. (vii) Irrigated. (viii) 19 hoeings, earthing up in August. (ix) 39.93%. (x) 11.2.1951 to 18.3.1951.

## 2. TREATMENTS :

Main-plot treatments :

3 levels of irrigation : I<sub>1</sub>=3 pre-monsoon irrigations each at an interval of 4 weeks and 1 post-monsoon irrigation during Nov., I<sub>2</sub>=4 pre-monsoon irrigations each at an interval of 3 weeks and 2 post-monsoon irrigations in Oct. and Dec. and I<sub>3</sub>=5 pre-monsoon irrigations each at an interval of 2 weeks and 3 post-monsoon irrigations in Oct., Dec. and Feb.

Sub-plot treatments :

All combinations of (1) and (2)

(1) 2 varieties : V<sub>1</sub>=CO.S. 245 and V<sub>2</sub>=CO.S. 421.(2) 3 levels of N : N<sub>0</sub>=0, N<sub>1</sub>=100 and N<sub>2</sub>=150 lb./ac. of N.

N applied as A/S and G.N.C. on equal nitrogen basis.

## 3. DESIGN :

(i) Split-plot. (ii) (a) 3 main-plots/replication and 7 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 55'×27'. (b) 51'×21'. (v) One row on each side and 3' border at each end of plot. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Nil. (iii) Germination, tillers, millable cane counting and sugarcane yield. (iv) (a) 1949-1950. (b) and (c) No. (v) (a) and (b) No. (vi) Nil. (vii) The experiment was conducted by D.S.R. (M).

## 5. RESULTS :

- (i) 23.15 ton/ac.
- (ii) (a) 4.397 ton/ac.
- (b) 2.584 ton/ac.
- (iii) Main effects of N and V are highly significant. Others are not significant.



(iv) Av. yield of sugarcane in ton/ac.

	N <sub>0</sub>	N <sub>1</sub>	N <sub>2</sub>	Mean	V <sub>1</sub>	V <sub>2</sub>
I <sub>1</sub>	16.03	24.52	25.34	21.96	23.22	20.70
I <sub>2</sub>	16.92	25.83	29.11	23.95	25.04	22.87
I <sub>3</sub>	16.23	26.42	28.00	23.55	24.80	22.30
Mean	16.39	25.59	27.48	23.15		
V <sub>1</sub>	17.79	27.02	28.25	24.35		
V <sub>2</sub>	14.39	24.17	26.72	21.96		

S.E. of the difference of two

1. marginal means of I = 1.269 ton/ac.
2. marginal means of N = 0.746 ton/ac.
3. marginal means of V = 0.609 ton/ac.
4. N means at the same level of I = 1.292 ton/ac.
5. I means at the same level of N = 1.650 ton/ac.
6. V means at the same level of I = 1.055 ton/ac.
7. I means at the same level of V = 1.472 ton/ac.
8. means of the body of N×V table = 1.055 ton/ac.

Crop :-Sugarcane.

Ref :-U.P. 51(27).

Site :-Sugarcane Res. Sub-Stn., Muzaffarnagar.

Type :-'IMV'.

Object :-To study the response of Sugarcane varieties to irrigation and manuring.

## 1. BASAL CONDITIONS :

(i) (a) Fallow—Sugarcane. (b) *Sanai* (crop failed due to rains and *Kamla* pest). (c) Nil. (ii) (a) Light loam. (b) Refer soil analysis, Muzaffarnagar. (iii) 14 and 15.2.1951. (iv) (a) 22 preparatory ploughings. (b) Sown flat. (c) N.A. (d) Rows 3' apart. (e) —. (v) Nil. (vi) As per treatments. (vii) As per treatments. (viii) 19 hoeings. Earthing up in August. (ix) 40.96%. (x) 9.2.1952 to 16.3.1952.

## 2. TREATMENTS :

Main-plot treatments :

3 levels of irrigation : I<sub>1</sub>=3 pre-monsoon irrigations each at an interval of 4 weeks and 1 post-monsoon irrigation during November, I<sub>2</sub>=4 pre-monsoon irrigations each at an interval of 3 weeks and 2 post-monsoon irrigations in October and December and I<sub>3</sub>=5 pre-monsoon irrigations each at an interval of 2 weeks and 3 post-monsoon irrigations in October, December and February.

Sub-plot treatments :

All combinations of (1) and (2)

(1) 2 varieties : V<sub>1</sub>=CO.S. 245 and V<sub>2</sub>=CO.S. 421.(2) 3 levels of N : N<sub>0</sub>=0, N<sub>1</sub>=100 and N<sub>2</sub>=200 lb./ac.

N applied as A/S and Castor cake on equal nitrogen basis.

## 3. DESIGN :

(i) Split-plot. (ii) (a) 3 main-plots/replication and 6 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 55'×27'. (b) 49'×21'. (v) One row on each side of plot and 3' border at each end of plot. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Heavy pyrilla infestation, no control measure was taken. (iii) Germination, tillers, millable cane counting and sugarcane yield. (iv) (a) to (c) No. (v) (a) and (b) No. (vi) Nil. (vii) Experiment was conducted by D.S.R.(M).

## 5. RESULTS :

- (i) 25.93 ton/ac.  
 (ii) (a) 4.072 ton/ac.  
 (b) 2.575 ton/ac.  
 (iii) Main effects of I and V are highly significant. Others are not significant.  
 (iv) Av. yield of sugarcane in ton/ac.

	N <sub>0</sub>	N <sub>1</sub>	N <sub>2</sub>	Mean	V <sub>1</sub>	V <sub>2</sub>
I <sub>1</sub>	21.16	23.10	22.82	22.36	23.78	20.94
I <sub>2</sub>	27.04	25.46	26.14	26.21	27.42	25.01
I <sub>3</sub>	29.41	29.33	28.96	29.23	31.40	27.07
Mean	25.87	25.96	25.97	25.93		
V <sub>1</sub>	27.51	27.66	27.42	27.53		
V <sub>2</sub>	24.23	24.26	24.52	24.34		

## S.E. of difference of two

1. I marginal means =1.176 ton/ac.
2. V marginal means =0.607 ton/ac.
3. N marginal means =0.743 ton/ac.
4. N means at the same level of I =1.288 ton/ac.
5. I means at the same level of N =1.577 ton/ac.
6. V means at the same level of I =1.051 ton/ac.
7. I means at the same level of V =1.391 ton/ac.
8. means of the body of N×V table =1.051 ton/ac.

Crop :-Sugarcane.

Ref :-U.P. 53(290).

Site :-Sugarcane Res. Sub-Stn., Muzaffarnagar.

Type :-'IMV'.

Object :-To study the response of Sugarcane varieties to different irrigational and manurial treatments.

## 1. BASAL CONDITIONS :

- (a) (a) G.M.—Wheat—Cotton—Sugarcane. (b) Cotton. (c) No. (ii) (a) Loam. (b) N.A. (iii) 12.3.1953. (iv) (a) 7 ploughings by *desi* plough. Levelling of field, *palewa* and *pata* twice. (b) N.A. (c) 36 three budded setts/row. (d) N.A. (e) —. (v) N.A. (vi) As per treatments. (vii) Irrigated. (viii) 3 hoeings by *kassi*, 1 by cultivator, 1 by *Akola* hoe on 2.3.1953 and 3 by spade. (ix) N.A. (x) 10.12.1953.

## 2. TREATMENTS :

Main-plot treatments :

- 2 levels of irrigation : I<sub>1</sub>=2 pre-monsoon and 2 post-monsoon irrigations and I<sub>2</sub>=5 pre-monsoon and 2 post-monsoon irrigations.

Sub-plot treatments :

All combinations of (1) and (2)

- (1) 3 varieties : V<sub>1</sub>=CO.S. 245, V<sub>2</sub>=CO.S. 321 and V<sub>3</sub>=CO. 312.

- (2) 2 levels of N : N<sub>1</sub>=60 lb./ac. of compost and N<sub>2</sub>=N<sub>1</sub>+60 lb./ac. of A/S.

Compost applied as basal dressing and A/S top dressed.

## 3. DESIGN :

- (i) Split-plot. (ii) (a) 2 main-plots/replication and 6 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) 34'×15'. (b) 28'×9'. (v) 3' on each side of the plot. (vi) Yes.

## 4. GENERAL :

- (i) N.A. (ii) N.A. (iii) Sugarcane yield. (iv) (a) to (c) No. (v) (a) and (b) No. (vi) Nil. (vii) Experiment was conducted by D.S.R.(M).

## 5. RESULTS :

- (i) 19.76 ton/ac.  
 (ii) (a) 1.197 ton/ac.  
 (b) 2.568 ton/ac.  
 (iii) Main effect of V and N are highly significant. Others are not significant.  
 (iv) Av. yield of sugarcane in ton/ac.

	N <sub>1</sub>	N <sub>2</sub>	Mean	V <sub>1</sub>	V <sub>2</sub>	V <sub>3</sub>
I <sub>1</sub>	17.82	21.10	19.46	18.79	21.25	18.34
I <sub>2</sub>	18.80	21.31	20.06	20.64	22.04	17.49
Mean	18.31	21.20	19.76	19.71	21.65	17.92
V <sub>1</sub>	19.10	20.32				
V <sub>2</sub>	20.11	23.18				
V <sub>3</sub>	15.72	20.11				

## S.E. of difference of two

- |                                   |                |
|-----------------------------------|----------------|
| 1. I marginal means               | =0.399 ton/ac. |
| 2. V marginal means               | =1.048 ton/ac. |
| 3. N marginal means               | =0.856 ton/ac. |
| 4. N means at the same level of I | =1.211 ton/ac. |
| 5. I means at the same level of N | =0.943 ton/ac. |
| 6. V means at the same level of I | =1.483 ton/ac. |
| 7. I means at the same level of V | =1.274 ton/ac. |
| 8. mean in the body of N×V table  | =1.483 ton/ac. |

Crop :- Sugarcane.

Ref :- U.P. 52(60).

Site :- Sugarcane Res. Sub-Stn., Kunraghat.

Type :- 'CP'.

Object :- To study the effect of irrigation and cultural practices on Sugarcane yield.

## 1. BASAL CONDITIONS :

(i) (a) G.M.—Wheat. (b) *Guar* for seed. (c) G.M. (ii) (a) Sandy loam. (b) N.A. (iii) 18 and 20.3.1952. (iv) 4 ploughings with victory plough and *desi* plough, 1 ploughing with cultivator. (b) Sown flat. (c) 45 three budded setts/row in single setting. 90 three budded setts/row in double setting. (d) As per treatments. (e) —. (v) Castor cake at 30 lb./ac. of N and F.Y.M. at 50 lb./ac. at planting time. (Castor cake 10 md./ac. and F.Y.M. 165 md./ac.). A/S at 40 lb./ac. of N (top dressing). (vi) CO.453. (vii) Irrigated. (viii) 4 hoeings and 2 earthings. (ix) 33.67%. (x) 17 to 26.1.1953.

## 2. TREATMENTS :

## Main-plot treatments :

All combination of (1) and (2)

- (1) 3 levels of irrigations : I<sub>1</sub>=3, I<sub>2</sub>=5 and I<sub>3</sub>=7 irrigations.  
 (2) 2 spacing between rows : S<sub>1</sub>=2½' and S<sub>2</sub>=3'.

## Sub-plot treatments :

All combinations of (1) and (2)

- (1) 2 types of seed : R<sub>1</sub>=Normal setting and R<sub>2</sub>=Double setting.  
 (2) 2 seed treatments : T<sub>1</sub>=Unsoaked and T<sub>2</sub>=Soaked in 2% phenyl.

Irrigations given as follows : for I<sub>1</sub>=17 and 18.4.1952, 19 and 20.5.1952 and 14 and 15.6.1952. I<sub>2</sub>=17 and 18.4.1952, 3, 19 and 20.5.1952 and 14 and 15.5.1952 and 16.10.1952 and I<sub>3</sub>=17 and 18.4.1952, 3, 19 and 20.5.1952, 14 and 15.6.1952, 16 and 17.10.1952 and 28.11.1952.

## 3. DESIGN :

(i) Split-plot. (ii) 3 main-plots/replication ; 4 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) Main-plot : 56'×60 (5 rows in 3' distances). Sub-plot : 15'×56'. (b) 15'×56'. (6 rows in 2½' distance). (v) No. (vi) Yes.

## 4. GENERAL :

- (i) Normal. No lodging. (ii) Attack of borers. (iii) Germination, tillers, millable cane and sugarcane yield. (iv) (a) to (c) No (v) (a) and (b) No. (vi) Nil. (vii) The experiment was conducted by D.S.R.(G).

## 5. RESULTS :

- (i) 25.96 ton/ac.  
 (ii) (a) 4.782 ton/ac.  
 (b) 2.845 ton/ac.  
 (iii) Main-effects of R and I are highly significant, I and S are significant while all others are not significant.  
 (iv) Av. yield of sugarcane in ton/ac.

	R <sub>1</sub>	R <sub>2</sub>	Mean	S <sub>1</sub>	S <sub>2</sub>	T <sub>1</sub>	T <sub>2</sub>
I <sub>1</sub>	23.47	24.81	24.14	25.78	22.50	21.98	26.30
I <sub>2</sub>	25.00	26.74	25.87	27.16	24.58	24.73	27.01
I <sub>3</sub>	26.92	28.84	27.88	29.03	26.73	26.07	29.69
Mean	25.13	26.80	25.96	27.32	24.60	24.26	27.67
T <sub>1</sub>	23.51	25.01	24.26	25.80	22.72		
T <sub>2</sub>	26.76	28.58	27.67	28.85	26.49		
S <sub>1</sub>	26.77	27.88	27.32				
S <sub>2</sub>	23.50	25.71	24.60				

## S.E. of difference of two

1. I marginal means =1.195 ton/ac.
2. S marginal means =0.976 ton/ac.
3. T or R marginal means =0.581 ton/ac.
4. T or R means at a same level of I =1.006 ton/ac.
5. I means at a same level of T or R =1.391 ton/ac.
6. T or R means at a same level of S =0.821 ton/ac.
7. S means at a same level of T or R =1.136 ton/ac.
8. means of body of I × S table =1.691 ton/ac.
9. means of body of R × T table =0.821 ton/ac.

Crop :- Sugarcane.

Ref :- U.P. 51(185).

Site :- Sugarcane Res. Sub-Stn., Shahjahanpur.

Type :- 'CP'.

Object :- To study the effect of planting cane at different depths and different soil moisture conditions to obtain maximum germination of different seed material of Sugarcane with and without pre-soaking treatment.

## 1. BASAL CONDITIONS :

- (i) (a) N.A. (b) *Sanai* for G.M. (c) No. (ii) (a) Loam. (b) Refer soil analysis, Shahjahanpur. (iii) 11.3.1951. (iv) (a) 2 ploughings by victory plough on 29.8.1950, 3.10.1950, 1 by *desi* plough on 15.10.1950, 6 harrowings by tractor, 1 harrow on 25.12.1950 and 6 *pata* (b) N.A. (c) 50 three budded setts/row. (d) N.A. (e) —. (v) Turning in of *sanai* (G.M.) at 40 lb./ac. of N on 29.8.1950, spreading F.Y.M. at 20 lb./ac. of N on 1.1.1951, Castor cake broadcast at 45 lb./ac. of N on 18.2.1951. Top dressing of A/S at 45 lb./ac. of N on 15 and 19.5.1951. (vi) CO.K. 30 (medium). (vii) Irrigated. (viii) Hoeings with *kassi* on 2, 3.4.1951 in T<sub>1</sub> plots, hoeings with cultivator on 4, 5.4.1951 in T<sub>2</sub> plots, hoeings with cultivator on 15 and 19.5.1951 and 21 and 23.6.1951 and earthing on 13, 14 and 16.8.1951 (ix) 29.86°, (x) 26.2.1952 to 3.3.1952.

## 2. TREATMENTS :

Main-plot treatments :

All combinations of (1) and (2)

(1) 2 times of irrigation :  $T_1$ =before planting and  $T_2$ =after planting.(2) 2 depths of planting :  $D_1$ =2" deep by *kassi* and  $D_2$ =6" deep by *desi* plough.

Sub-plot treatments :

All combinations of (1) and (2)

(1) 2 soaking treatments :  $S_0$ =unsoaked and  $S_1$ =soaking in water for 20 hours.(2) 2 portions of cane as seed :  $P_1$ =top (2 top sett) and  $P_2$ =bottom (setts) portion.

## 3. DESIGN :

(i) Split-plot. (ii) (a) 4 main-plots/replication ; 4 sub-plots/main-plot. (b) N.A. (iii) 2- (iv) (a) and (b) 50'x9'. (v) Nil. (vi) Yes.

## 4. GENERAL :

(i) Satisfactory. (ii) N.A. (iii) Germination count, tiller count, millable cane and sugarcane yield. (iv) (a) 1951—1953. (b) and (c) No. (v) (a) and (b) No. (vi) Nil. (vii) The experiment was conducted by D.S.R.(S).

## 5. RESULTS :

- (i) 17.86 ton/ac.  
 (ii) (a) 1.999 ton/ac.  
 (b) 2.219 ton/ac.  
 (iii) Only S effect is significant. All others are not significant.  
 (iv) Av. yield of sugarcane in ton/ac.

	$D_1$	$D_2$	Mean	$S_0$	$S_1$	$P_1$	$P_2$
$T_1$	17.97	18.32	18.14	18.92	17.37	18.18	18.11
$T_2$	17.57	17.59	17.58	19.12	16.04	17.61	17.55
Mean	17.77	17.96	17.86	19.02	16.70	17.90	17.83
$P_1$	17.48	18.31	17.77	18.90	16.89		
$P_2$	18.06	17.60	17.96	19.15	16.51		
$S_0$	19.30	18.75	19.02				
$S_1$	16.24	17.17	16.70				

S.E. of difference of two

- |   |                |
|---|----------------|
| 1. T or D marginal means                    | =0.707 ton/ac. |
| 2. S or P marginal means                    | =0.785 ton/ac. |
| 3. S or P means at the same level of T or D | =1.110 ton/ac. |
| 4. T or D means at the same level of S or P | =1.056 ton/ac. |
| 5. means in the body of TxD table           | =1.000 ton/ac. |
| 6. means in the body of SxP table           | =1.110 ton/ac. |

Crop :- Sugarcane.

Ref :- U.P. 52(236).

Site :- Sugarcane Res. Sub-Strn., Shahjahanpur.

Type :- 'CI'.

Object :- To study the effect of planting cane at different depths and different soil moisture conditions to obtain maximum germination of different seed material of Sugarcane with and without pre-soaking treatments.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) *Sanai* for G.M. (c) No. (ii) (a) Loam. (b) Refer soil analysis, Shahjahanpur. (iii) 22.3.1952. (iv) (a) Ploughings by victory and *desi* plough. Liver harrow. *Pata* (b) NA. (c) 40 three budded setts/row. (d)&(e) N.A. (v) *Sanai* turned in on 11.9.1952, spreading of F.Y.M on 31.1.1952 and top dressing of A/S and Castor cake on 15, 16.5.1952. (vi) CO.K.30 (medium). (vii) Irrigated. (viii) Hoeing with *kassi* on 5, 6.4.1951 and cultivator on 16, 17.5.1952. Earthing on 24, 25.9.1952. (ix) 33.30"(x) 6 to 15.3.1953.

**2. TREATMENTS :****Main-plot treatments :**

All combinations of (1) and (2)

- (1) 2 times of irrigation :  $T_1$ =before planting and  $T_2$ =after planting.  
 (2) 2 depths of planting :  $D_1=2\frac{1}{2}$ " to 3" and  $D_2=5$ " to 6".

**Sub-plot treatments :**

All combinations of (1) and (2)

- (1) 2 soaking treatments :  $S_0$ =no soaking and  $S_1$ =soaking in water for a day.  
 (2) 2 portions of sugarcane as seed :  $P_1$ =top (2-3 budded setts) portion and  $P_2$ =bottom portion.

**3. DESIGN :**

- (i) Split-plot. (ii) (a) 4 main-plots/replication and 4 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 40'x12'. (b) 34'x12'. (v) 3' on two sides of the gross plot left as non-experimental area. (vi) Yes.

**4. GENERAL :**

- (i) Satisfactory. (ii) N.A. (iii) Germination count, tillers, millable cane and sugarcane yield. (iv) (a) 1951-1953. (b) and (c) No. (v) (a) and (b) No. (vi) Nil. (vii) The experiment was conducted by D.S.R. (S).

**5. RESULTS :**

- (i) 22.55 ton/ac.  
 (ii) (a) 5.888 ton/ac.  
 (b) 2.433 ton/ac.  
 (iii) Only P effect is significant. All others are not significant.  
 (iv) Av. yield of sugarcane in ton/ac.

	$D_1$	$D_2$	Mean	$S_0$	$S_1$	$P_1$	$P_2$
$T_1$	22.76	22.15	22.46	22.89	22.02	23.14	21.77
$T_2$	22.86	22.42	22.64	22.86	22.41	23.40	21.88
Mean	22.81	22.28	22.55	22.88	22.22	23.27	21.82
$P_1$	23.16	23.38	23.27	23.26	23.28		
$P_2$	22.46	21.18	21.82	22.50	21.15		
$S_0$	23.46	22.30	22.88				
$S_1$	22.17	22.26	22.22				

**S.E. of difference of two**

1. T or D marginal means =1.472 ton/ac.  
 2. S or P marginal means =0.608 ton/ac.  
 3. S or P means at the same level of T or D =0.860 ton/ac.  
 4. T or D means at the same level of S or P =1.593 ton/ac.  
 5. means in the body of TxD table =2.082 ton/ac.  
 6. means in the body of SxP table =0.860 ton/ac.

Crop :-Sugarcane.

Ref :-U.P. 53(261).

Site :-Sugarcane Res. Sub-Stn., Shahjahanpur.

Type :-'CP'.

Object:—To study the effect of planting cane at different depths and different soil moisture conditions to obtain maximum germination of different seed material of Sugarcane with and without pre-soaking treatments.

**1. BASAL CONDITIONS :**

- (i) (a) N.A. (b) N.A. (c) N.A. (ii) (a) Loam. (b) Refer soil analysis, Shahjahanpur. (iii) 13.3.1953.  
 (iv) (a) 8 ploughings with *desi* plough and 4 with victory plough. (b) N.A. (c) 40 three budded setts/row.  
 (d) N.A. (e) —. (v) N.A. (vi) CO.K.30 (medium). (vii) Irrigated. (viii) Hoeing with *kassi* on 24.3.1953 (irrigated plots) and 4 to 6.5.1953 and 7 to 11.6.1954. (ix) 45.73°. (x) 17. 18.2.1954.

## 2. TREATMENTS :

## Main-plot treatments :

All combinations of (1) and (2)

- (1) 2 times of irrigation :  $T_1$ =before planting and  $T_2$ =after planting.  
 (2) 2 depths of planting :  $D_1$ =2½" to 3" and  $D_2$ =5" to 6".

## Sub-plot treatments :

All combinations of (1) and (2)

- (1) 2 soaking treatments :  $S_0$ =no soaking and  $S_1$ =soaking in water for a day.  
 (2) 2 portions of sugarcane as seed :  $P_1$ =top (2-3 budded setts) and  $P_2$ =bottom portion.

## 3. DESIGN :

(i) Split-plot. (ii) (a) 4 main-plots/replication and 4 sub-plots/main-plot. (b) N.A. (iii) 4 (replication I has been rejected). (iv) (a) 40'×12'. (b) 34'×12'. (v) 3½' was left at the two ends of the plot in the lengthwise direction as non experimental area. (vi) Yes.

## 4. GENERAL :

(i) Low yields in replication I, hence rejected for analysis. (ii) N.A. (iii) Germination count, tillers, millable cane and sugarcane yield. (iv) (a) 1951-1953. (b) and (c) No. (v) (a) and (b) No. (vi) Nil. (vii) The experiment was conducted by D.S.R. (S).

## 5. RESULTS :

- (i) 23.80 ton/ac.  
 (ii) (a) 4.104 ton/ac.  
 (b) 2.781 ton/ac.  
 (iii) None of the effects is significant.  
 (iv) Av. yield of sugarcane in ton/ac.

	$D_1$	$D_2$	Mean	$S_0$	$S_1$	$P_1$	$P_2$
$T_1$	23.19	24.81	24.00	23.22	24.77	24.09	23.90
$T_2$	23.95	23.26	23.60	23.51	23.69	23.69	23.51
Mean	23.57	24.03	23.80	23.36	24.23	23.89	23.70
$P_1$	23.64	24.15	23.89	23.99	23.79		
$P_2$	23.50	23.91	23.70	22.74	24.67		
$S_0$	22.91	23.82	23.36				
$S_1$	24.23	24.24	24.23				

## S.E. of difference of two

1. T or D marginal means =1.185 ton/ac.  
 2. S or P marginal means =0.803 ton/ac.  
 3. S or P means at the same level of T or D =1.135 ton/ac.  
 4. T or D means at the same level of S or P =1.431 ton/ac.  
 5. means of the body of T or D table =1.676 ton/ac.  
 6. means of the body of S×P table =1.135 ton/ac.

Crop :- Sugarcane.

Ref :- U.P. 48(76).

Site :- Sugarcane Res. Stn., Shahjahanpur.

Type :- 'CIV'.

Object :- To find the effect of high and normal moisture content in top soil in relation to depth of planting and Sugarcane variety.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) *Sanal* as G.M. (c) No. (ii) (a) Loam. (b) Refer soil analysis, Shahjahanpur. (iii) 3 and 4.3.1948. (iv) (a) 3 ploughings by victory plough, 7 ploughings by *desi* plough, 1 by cultivator and 8 plankings. (b) N.A. (c) 50, three budded setts/row. (d) N.A. (e) —. (v) *Sanal* as G.M. at 60 lb./ac. of N on 24.8.1947, applied as B.D., castor cake at 40 lb./ac of N on 24.1.1948 and A/S at 20 lb./ac. of N on 4.5.1948, as top dressing. (vi) As per treatments. (vii) Irrigated. (viii) Planking after planting on 5.3.1948, hoeings by *kassi* in  $T_2$  plots on 16.3.1948 and in  $T_1$  plots on 17.3.1948, planting after hoeing on 23.3.1948, 2 hoeings by *kassi* on 14.4.1948 and 1.7.1948, 2 hoeings by cultivator on 5.5.1948 and 21.5.1948 and earthing up on 23, 24.8.1948. (ix) 40.24°. (x) 10, 11, 14.2.1949 and 2, 4, 11, 24.3.1949.

**2. TREATMENTS :****Main-plot treatments :**

2 times of irrigation :  $T_1$ =irrigation before planting and  $T_2$ =irrigation after planting.

**Sub-plot treatments :**

4 varieties :  $V_1$ =CO. 527 (early),  $V_2$ =CO. 453 (late),  $V_3$ =CO. 421 (medium) and  $V_4$ =CO.S. 76 (medium).

**Sub-sub-plot treatments :**

2 depths of planting :  $D_1$ =2½"-3" (shallow) and  $D_2$ =5"-6" (deep) by delta furrow.

**3. DESIGN :**

(i) Split-plot. (ii) (a) 2 main-plots/replication, 4 sub-plots/main-plot and 2 sub-sub-plots/sub-plot. (b) N.A. (iii) 4. (iv) (a) and (b) 41'×9'. (v) No. (vi) Yes.

**4. GENERAL :**

(i) Good. (ii) Some traces of leaf yellowing in October 1948, it is more apparent in CO. 527 in November than in other treatments. (iii) Germination, tiller counts, millable cane and sugarcane yield. (iv) (a) 1948—N.A. (b) and (c) No. (v) (a) and (b) No. (vi) Nil. (vii) Experiment was conducted by D.S.R. (S).

**5. RESULTS :**

- (i) 24.40 ton/ac.  
 (ii) (a) 3.04 ton/ac.  
 (b) 4.01 ton/ac.  
 (c) 2.54 ton/ac.  
 (iii) V effect is highly significant,  $T \times D$  is significant,  $T \times V \times D$  is highly significant and all others are not significant.  
 (iv) Av. yield of sugarcane in ton/ac.

	$V_1$	$V_2$	$V_3$	$V_4$	Mean	$D_1$	$D_2$
$T_1$	20.31	34.10	23.51	19.24	24.29	23.65	24.94
$T_2$	21.45	32.50	23.49	20.64	24.52	25.43	23.61
Mean	20.88	33.30	23.50	19.94	24.40	24.54	24.27
$D_1$	20.57	33.34	25.06	19.19			
$D_2$	21.19	33.26	21.94	20.69			

**S.E. of difference of two**

1. T marginal means =0.761 ton/ac.
2. V marginal means =1.419 ton/ac.
3. D marginal means =0.636 ton/ac.
4. D means at the same level of V =1.272 ton/ac.
5. V means at the same level of D =1.680 ton/ac.
6. D means at the same level of T =0.900 ton/ac.
7. T means at the same level of D =0.992 ton/ac.
8. V means at the same level of T =2.007 ton/ac.
9. T means at the same level of V =1.897 ton/ac.

Crop :- Sugarcane.

Ref :- U.P. 48(89).

Site :- Sugarcane Res. Sub-Strn., Muzaffarnagar.

Type :- 'D'.

Object :- To find out the effect of different insecticides on the incidence of top borers.

**1. BASAL CONDITIONS :**

(i) (a) to (c) N.A. (ii) (a) Light loam. (b) Refer soil analysis, Muzaffarnagar. (iii) 22.3.1948. (iv) (a) to (e) N.A. (v) N.A. (vi) CO. 312 (late). (vii) N.A. (viii) N.A. (ix) N.A. (x) N.A.



## 2. TREATMENTS :

1. Control.
2. Dusting gammexane at 30 lb./ac. on 15 June, at 40 lb./ac. on 15 July and at 50 lb./ac. and on 15 August. 1948.
3. Spraying with D.D.T. (2%).

## 3. DESIGN :

- (i) R.B.D. (ii) (a) 3. (b) N.A. (iii) 6. (iv) (a) N.A. (b) 59' x 27'. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) N.A. (iii) % of top bored plants. (iv) (a) No. (b) and (c) N.A. (v) (a) and (b) N.A. (vi) The data has been converted into  $\sin^{-1}\sqrt{p}$  and then analysed. Transformed back mean percentages are given after applying bias correction. (vii) Experiment conducted by D.S.R. (M).

## 5. RESULTS :

(i) to (iv)

Treatment	Mean angle	Transformed back mean percentages
1.	9.31	3.10
2.	8.58	2.71
3.	8.43	2.63
G.M.	8.77	2.80
Significance	N.S.	
S.E./mean	0.516	

Crop :- Sugarcane.

Ref :- U.P. 49(184),

Site :- Sugarcane Res. Sub-Stn., Muzaffarnagar.

Type :- 'D'.

Object :—To find out the efficacy of application of D.D.T. and gammexane to control termite.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) Cotton. (c) N.A. (ii) (a) Light loam. (b) Refer soil analysis, Muzaffarnagar. (iii) 9.3.1952. (iv) (a) to (e) N.A. (v) 120 lb./ac. of N. (vi) CO.312 (late). (vii) Irrigated. (viii) and (ix) N.A. (x) 17.1.1950.

## 2. TREATMENTS :

1. Control.
2. 5% D.D.T. as dip at planting (Geigy 550—50%).
3. 2.5% D.D.T. as dip at planting (Geigy 550—50%).
4. 25 lb./ac. of D.D.T (Geigy 410) in rows after 4 weeks of planting on 8.4.1949.
5. 25 lb./ac. of gammexane powder in furrows at planting.
6. 25 lb./ac. of gammexane powder in rows after 4 weeks of planting on 8.4.1949.

## 3. DESIGN :

- (i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 6. (iv) (a) and (b) 58' x 27'. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) N.A. (iii) Yield of sugarcane for two rows of 11' each of sugarcane free from termite, cane attacked by termite and sugarcane completely destroyed by termite. % attack of termite to eye buds, ends and setts. % eye buds germinated. (iv) (a) to (c) No. (v) (a) and (b) No. (vi) Nil. (vii) Experiment was conducted by D.S.R. (M).  $p_1$  = % of eye buds attacked by termite and  $p_2$  = % of ends attacked by termite.

## 5. RESULTS :

- |   |   |
|---|---|
| (i) 7.26 $\sin^{-1}\sqrt{p_1}$ /plot                | (i) 9.76 $\sin^{-1}\sqrt{p_2}$ /plot.               |
| (ii) 3.479 $\sin^{-1}\sqrt{p_1}$ /plot              | (ii) 3.912 $\sin^{-1}\sqrt{p_2}$ /plot.             |
| (iii) Treatment differences are highly significant. | (iii) Treatment differences are highly significant. |

Treatment	Mean value of $\text{Sin}^{-1}\sqrt{p_1}/\text{plot}$	% of eye buds attacked by termite (Transformed back)	Treatment	Mean value of $\text{Sin}^{-1}\sqrt{p_2}$	% of ends attacked by termite (Transformed back)
1.	16.72	8.70	1.	23.38	16.09
2.	1.81	0.60	2.	1.09	0.54
3.	0.00	0.50	3.	1.95	0.62
4.	16.34	8.34	4.	20.48	12.63
5.	4.68	1.16	5.	8.38	2.60
6.	4.00	0.99	6.	3.28	0.83
G.M.	7.26		G.M.	9.76	
S.E./mean	1.420		S.E./mean	1.597	

Crop :- Sugarcane.

Ref :- U.P. 50(230).

Site :- Sugarcane Res. Sub-Stn., Muzaffarnagar.

Type :- 'D'.

Object :- To study the efficacy of application of D.D.T., gammexane and crude oil emulsion to control termite.

### 1. BASAL CONDITIONS :

(i) (a) N.A. (b) Cotton. (c) N.A. (ii) (a) Light loam. (b) Refer soil analysis, Muzaffarnagar. (iii) 13.3.1950. (iv) (a) to (e) N.A. (v) N.A. (vi) CO.312 (late). (vii) N.A. (viii) N.A. (ix) N.A. (x) 5, 6.1.1951.

### 2. TREATMENTS :

- Control.
- Dipping the setts in 1% D.D.T. (No. 550) solution and planting when dry.
- Dusting the setts with D.D.T. (No. 410) at 5 lb./ac.
- Crude oil emulsion at the rate of 5 seer/ac. with 1st irrigation only.
- Dusting the setts with gammexane at 20 lb./ac.
- Dusting the setts with gammexane at 10 lb./ac.

### 3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) and (b) 57'x24'. (v) No. (vi) Yes.

### 4. GENERAL :

(i) N.A. (ii) Under study. (iii) Yield of canes free from termite, attacked by termite and destroyed by termite. (iv) (a) No. (b) and (c) N.A. (v) (a) and (b) N.A. (vi) Nil. (vii) The experiment was conducted by D.S.R. (M).  $p_1$  = % damage by termite to eye buds after 12 weeks of sowing on 8.6.1950 and  $p_2$  = % damage by termite to buds after 12 weeks of sowing.

### 5. RESULTS :

Treatments	Mean values of $\text{Sin}^{-1}\sqrt{p_1}$	% damage by termite to eye buds after 12 weeks of sowing on 8.6.1950. (transformed back)	Treatments	Mean value of $\text{Sin}^{-1}\sqrt{p_2}$	% damage by termite to ends after 12 weeks of sowing (transformed back)
1.	7.25	2.07	1.	12.20	4.92
2.	2.94	0.76	2.	0.00	0.50
3.	5.26	1.33	3.	4.92	1.23
4.	4.94	1.23	4.	25.94	19.45
5.	1.46	0.56	5.	2.55	0.70
6.	2.92	0.76	6.	4.92	1.23
G.M.	4.13		G.M.	8.42	
S.E./mean	3.630		S.E./mean	7.050	

Crop :- Sugarcane.

Ref :- U.P. 50(231).

Site :- Sugarcane Res. Sub-Stn., Muzaffarnagar.

Type :- 'D'.

Object :- To study the efficacy of gammexane and D.D.T. against moth borers.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) Pea for fodder. (c) No. (ii) (a) Loam. (b) Refer soil analysis, Muzaffarnagar. (iii) 17.3.1950  
 (iv) (a) to (e) N.A. (v) 120 lb./ac. of N—No other details are available. (vi) CO.S. 245 (medium). (vii) Irrigated. (viii) N.A. (ix) N.A. (x) 1.2.1951.

## 2. TREATMENTS :

## 1. Control.

2. Gammexane (P 520) at 4 lb. in 100 gallons of water (0.20%) in the month of July.

3. Gammexane (P 520) at 8 lb. in 100 gallons of water (0.4%) in the month of July.

4. D.D.T. (Geigy—550) at 6 lb. in 100 gallons of water (0.3%) in the month of July.

5. Dusting D.D.T. (410) at 10 lb./ac. in May, 12½ lb./ac. in June, 15 lb./ac. in July and 12½ lb./ac. in August.

6. Dusting Gammexane at 20 lb./ac. in May, 25 lb./ac. in June, 30 lb./ac. in July and 35 lb./ac. in August. Spraying by compressed air sprayer, Dusting by root hand duster. Date of 1st spraying 16.5.1950. Treatments. 2, 3, 4, 5 and 6 applied on 15.5.1950, 27.6.1950 and 27.8.1950. In the month of July albolinium at 8 oz./100 gallons in treatments 2 and 3 were applied in addition to details already given under the treatments.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) 58'×27'. (b) 52'×21'. (v) 3' around. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) Under study. (iii) Counting of top bored canes at harvest, yield of healthy canes, and yield of canes attacked by borers. (iv) (a) 1950—1952. (b) and (c) No. (v) (a) and (b) No. (vi) Nil. (vii) The experiment was conducted by D.S.R.(M).

## 5. RESULTS :

(i) 245.4 ton/ac.

(ii) 32.05 ton/ac.

(iii) Treatment differences are not significant.

(iv) Av. no. of top bored canes/plot.

Treatment	Av. no. of canes
1.	210.7
2.	241.0
3.	255.5
4.	267.2
5.	245.5
6.	252.5
S.E./mean	=16.02 ton/ac.

Crop :- Sugarcane.

Ref :- U.P. 51(221).

Site :- Sugarcane Res. Sub-Stn., Muzaffarnagar.

Type :- 'D'.

Object :- To find the effect of gammexane and D.D.T. against moth borers.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) Cotton. (c) N.A. (ii) (a) Loam. (b) Refer soil analysis, Muzaffarnagar. (iii) 19.3.1951.  
 (iv) (a) to (e) N.A. (v) N.A. (vi) CO. 245 (medium). (vii) Irrigated. (viii) N.A. (ix) N.A. (x) 20.2.1952.

## 2. TREATMENTS :

## 1. Control.

2. Spraying with 0.2% BHC (Gammexane P520).

3. Spraying with 0.4% BHC (Gammexane P 520).

4. Spraying with 0.5% BHC (Gammexane P520).

5. Dusting D.D.T. (No. 410) at 20 lb./ac. in May, 25 lb./ac. in June, 30 lb./ac. in July and 35 lb./ac. in August.

6. Dusting Gammexane at 20 lb./ac. in May, 25 lb./ac. in June, 30 lb./ac. in July and 25 lb./ac. in August.

Albolinium shall be mixed with treatments, 2, 3 and 4 in July and August. The rounds in order are 26.4.1951, 28.5.1951, 28.6.1951 1971951 and 2981951.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) 58'×27'. (b) 52'×21'. (v) 3' around. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) Under study. (iii) Population of top borers and sugarcane yield. (iv) (a) 1950—1952. (b) and (c) No. (v) (a) and (b) No. (vi) Nil. (vii) The experiment was conducted by D.S.R. (M).  $x$  = population of top borer on 13.12.1951.

## 5. RESULTS :

- (i) 2.68  $\sqrt{x+\frac{1}{4}}$ /ac.  
 (ii) 0.173  $\sqrt{x+\frac{1}{4}}$ /ac.  
 (iii) Treatment differences are highly significant.  
 (iv) Population of borers on 13.2.51.

Treatment	Mean value of $\sqrt{x+\frac{1}{4}}$	Population of top borer on 13.12.1951 (Transformed back)
1.	3.03	8.68
2.	2.54	5.95
3.	2.54	5.95
4.	2.34	4.98
5.	3.19	9.68
6.	2.45	5.50
S.E./mean	=0.087 ton/ac.	

Crop :- Sugarcane.

Ref :- U.P. 52(273).

Site :- Sugarcane Res. Sub-Stn., Muzaffarnagar.

Type :- 'D'.

Object :- To study the effect of gammexane and D.D.T. against moth borers.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) Cotton. (c) N.A. (ii) (a) Loam. (b) Refer soil analysis, Muzaffarnagar. (iii) 4.3.1952. (iv) (a) to (e) N.A. (v) N.A. (vi) C.O.S. 245 (medium). (vii) Irrigated. (viii) N.A. (ix) N.A. (x) 14.1.1953.

## 2. TREATMENTS :

- Control.
- Spraying with 0.20% BHC gammexane P 520.
- Spraying with 0.4% BHC gammexane P 520.
- Spraying with 0.5% BHC gammexane P 520.
- Dusting with D.D.T. (No. 410) at 20 lb./ac. in May, 25 lb./ac. in June, 30 lb./ac. in July and 35 lb./ac. in August.
- Dusting with gammexane at 20 lb./ac. in May, 25 lb./ac. in June, 40 lb./ac. in July and 35 lb./ac. in August.

N.B. :- Albolinium is mixed for treatments 1, 2 and 3 in July and August at 8 oz to 100 gallons. Dates of operations are 19.4.1952, 6.5.1952, 17.5.1952, 23.6.1952 and 30.7.1952.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) 58'×27'. (b) 52'×21'. (v) 3' on all sides of the plot. (vi) Yes

## 4. GENERAL :

(i) N.A. (ii) Under study. (iii) Infestation of top borers on 7.10.1952 and 18.11.1952, yield data of 2 rows each of 11' in respect of healthy and damaged sugarcane. (iv) (a) 1950—1952. (b) and (c) No. (v) (a) and (b) No. (vi) Nil. (vii) Experiment was conducted by D.S.R. (M).  $x$  is the infestation of top borers.

## 5. RESULTS :

- (i) 7.58  $\sqrt{x}$ /plot.  
 (ii) 0.483  $\sqrt{x}$ /plot.  
 (iii) Treatment differences are not significant.

## (iv) Av. infestation of top borers/plot.

Treatment	Mean value of $\sqrt{x}$ /plot	Infestation of top borers on 18.11.1952 (Transformed back)
1.	7.68	58.98
2.	7.56	57.15
3.	7.46	55.65
4.	7.26	52.71
5.	7.92	62.73
6.	7.62	58.06
S.E./mean	=0.242	

Crop :- Sugarcane.

Ref :- U.P. 53(288).

Site :- Sugarcane Res. Sub-Stn., Muzaffarnagar.

Type :- 'D'.

Object :- To find out suitable control measures against the stem and the root borer.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) Cotton. (c) N.A. (ii) (a) Loam. (b) Refer soil analysis, Muzaffarnagar. (iii) 20.2.1953, (iv) (a) to (e) N.A. (v) N.A. (vi) CO.S. 245 (medium). (vii) Irrigated. (viii) N.A. (ix) N.A. (x) 2.12.1953.

## 2. TREATMENTS :

- Control (no treatment).
- Spraying with 0.5% D.D.T. suspension at 40 gallons/ac.
- Spraying with 0.5% BHC. suspension at 40 gallons/ac.
- Spraying with 0.5% chlordane suspension at 40 gallons/ac.
- Dusting with 5% BHC dust at 20—35 lb./ac.
- Dusting with 5% D.D.T. dust at 20—35 lb./ac.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) and (b) 55' x 24'. (v) No. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) Under study. (iii) % of attack by borers and yield of two rows of 11' each of healthy and infested sugarcane. (iv) (a) No. (b) and (c) No. (v) (a) and (b) No. (vi) Nil. (vii) Experiment was conducted by D.S.R. (M). x is the no. of dead hearts.

## 5. RESULTS :

- 8.11  $\sqrt{x}$ /plot.
- 1.347  $\sqrt{x}$ /plot.
- Treatment differences are not significant.
- Av. no. of dead hearts/plot.

Treatment	Mean value of $\sqrt{x}$ /plot	No. of deadhearts/plot (Transformed back).
1.	8.54	72.93
2.	7.42	55.06
3.	7.94	63.04
4.	9.47	89.68
5.	7.88	62.09
6.	7.39	54.61
S.E./mean	=0.674	

Crop :- Sugarcane.

Ref :- U.P. 53(289).

Site :- Sugarcane Res. Sub-Stn., Muzaffarnagar.

Type :- 'D'.

Object :- To find out suitable control measure against top borer.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) *Jowar* for seed. (c) N.A. (ii) (a) Loam. (b) Refer soil analysis, Muzaffarnagar. (iii) 11.3.1953. (iv) (a) to (e) N.A. (v) N.A. (vi) CO:245 (medium). (vii) Irrigated. (viii) N.A. (ix) N.A. (x) 10.12.1953.

## 2. TREATMENTS :

1. Control.
  2. Spraying with 0.5 % BHC.
  3. Spraying with 0.5 % Toxaphene.
  4. Spraying with 1.0 % BHC.
  5. Spraying with 1.0 % D.D.T.
  6. Dusting with 5 % BHC.
- Spraying on 3.7.1953, 20.8.1953 and 14.10.1953.

## 3. DESIGN :

- (i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) and (b) 58'×27'. (v) No. (vi) Yes.

## 4. GENERAL :

- (i) N.A. (ii) Under study. (iii) Germination counts, tiller counts, no. of canes, % attack of top borer, wt. of diseased and healthy sugarcane for 2 rows of 13' each and yield at harvest. (iv) (a) to (c) No. (v) (a) and (b) No. (vi) Nil. (vii) The experiment was conducted by D.S.R. (M).

## 5. RESULTS :

- (i) 39.00  $\text{Sin}^{-1}\sqrt{p/\text{plot}}$ .  
 (ii) 3.96  $\text{Sin}^{-1}\sqrt{p/\text{plot}}$ .  
 (iii) Treatment differences are not significant.  
 (iv) % attack of top borers on sugarcane.

Treatment	Mean value of $\text{Sin}^{-1}\sqrt{p/\text{plot}}$	% attack of top borers on sugarcanes (transformed back)
1.	41.54	44.04
2.	37.18	36.65
3.	35.38	33.68
4.	38.29	38.52
5.	40.80	42.77
6.	40.82	42.80
S.E./mean	1.980	

Crop :- Sugarcane.

Ref :- U.P. 51(146).

Site :- Sugarcane Res. Stn., Shahjahanpur.

Type :- 'D'.

Object :- To test the relative efficiency of different weedicides with regard to the weeds growing in Sugarcane.

## 1. BASAL CONDITIONS :

- (i) (a) No. (b) *Guar* for grain. (c) No. (ii) (a) Light loam. (b) Refer soil analysis, Shahjahanpur. (iii) 23.2.1951. (iv) (a) N.A. (b) Flat planting. (c) 40 three budded setts/row. (d) Rows 3' apart. (e) —. (v) A/S at 6.9 lb./plot. (vi) CO.453 (late). (vii) Irrigated. (viii) Hoeing by *kassi* and earthing. (ix) 31.60' (x) 10, 11.1.1952.

## 2. TREATMENTS :

1. 2-4—D sodium salt at 1 lb./ac. of active material.
  2. 2-4—D sodium salt at 2 lb./ac. of active material.
  3. Dicotox at 0.1 % solution of active material.
  4. Dicotox at 0.2 % solution of active material.
  5. Fernoxone at 1 lb./ac. of active material.
  6. Fernoxone at 2 lb./ac. of active material.
  7. Pittsburgh weed killer at 1 lb./ac.
  8. Pittsburgh weed killer at 2 lb./ac.
  9. Normal cultivation.
  10. Normal cultivation without hoeing and weeding.
- Spraying of treatments in water at 100 gallon/ac. on 26, 27.4.1951 and 9.7.1951. 2-4—D sodium salt 2-4—Dichlorophenoxyacetic acid containing 82% acid equivalent. Dicotox containing 2-4—D as its active material Pittsburgh Amine weed killer contain 60 % active material Fernoxone—80 % sodium salt of 2-4—D.

## 3. DESIGN :

- (i) R.B.D. (ii) (a) 10. (b) N.A. (iii) 3. (iv) (a) and (b) 15'×40'. (v) No. (vi) Yes.

## 4. GENERAL :

(i) Fairly good. (ii) No. (iii) Germination, tillering, mortality of weed and sugarcane yield. (iv) (a) 1951-1954. (b) and (c) No. (v) (a) and (b) No. (vi) Nil. (vii) The experiment was conducted by D.S.R. (S).

## 5. RESULTS :

- (i) 23.76 ton/ac.  
 (ii) 4.272 ton/ac.  
 (iii) Treatment differences are not significant.  
 (iv) Av. yield of sugarcane in ton/ac.

Treatment	Av. yield	Treatment	Av. yield
1.	24.53	6.	23.33
2.	22.67	7.	24.60
3.	26.15	8.	23.99
4.	26.31	9.	29.26
5.	18.82	10.	17.95

S.E./mean = 2.467 ton/ac.

Crop :- Sugarcane.

Ref :- U.P. 52(195).

Site :- Sugarcane Res. Stn., Shahjahanpur.

Type :- 'D'.

Object :- To test the relative efficiency of the different weedicides with regard to the weeds growing in Sugarcane.

## 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Light loam. (b) Refer soil analysis, Shahjahanpur. (iii) 12.2.1952. (iv) (a) N.A. (b) Flat planting. (c) 33 three budded setts/row. (d) Rows 3' apart. (e) N.A. (v) Application of A/S at the rate of 120 lb./ac. of N in standing water after irrigation. (vi) CO. 453 (late). (vii) Irrigated. (viii) Hoeing with spring tooth harrow on 27.2.1952 and hoeing with *kassi* on 19, 20.3.1952. (ix) 33.49". (x) 27.12.1952.

## 2. TREATMENTS :

- 2-4-D sodium salt at 1 lb./ac. of active material.
- 2-4-D sodium salt at 2 lb./ac. of active material.
- Dicotox at 1 lb./ac. of active material.
- Dicotox at 2 lb./ac. of active material.
- Fernoxone at 1 lb./ac. of active material.
- Fernoxone at 2 lb./ac. of active material.
- Pittsburgh weed killer at 1 lb./ac. of active material.
- Pittsburgh weeds killer at 2 lb./ac. of active material.
- Normal cultivation.
- Normal cultivation without hoeing and weeding.

Spraying of 100 gallons of water with treatments, spraying of weedicides on 6.8.1952, 7.5.1952 and 18.7.1952. 2-4-Dichlorophenoxyacetic acid containing 80% acid equivalent, pittsburgh weed killer at 60% of acid equivalent, dicotox and 2-4-D as its active principle and fernoxone at 80% sodium salt of 2-4-D active material.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 10. (b) N.A. (iii) 3. (iv) (a) and (b) 30' x 18'. (v) No. (vi) Yes.

## 4. GENERAL :

(i) Fairy good. (ii) No. (iii) Germination count, tillers, mortality % and sugarcane yield. (iv) (a) 1951-1954. (b) and (c) No. (v) (a) and (b) No. (vi) Nil. (vii) Experiment conducted by D.S.R. (S).

## 5. RESULTS :

- (i) 19.01 ton/ac.  
 (ii) 3.46 ton/ac.  
 (iii) Treatment differences are significant.

(iv) Av. yield of sugarcane in ton/ac.			
Treatment	Av. yield	Treatment	Av. yield
1.	20.60	6.	17.05
2.	19.63	7.	13.30
3.	17.69	8.	17.21
4.	20.95	9.	26.71
5.	18.13	10.	19.18
S.E./mean		=1.99 ton/ac.	

Crop :- Sugarcane.

Ref :- U.P. 53(223).

Site :- Sugarcane Res. Stn., Shahjahanpur.

Type :- 'D'.

Object :- To test the relative efficiency of the different weedicides with regard to the weeds growing in Sugarcane fields.

### 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis, Shahjahanpur. (iii) 17.2.1953. (iv) (a) N.A. (b) Flat planting. (c) 25 three budded setts/row. (d) Rows 3' apart. (e) —. (v) Manuring at 100 lb./ac. of N with A/S on 18 and 19.5.1953. (vi) CO. 453 (late). (vii) Irrigated. (viii) Hoeing with *kassi* in control plots on 25.4.1953, 25.5.1953 and 11.6.1953 and earthing in control plots on 20.8.1953. (ix) 43.43°. (x) 29.1.1954.

### 2. TREATMENTS :

- |   |  |
|---|--|
| 1. 2-4-D monohydrate at 0.1% concentration. | 6. Fernoxone at 0.2% concentration.              |
| 2. 2-4-D monohydrate at 0.2% concentration. | 7. Pittsburgh weed killer at 0.1% concentration. |
| 3. Dicotox at 0.1% concentration.           | 8. Pittsburgh weed killer at 0.2% concentration. |
| 4. Dicotox at 0.2% concentration.           | 9. No hoeing and weedings (control).             |
| 5. Fernoxone at 0.1% concentration.         | 10. Normal cultivation (control).                |
- (Rate of spraying—100 gallons/ac. spray in water, spraying of weedicides on 29, 30.4.1953 and 7.7.1953, Pittsburgh Amine weed killer—60% and equivalent, 2-4 dichlorophenoxyacetic acid—viz., sodium 2-4-D, monohydrate containing 82% acid equivalent, dicotox containing 2-4-D as its active principle and fernoxone—80% sodium salt of 2-4-D).

### 3. DESIGN :

(i) R.B.D. (ii) (a) 10. (b) N.A. (iii) 6. (iv) (a) and (b) 22' × 18'. (v) No. (vi) Yes.

### 4. GENERAL :

(i) Fairly good. (ii) No. (iii) Germination, mortality and weeds after 15 days of application and sugarcane yield. (iv) (a) 1951—1954. (b) and (c) No. (v) (a) and (b) No. (vi) Nil. (vii) Experiment conducted by D.S.R. (S).

### 5. RESULTS :

- (i) 24.55 ton/ac.  
(ii) 4.56 ton/ac.  
(iii) Treatment differences are not significant.  
(iv) Av. yield of sugarcane in ton/ac.

Treatment	Av. yield	Treatment	Av. yield
1.	20.10	6.	24.54
2.	24.99	7.	28.16
3.	23.84	8.	20.16
4.	20.53	9.	24.55
5.	27.02	10.	31.66
S.E./mean		=2.63 ton/ac.	



Crop :- Sugarcane.

Ref :- U.P. 51(142).

Site :- Sugarcane Res. Stn., Shahjahanpur.

Type :- 'D'.

Object :- To study the effect of various hormones and other chemicals on the growth, yield and sugar quality of Sugarcane.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) Pea. (c) N.A. (ii) (a) Loam. (b) Refer soil analysis, Shahjahanpur. (iii) 3.3.1951. (iv) (a) and (b) N.A. (c) 30 three budded setts/row. (d) N.A. (e) —. (v) *Sanat*, A/S at 60 lb./ac. of N on 4.5.1951. (vi) CO.453 (late). (vii) Irrigated. (viii) Hceings on 30.3.1951, 10.4.1951 and 31.5.1951. (ix) 29.86". (x) 21.2.1952.

## 2. TREATMENTS :

1. Control.
2. Pyruvic acid.
3. ZnSO<sub>4</sub> (zinc sulphate).
4. Mixture.
5. KH<sub>2</sub>PO<sub>4</sub> (Potassium dihydro-phosphate).
6. Glutamic acid.

About 10 litres of solution was sprayed on each plot. Spraying on 22.5.1951, 13.6.1951, 13.7.1951 and 15.12.1951. (1) ZnSO<sub>4</sub>—10 ppm. (2) Mixture of Boric acid—1 ppm., KMnO<sub>4</sub>—1 ppm., CuSO<sub>4</sub>—1 ppm., ZnCl<sub>2</sub>—1 ppm. and MgO—1 ppm. (3) Pyruvic acid—50 ppm. (4) Glutamic—10 ppm. (5) KH<sub>2</sub>PO<sub>4</sub>—50 ppm.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 3. (iv) (a) N.A. (b) 30'×18'. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) N.A. (iii) Tillers, millable cane and sugarcane yield. (iv) (a) 1951-1952. (b) and (c) Nil. (v) (a) and (b) No. (vi) Nil. (vii) The experiment was conducted by D.S.R. (S).

## 5. RESULTS :

- (i) 20.65 ton/ac.
- (ii) 2.58 ton/ac.
- (iii) Treatment differences are not significant.
- (iv) Av. yield of sugarcane in ton/ac.

Treatment	Av. yield
1.	19.32
2.	21.53
3.	20.89
4.	20.40
5.	22.70
6.	19.04
S.E./mean	= 1.49 ton/ac.

Crop :- Sugarcane.

Ref :- U.P. 52(239).

Site :- Sugarcane Res. Stn., Shahjahanpur.

Type :- 'D'.

Object :- To study the effect of different chemicals on Sugarcane.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) *Moong* type T<sub>2</sub>. (c) N.A. (ii) (a) Loam. (b) Refer soil analysis, Shahjahanpur. (iii) 19.2.1952. (iv) (a) to (c) N.A. (v) Nil. (vi) CO.452 (late). (vii) Irrigated. (viii) Harrowing on 28.2.1952. and 15.3.1952. Hceing on 15, 29.4.1952. and earthing on 17.8.1952. (ix) 33.49". (x) 29.12.1952.

## 2. TREATMENTS :

1. Control.
  2. Pyuric acid.
  3. Zinc sulphate.
  4.  $\text{KH}_2\text{PO}_4$  (potassium dihydro-phosphate).
  5. Lime super
  6. Potassium sulphate.
  7. Sodium nitrate.
  8. A/S.
- Spraying on 13, 27.5.1952, 10.6.1952, 5, 30.7.1952, 15.9.1952 and 16.10.1952.

## 3. DESIGN :

- (i) R.B.D. (ii) (a) 8. (b) N.A. (iii) 3. (iv) (a) N.A. (b)  $37' \times 27'$ . (v) N.A. (vi) Yes.

## 4. GENERAL :

- (i) N.A. (ii) N.A. (iii) Tillers, millable cane and sugarcane yield. (iv) (a) No. (b) and (c) Nil. (v) (a) and (b) No. (vi) Treatment no. 4 and 8 were damaged by rats in replication no. III. These have been estimated for analysis and summary of results. (vii) The experiment was conducted by D.S.R. (S).

## 5. RESULTS :

- (i) 18.03 ton/ac.  
 (ii) 3.164 ton/ac.  
 (iii) Treatment differences are not significant.  
 (iv) Av. yield of sugarcane in ton/ac.

Treatment	Av. yield	Treatment	Av. yield
1.	17.67	5.	17.92
2.	17.97	6.	16.84
3.	15.89	7.	21.36
4.	18.71	8.	18.03

S.E./mean for treatments 1, 2, 3, 5, 6 and 7

=1.827 ton/ac.

S.E. of difference of means of treatment nos. 4 and 8

=3.164 ton/ac.

S.E. of the difference of either of treatment means 4 or 8 with any of the treatment mean 1, 2, 3, 5, 6 or 7

=3.002 ton/ac.

Crop :- Sugarcane.

Ref :- U.P. 51 (189).

Site :- Sugarcane Res. Stn., Shahjahanpur.

Type :- 'D'.

Object :- To study the effect of spraying chemicals in controlling borer attack on Sugarcane.

## 1. BASAL CONDITIONS :

- (i) (a) N.A. (b) *Guar.* (c) No. (ii) (a) Loam. (b) Refer soil analysis, Shahjahanpur. (iii) 15.1.1951.  
 (iv) (a) and (b) N.A. (c) 60 three budded setts/row. (d) N.A. (e) —. (v) 100 lb./ac. of N. (vi) CO. 421 (medium). (vii) and (viii) N.A. (ix) 31.26°. (x) N.A.

## 2. TREATMENTS :

1. 0.5% D.D.T. (Geigy no. 550) spray.
2. 0.5% BHC (agro wet powder) spray.
3. 0.5% chlordane spray.
4. 5.0% BHC gammexane dust.
5. 5 % BHC (hexyclane) dust.
6. 5 % D.D.T. (Geigy No. 405) dust.
7. Control (no treatment).

The spraying and dusting was carried out at monthly intervals. The first round was applied as soon as the egg laying began. Gammexane at 2 lb./ac. in furrows before planting.

## 3. DESIGN :

- (i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 3. (iv) (a) N.A. (b)  $55' \times 24'$ . (v) N.A. (vi) Yes.

## 4. GENERAL :

- (i) N.A. (ii) Under study. (iii) Sugarcane yield. (iv) (a) to (c) No. (v) (a) and (b) No. (vi) Nil.  
 (vii) Experiment conducted by D.S.R. (S).

## 5. RESULTS :

- (i) 15.47 ton/ac.  
 (ii) 1.97 ton/ac.  
 (iii) Treatment differences are not significant.  
 (iv) Av. yield of sugarcane in ton/ac.

Treatment	Av. yield
1.	16.57
2.	16.65
3.	15.09
4.	15.35
5.	16.08
6.	14.87
7.	13.67
S.E./mean	=1.14 ton/ac.

Crop :-Sugarcane.

Ref :-U.P. 49(168).

Site :-Sugarcane Res. Stn., Shahjahanpur.

Type :-'D'.

Object :-To study the effect of spraying chemicals in controlling stem borer attack on Sugarcane.

## 1. BASAL CONDITIONS :

- (i) (a) N.A. (b) Wheat. (c) N.A. (ii) (a) Loam. (b) Refer soil analysis, Shahjahanpur. (iii) 3.4.1949.  
 (iv) (a) and (b) N.A. (c) 440 three budded setts/plot. (d) N.A. (e) —. (v) N.A. (vi) CO. 421 (medium).  
 (vii) and (viii) N.A. (ix) 50.02'. (x) 10.2.1950.

## 2. TREATMENTS :

1. Spraying with 2% D.D.T. (fortnightly).  
 2. Spraying with 2% BHC. (fortnightly).  
 3. Control.

Chemicals used : Geigy's 50% D.D.T. powder no. 550. I.C.I.'s gammexane P. 520 (containing 50% BHC.). Sprayings started near about 13.6.1949 and ended on 18.7.1949.

## 3. DESIGN :

- (i) R.B.D. (ii) (a) 3. (b) N.A. (iii) 4. (iv) (a) and (b) 55'x24'. (v) Nil. (vi) Yes.

## 4. GENERAL :

- (i) N.A. (ii) Under study. (iii) Germination, tillers, total dead hearts before sprayings, during sprayings and after sprayings, % stem borer and sugarcane yield. (iv) (a) to (c) No. (v) (a) and (b) No. (vi) Nil.  
 (vii) Experiment conducted by D.S.R.(S).  $p = \%$  attack of stem borer.

## 5. RESULTS :

- (i) 6.16 ton/ac. (ii) 2.083 ton/ac. (iii) Treatment differences are not significant.  
 (iv) Av. yield of sugarcane in ton/ac.

Treatment	Av. yield	Treatment	Mean value of $\sin^{-1} \sqrt{p}$ /plot.	% attack of stem borer (transformed back)
1.	5.88	1.	8.14	2.48
2.	6.54	2.	8.58	2.71
3.	6.06	3.	9.59	3.25
S.E./mean	=1.041 ton/ac.	S.E./mean	=2.582	

Crop :-Sugarcane.

Ref:-U.P. 53(225).

Site :-Sugarcane Res. Stn., Shahjahanpur.

Type :-'D'.

Object :—To study the effect of spraying weak solutions of certain chemical mixtures on the growth, juice quality and yield of Sugarcane.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) *Sanai*. (c) No. (ii) (a) Loam. (b) Refer soil analysis, Shahjahanpur. (iii) 10.2.1953. (iv) (a) Field has been prepared before planting. (b) to (e) N.A. (v) *Sanai* as B.D. and A/S at 60 lb./ac. of N top dressed on 22.4.1953. (vi) CO-453 (late). (vii) Irrigated. (viii) Hoeing with cultivator on 26.2.1953, 19.2.1953. Hoeing with *kassi* on 13.4.1953, and 17.5.1953 and earthing on 17.5.1953. (ix) 45.79°. (x) 8.3.1954.

## 2. TREATMENTS :

1. Control.
2.  $\text{FeSO}_4$  20 p.p.m.+ $\text{MnSO}_4$  50 p.p.m.
3.  $\text{CuSO}_4$  1 p.p.m.+ $\text{ZnSO}_4$  100 p.p.m.
4.  $\text{CaCl}_2$  1000 p.p.m.+Boric acid 1 p.p.m.
5.  $\text{MnSO}_4$  5 p.p.m.+ $\text{CaCl}_2$  150 p.p.m.
6. Iodine 1 p p m.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 3. (iv) (a) N.A. (b) 30'×18'. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) N.A. (iii) Tillers, millable sugarcane and cane yield. (iv) (a) 1953-1955. (b) and (c) No. (v) (a) and (b) No. (vi) Nil. (vii) Experiment conducted by D.S.R.(S).

## 5. RESULTS :

- (i) 29.69 ton/ac.  
 (ii) 3.85 ton/ac.  
 (iii) Treatments do not differ significantly.  
 (iv) Av. yield of sugarcane in ton/ac.

Treatment	Av. yield
1.	31.23
2.	31.06
3.	29.48
4.	30.53
5.	28.49
6.	27.33

S.E./mean = 2.22 ton/ac.

Crop :-Sugarcane.

Ref:-U.P.53(226).

Site :-Sugarcane Res. Stn., Shahjahanpur.

Type :-'D'.

Object :—To find out the optimum number and time of application of weedicides to Sugarcane fields with a view to obtaining good weed free crop stand.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) N.A. (c) N.A. (ii) (a) Light loam. (b) Refer soil analysis, Shahjahanpur. (iii) 7.2.1953. (iv) (a) N.A. (b) Flat planting. (c) 25, three budded setts/row. (d) rows 3' apart. (e) —. (v) A/S at 100 lb./ac. of N on 18 and 19.5.1953 with irrigation. (vi) CO-453 (late). (vii) Irrigated. (viii) Hoings by *kassi* on 4.4.1953, hoings by *kassi* in control on 25.4.1953, 25.5.1953, 11.6.1953 and earthings in plots on 20.8.1953. (ix) 43.43°. (x) 29.1.1954.

## 2. TREATMENTS :

All combinations (1) and (2)+a control.

- (1) 3 times of weedicide spraying :  $W_1$ =Pre-emergence, end of April and July,  $W_2$ =Pre-emergence and July and  $W_3$ =April and July.

(2) 3 times of hoeing : H<sub>1</sub>=At germination, H<sub>2</sub>=At germination and in May and H<sub>3</sub>=At germination, in May and earthing in August.

Treatment in water spray at 100 gallons/ac. 2-4-D Amine formulation applied as 0.2% of acid equivalent; Sprayings in pre-emergence plots on 27, 28.2.1953; Sprayings in April spraying plots on 29, 30.4.1953; Spraying in July spraying plots on 7.7.1953.

### 3. DESIGN :

(i) R.B.D. (ii) (a) 10. (b) N.A. (iii) 3. (iv) (a) and (b) 22'×18'. (v) No. (vi) Yes.

### 4. GENERAL:

(i) Fairly good. (ii) No. (iii) Germination, av. infestation of weeds per unit area after pre-emergence treatments, mortality and yield. (iv) (a) 1953-1956. (b) and (c) No. (v) (a) and (b) No. (vi) Nil. (vii) Experiment conducted by D.S.R.(S).

### 5. RESULTS :

- (i) 24.76 ton/ac.  
 (ii) 5.986 ton/ac.  
 (iii) None of the effects is significant.  
 (iv) Av. yield of sugarcane in ton/ac.

	Control= 29.55 ton/ac.			Mean
	W <sub>1</sub>	W <sub>2</sub>	W <sub>3</sub>	
H <sub>1</sub>	22.26	26.96	23.98	24.40
H <sub>2</sub>	18.84	27.52	27.73	24.70
H <sub>3</sub>	19.23	26.98	24.56	23.59
Mean	20.11	27.15	25.42	24.23

S.E. of any marginal mean = 1.995 ton/ac.  
 S.E. of body of table = 3.456 ton/ac.

Crop :- Sugarcane.  
 Zone :- Sardarnagar (Gorakhpur).

Ref :- U.P. 49(151).  
 Type :- 'D'.

Object :- To find out suitable control measures for termite in Sugarcane.

### 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) Loam. (iii) N.A. (iv) N.A. (v) (a) to (e) N.A. (vi) N.A. (vii) N.A. (viii) N.A. (ix) N.A. (x) 10.2.1950.

### 2. TREATMENTS :

1. D.D.T.
2. Lead arsenate.
3. Corrosive sublimate.
4. Gammoxene.
5. Control.

### 3. DESIGN :

(i) and (ii) 4 replications in R.B.D. (iii) (a) N.A. (b) 31½'×22'. (iv) N.A.

### 4. GENERAL :

(i) N.A. (ii) N.A. (iii) Germination, tillers, millable cane and sugarcane yield. (iv) (a) No. (b) and (c) N.A. (v) N.A. (vi) Nil. (vii) The experiment was conducted by D.S.R. (G) on cultivators' fields.

### 5. RESULTS :

- (i) 19.30 ton/ac.  
 (ii) 1.892 ton/ac.  
 (iii) Treatment differences are not significant

(iv) Av. yield of sugarcane in ton/ac.

Treatment	Av. yield
1.	18.11
2.	20.41
3.	19.08
4.	19.47
5.	19.41
S E./mean	= 0.946 ton/

Crop :- Sugarcane.

Ref :- U.P. 49(167).

Zone :- Lakhimpur (Lakhimpur Kheri).

Type :- 'D'.

Object :- To find out suitable control measures for termites in Sugarcane.

**1. BASAL CONDITIONS :**(i) (a) N.A. (b) *Lahl.* (c) N.A. (ii) N.A. (iii) N.A. (iv) CO. 290-improved. (v) (a) and (b) N.A. (c) 1200 buds/plot. (d) and (e) N.A. (vi) 20.2.1949. (vii) N.A. (viii) N.A. (ix) N.A. (x) 23.12.1949.**2. TREATMENTS :**

1. 2.5% D.D.T. solution as dip.
2. 5.0% lead arsenate solution as dip.
3. 0.25% corrosive sublimate solution as dip.
4. Gammaxene powder at 25 lb./ac. in furrows.
5. Control.

**3. DESIGN :**

(i) and (ii) 4 replications in R.B.D. (iii) (a) and (b) 24' x 25'. (iv) N.A.

**4. GENERAL :**

(i) N.A. (ii) N.A. (iii) Germination condition of eye buds, termite damage and yield of sugarcane. (iv) (a) No. (b) and (c) N.A. (v) (a) and (b) N.A. (vi) Nil. (vii) The experiment was conducted by D.S.R. (S) on cultivators' fields.

**5. RESULTS :**

- (i) 37.56 ton/ac.
- (ii) 1.547 ton/ac.
- (iii) Treatment differences are highly significant.
- (iv) Av. yield of sugarcane in ton/ac.

Treatment	Av. yield
1.	39.25
2.	35.75
3.	37.92
4.	42.40
5.	32.50
S.E./mean	= 0.773 ton/ac.

Crop :- Sugarcane.

Ref :- U.P. 49(172).

Zone :- Khatauli (Muzaffarnagar).

Type :- 'D'.

Object :- To find out suitable control measure for termites in Sugarcane.

**1. BASAL CONDITIONS :**

(i) (a) to (c) N.A. (ii) N.A. (iii) N.A. (iv) Improved. (v) (a) to (e) N.A. (vi) 17.3.1949. (vii) N.A. (viii) N.A. (ix) N.A. (x) N.A.

**2. TREATMENTS :**

1. 2.5% D.D.T. solution as dip.
2. 5% Lead Arsenate solution as dip.
3. 0.25% Corrosive sublimate solution as dip.
4. Gammexane at 25 lb./ac.
5. Control.

**3. DESIGN :**

(i), (ii) R.B.D. with 4 replications. (iii) (a) 45'x24'. (b) 39'x18'. (iv) N.A.

**4. GENERAL :**

(i) N.A. (ii) N.A. (iii) Sugarcane yield. (iv) (a) No. (b) and (c) N.A. (v) N.A. (vi) Nil. (vii) The expt. was conducted by D.S.R.(M). on cultivators' fields.

**5. RESULTS :**

- (i) 53.61 ton/ac.
- (ii) 3.270 ton/ac.
- (iii) Treatment differences are not significant.
- (iv) Av. yield of sugarcane in ton/ac.

Treatment	Av. yield
1.	52.69
2.	52.58
3.	51.80
4.	54.22
5.	56.76
S.E./mean	=1.635 ton/ac.

**Crop :-Sugarcane.**

**Ref :-U.P. 49(145).**

**Zone :-Haldwani (Nainital).**

**Type :-'D'.**

**Object :-To find out suitable control measures for termites in Sugarcane.**

**BASAL CONDITIONS :**

(i) (a) N.A. (b) *Jowar*. (c) N.A. (ii) Clay, loam. (iii) N.A. (iv) CO. 421 (medium) improved. (v) (a) Ploughings—1 by mould board plough, 3 by Athens' plough, 1 by disc plough. Parrsoms harrowing twice and planking twice. (b) Flat planting. (c) 7 rows/plot; 1050 buds/plot (350 three budded setts). (d) N.A. (e) —. (vi) 6.3.1949. (vii) N.A. (viii) Hoeings by bullock cultivator on 16.4.1949 followed by hand *kassi* on 19.4.1949. Hoeing by hand *kassi* on 5, 6.5.1949, 22.6.1949 and 5, 6.7.1949 and earthing up by spade on 11 to 13.7.1949. (ix) 60°. (x) 18.3.1950.

**2. TREATMENTS :**

1. 2.5% D.D.T. solution as dip.
2. 5% Lead Arsenate solution as dip.
3. 0.25% Corrosive sublimate solution as dip.
4. Gammexane powder at 25 lb./ac. in furrows.
5. Control.

**3. DESIGN :**

(i), (ii) 4 replications in R.B.D. (iii) (a) and (b) 45'x24½'. (iv) N.A.

**4. GENERAL :**

(i) N.A. (ii) N.A. (iii) Germination and sugarcane yield. (iv) (a) No. (b) and (c) N.A. (v) N.A. (vi) Nil. (vii) The expt. was conducted by D.S.R(S) on cultivators' fields.

**5. RESULTS :**

- (i) 41.59 ton/ac.
- (ii) 3.919 ton/ac.
- (iii) Treatment differences are significant.

(iv) Av. yield of sugarcane in ton/ac.

Treatment	Av. yield
1.	43.41
2.	39.82
3.	43.81
4.	44.77
5.	36.15
S.E./mean	=1.959 ton/ac.

Crop :- Sugarcane.

Ref :- U.P. 49(166).

Zone :- Shahjahanpur (Shahjahanpur).

Type :- 'D'.

Object :- To find out suitable control measures for termite in Sugarcane.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) *Jowar*. (c) N.A. (ii) and (iii) N.A. (iv) CO. 313 (early) improved. (v) (a) and (b) N.A. (c) 1200 buds/plot. (d) and (e) N.A. (vi) 1.3.1949. (vii) N.A. (viii) N.A. (ix) N.A. (x) 24.12.1949.

## 2. TREATMENTS :

- 2.5% D.D.T. solution as dip.
- 5% Lead Arsenate solution as dip.
- 0.25% Corrosive sublimate solution as dip.
- Gammexane powder at 25 lb./ac. in furrows.
- Control

## 3. DESIGN :

(i) and (ii) R.B.D. with 4 replications. (iii) (a) and (b) 45' x 24'. (iv) N.A.

## 4. GENERAL :

(i) and (ii) N.A. (iii) Germination condition of eye buds, tiller counts, termite attack at harvest and yield of sugarcane. (iv) (a) No. (b) and (c) N.A. (v) N.A. (vi) Nil. (vii) The experiment was conducted by D.S.R. (S) on cultivators' fields.

## 5. RESULTS :

(i) 8.98 ton/ac.

(ii) 4.316 ton/ac.

(iii) Treatment differences are not significant.

(iv) Av. yield of sugarcane in ton/ac.

Treatment	Av. yield
1.	6.46
2.	8.98
3.	11.41
4.	11.88
5.	6.18
S.E./mean	=2.158 ton/ac.

p = % of termite attack

(i) 5.86  $\sin^{-1}\sqrt{p}$ /plot.(ii) 3.945  $\sin^{-1}\sqrt{p}$ /plot.

(iii) Treatment differences are not significant.

(iv) Mean angle and transformed back % attack per plot.

Treatment	Mean angle (i.e. $\sin^{-1}\sqrt{p}$ /plot)	Transformed back (% of termite attack/plot)
1.	5.04	1.26
2.	6.22	1.66
3.	5.04	1.26
4.	2.50	0.69
5.	10.49	3.82
S.E./mean	=1.972 $\sin^{-1}\sqrt{p}$ /plot	



Crop :- Sugarcane.

Ref :- U.P. 52(327).

Site :- Allahabad Agricultural Institute, Allahabad.

Type :- 'DM'.

Object :- To find best seed treatment and manurial schedule for Sugarcane.

## 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) N.A. (b) Refer soil analysis, Allahabad. (iii) 25.2.1952. (iv) (a) to (c) N.A. (d) Rows 3' apart. (e) N.A. (v) N.A. (vi) CO. 453. (vii) and (viii) N.A. (ix) 29.42". (x) 24.12.1952.

## 2. TREATMENTS :

Main-plot treatments :

4 sources of N :  $S_0$  = no manure (control),  $S_1$  = 150 lb./ac. of N as F.Y.M.,  $S_2$  = 150 lb./ac. of N as G.N.C. and  $S_3$  = 150 lb./ac. of N as A/S.

Sub-plot treatments :

2 seed treatments :  $T_1$  = sugarcane setts treated with gammexane dust and  $T_2$  = control (untreated setts).

The setts were treated before planting to protect from white ants. Manures applied on 8.8.1952 as top dressing.

## 3. DESIGN :

(i) Split-plot. (ii) (a) 4 main-plots/replication and 2 sub-plots/main-plot. (b) 104' x 60'. (iii) 6. (iv) (a) 52' x 15'. (b) 46' x 9'. (v) One row on either side and 3' at either end of the net sub-plot. (vi) Yes.

## 4. GENERAL :

(i) and (ii) N.A. (iii) Sugarcane yield. (iv) (a) to (c) No. (v) (a) and (b) No. (vi) Nil. (vii) Experiment conducted by A.A.I.

## 5. RESULTS :

(i) 23.87 ton/ac.

(ii) (a) 4.837 ton/ac.

(b) 4.564 ton/ac.

(iii) Only S effect is significant. Others are not significant.

(iv) Av. yield of sugarcane in ton/ac.

	$T_1$	$T_2$	Mean
$S_0$	22.24	23.05	22.64
$S_1$	21.56	24.50	23.03
$S_2$	22.84	21.97	22.41
$S_3$	26.06	28.70	27.38
Mean	23.18	24.56	23.87

S.E. of difference of two

- |                                   |                 |
|-----------------------------------|-----------------|
| 1. marginal means of S            | = 1.975 ton/ac. |
| 2. marginal means of T            | = 1.317 ton/ac. |
| 3. T means at the same level of S | = 2.635 ton/ac. |
| 4. S means at the same level of T | = 2.715 ton/ac. |

Crop :- Sugarcane.

Ref :- U.P. 52(194).

Site :- Sugarcane Res. Stn., Shahjahanpur.

Type :- 'CD'.

Object :- To study the effect of spraying weak solution of certain chemicals on leaves on the growth, juice quality and sugarcane yield.

## 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Loam. (b) Refer soil analysis, Shahjahanpur. (iii) As per treatments. (iv) (a) to (c) N.A. (v) A/S at 60 lb./ac. of N at sowing on 14.10.1952 and 10.4.1953. Castor cake at 40 lb./ac. of N at tillering on 1.6.1953. (vi) CO.453 (late). (vii) Irrigated. (viii) 9 hoeings and earthing. (ix) 44.20". (x) 22.1.1954.

**2. TREATMENTS :**

All combinations of (1) and (2)

(1) 2 times of planting :  $T_1=11.10.1952$  and  $T_2=8.3.1953$ .

(2) 4 sprayings :  $S_1=$ Control (water [spray]),  $S_2=A/N$  spray,  $S_3=$ Pot. acid phosphate spray and  $S_4=$ Ammo. Phos. sprays.

Spraying on 17.4.1953, 12.5.1953, 9.6.1953 and 24.7.1953 with concentration of 200 parts/million.

**3. DESIGN :**

(i)  $2 \times 4$  Fact. in R.B.D. (ii) (a) 8. (b) N.A. (iii) 5. (iv) (a) N.A. (b)  $40' \times 27'$ . (v) N.A. (vi) Yes.

**4. GENERAL :**

(i) N.A. (ii) N.A. (iii) Millable cane, tillers and sugarcane yield. (iv) (a) No. (b) and (c) No. (v) (a) and (b) No. (vi) Nil. (vii) The experiment was conducted by D.S.R. (S).

**5. RESULTS :**

(i) 33.93 ton/ac.

(ii) 1.682 ton/ac.

(iii) None of the effects is significant.

(iv) Av. yield of sugarcane in ton/ac.

	$S_1$	$S_2$	$S_3$	$S_4$	Mean
$T_1$	34.43	33.26	35.44	34.49	34.40
$T_2$	32.18	34.82	33.38	33.44	33.46
Mean	33.30	34.04	34.41	33.96	33.93

S.E. of T marginal means = 0.486 ton/ac.

S.E. of S marginal means = 0.687 ton/ac.

S.E. of body of table = 0.971 ton/ac.

Crop :- Sugarcane.

Site :- Sugarcane Res. Sub-Stn., Kunraghat.

Ref :- U.P. 49(5).

Type :- 'DIV'.

Object :- To investigate the possibility of improving sugarcane yield for the late planted crop.

**1. BASAL CONDITIONS :**

(i) (a) G.M.—Wheat. (b) *Sanat* as G.M. (c) G.M. (ii) (a) Sandy loam. (b) N.A. (iii) 1.4.1949. (iv) (a) 4 preparatory ploughings and 4 harrowings with *desi* and watt's plough. (b) Sown in trenches. (c) 60 three budded setts/row. (d) N.A. (e) —. (v) Village compost at 60 lb./ac. of N and Castor cake at 60 lb./ac. of N. (vi) As per treatments. (vii) Irrigated. (viii) 6 hoeings and 1 earthing. (ix) 51.45°. (x) 2.4.1950.

**2. TREATMENTS :**

Main-plot treatments :

2 levels of irrigation :  $I_1=3$  and  $I_2=6$  irrigations.

Sub-plot treatments :

2 levels of insecticide :  $T_0=$ No insecticide and  $T_1=$ Insecticide applied.

Sub-sub-plot treatments :

2 varieties :  $V_1=$ CO.453 and  $V_2=$ CO.395.

**3. DESIGN :**

(i) Split-plot. (ii) (a) 2 main-plots/replication, 2 sub-plots/main-plot and 2 sub-sub-plots/sub-plot. (b) N.A. (iii) 3. (iv) (a)  $56' \times 18'$ . (b)  $50' \times 12'$ . (v) 3' border around the gross plot. (vi) Yes.

**4. GENERAL :**

(i) Normal, no lodging. (ii) No. (iii) Germination, tillers, millable cane and sugarcane yield. (iv) (a) 1949-1950. (b) and (c) No. (v) (a) and (b) No. (vi) Nil. (vii) The experiment was conducted by D.S.R. (G).

## 5.1 RESULTS :

- (i) 10.37 ton/ac.  
 (ii) (a) 0.974 ton/ac.  
 (b) 2.309 ton/ac.  
 (c) 1.486 ton/ac.  
 (iii) Main effect of V and interaction I×V are highly significant. Main effect of I and interaction T×V, I×T×V are significant while others are not significant.  
 (iv) Av. yield of sugarcane in ton/ac.

	T <sub>0</sub>	T <sub>1</sub>	Mean	V <sub>1</sub>	V <sub>2</sub>
I <sub>1</sub>	9.38	9.15	9.26	10.25	8.28
I <sub>2</sub>	11.15	11.80	11.48	14.60	8.35
Mean	10.26	10.48	10.37	12.42	8.32
V <sub>1</sub>	13.04	11.81			
V <sub>2</sub>	7.49	9.14			

## S.E. of difference of two

- |                                   |                |
|-----------------------------------|----------------|
| 1. I marginal means               | =0.397 ton/ac. |
| 2. T marginal means               | =0.943 ton/ac. |
| 3. V marginal means               | =0.607 ton/ac. |
| 4. V means at the same level of I | =0.858 ton/ac. |
| 5. I means at the same level of V | =1.026 ton/ac. |
| 6. T means at the same level of I | =1.333 ton/ac. |
| 7. I means at the same level of T | =1.023 ton/ac. |
| 8. V means at the same level of T | =0.858 ton/ac. |
| 9. T means at the same level of V | =1.121 ton/ac. |

Crop :- Sugarcane.

Ref :- U.P. 50(29).

Site :- Sugarcane Res. Sub-Stn., Kunraghat.

Type :- 'DIV'.

Object :- To investigate the possibility of improving Sugarcane yield for late planted crop.

## 1. BASAL CONDITIONS :

(i) (a) G.M.-Wheat. (b) *Sanai* as G.M. (c) Green manure. (ii) (a) Sandy loam. (b) N.A. (iii) 3, 4.4.1950. (iv) (a) 4 preparatory ploughings and harrowings with *dest* and watt's ploughs. (b) Sown in trenches. (c) and (d) N.A. (e) —. (v) 100 lb./ac. of N as A/S and 100 lb./ac. of N as F.Y.M. Top dressing before sowing. (vi) As per treatments. (vii) Irrigated. (viii) 9 hoeings. (ix) 44.07". (x) 24 to 29.1.1951.

## 2. TREATMENTS :

Main-plot treatments :

All combinations of (1) and (2)

2 levels of irrigation : I<sub>1</sub>=3 and I<sub>2</sub>=6 irrigations.2 varieties : V<sub>1</sub>=Co-453 ; V<sub>2</sub>=Co. 395.

Sub-plot treatments :

2 levels of insecticide : T<sub>0</sub>=No insecticide, T<sub>1</sub>=Insecticide applied.(soaked in 2% Phenyle.)

## 3. DESIGN :

(i) Split-plot. (ii) (a) 4 main-plots/replication and 2 sub-plots/ main-plot. (b) N.A. (iii) 4. (iv) (a) 84'×15'. (b) 78'×9'. (v) 3' border around the net plot. (vi) Yes.

## 4. GENERAL :

(i) Normal. No lodging. (ii) Borers attacked. (iii) Germination, tillers, millable cane and sugarcane yield. (iv) (a) 1949-1950. (b) and (c) No. (v) (a) and (b) No. (vi) Nil. (vii) Experiment was conducted by D.S.R.(S).

## 5. RESULTS:

- (i) 18.12 ton/ac.  
 (ii) (a) 3.871 ton/ac.  
 (b) 1.241 ton/ac.  
 (iii) Main effect of V is highly significant. Interaction I×T is significant while all others are not significant.  
 (iv) Av. yield of sugarcane in ton/ac.

	V <sub>1</sub>	V <sub>2</sub>	Mean	T <sub>0</sub>	T <sub>1</sub>
I <sub>1</sub>	21.10	13.94	17.52	16.63	18.41
I <sub>2</sub>	22.58	14.86	18.72	18.82	18.61
Mean	21.84	14.40	18.12	17.72	18.51
T <sub>0</sub>	21.75	13.71			
T <sub>1</sub>	21.94	15.09			

## S.E. of difference of two

1. I or V marginal means =1.369 ton/ac.
2. T marginal means =0.439 ton/ac.
3. T means at the same level of I or V =0.621 ton/ac.
4. I or V means at the same level of T =1.437 ton/ac.
5. means of the body I×V table =1.935 ton/ac.

Crop :- Cotton (*Kharif*).

Ref :-U.P. 52(335).

Site :- Institutional Res. Farm, B.R. College, Bichpuri, Agra.

Type :- 'M'.

Object :-To study the effect of N on growth, development and yield of Cotton.

## 1. BASAL CONDITIONS:

- (i) (a) N.A. (b) Wheat. (c) Nil. (ii) (a) Sandy loam. (b) Refer soil analysis, Bichpuri (Agra). (iii) 31.5.1952. (iv) (a) One cultivation by rigid shank cultivation by tractor, *palewa*, 4 *pata*, 1 ploughing by *desi* plough and cultivation by Mc. Cornick cultivator to mix manure. (b) By opening of furrows 3' deep by *desi* plough and sowing seeds by hand followed by *pata*. (c) 10 seers/ac. (d) 2'×1½'. (e) —. (v) Nil. (vi) 35/1. (vii) Nil. (viii) 2 weedings and 2 hoeings with *khurpi*, thinning done to leave the plants 1½' apart along with second hoeing and weeding. (ix) 43.3". (x) 7 pickings from 22.9.1952 to October.

## 2. TREATMENTS:

- 5 levels of N : N<sub>0</sub>=0, N<sub>1</sub>=20, N<sub>2</sub>=40, N<sub>3</sub>=60 and N<sub>4</sub>=80 lb./ac. of N.  
 N as castor cake applied by spreading evenly at the time of sowing in well powdered form on 31.5.1952.

## 3. DESIGN:

- (i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 6. (iv) (a) 56'×16', 56'×18'. (b) 48'×12'. (v) Block border 4', Plot border 2' and breadth of channel 4'. (vi) Yes.

## 4. GENERAL:

- (i) Water logging in fields in August due to heavy rains. Partial lodging in cotton on 25.8.1952 due to heavy rains and strong wind. Poor germination, 32% less stand after thinning on the basis of the spacing 2'×1½'. (ii) N.A. (iii) Germination count, ht. of main stem, no. of leaves, no. of branches, no. of flowers, no. of bolls/plant and yield. (iv) (a) No. (b) No. (c) Nil. (v) (a) and (b) No. (vi) Nil. (vii) The experiment was conducted by B.R.C. The weather was not favourable to cotton cultivation due to heavy rains and wet weather and hence the low yield. No plotwise yield data was available in the thesis.

## 5. RESULTS:

- (i) 458.2 lb./ac.  
 (ii) 108.21 lb./ac.  
 (iii) Treatment differences are highly significant.

(iv) Av. yield of seed cotton in lb./ac.

Treatment	Av. yield
N <sub>0</sub>	320.8
N <sub>1</sub>	347.2
N <sub>2</sub>	495.7
N <sub>3</sub>	545.1
N <sub>4</sub>	582.3
S.E./mean	=44.18 ton/ac.

Crop :- Cotton (*Kharif*).

Ref :- U.P. 53(380).

Site :- Institutional Research Farm, B. R. College, Bichpuri, Agra. Type :- 'M'.

Object :- To study the effect of varying doses of N with and without basal dressing of P on growth, development and yield of Cotton.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Wheat. (c) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis, Bichpuri (Agra). (iii) 20.6.1953 and dibbling on 28.6.1953. (iv) (a) *Palewa* and ploughing. (b) Dropping the seed behind the plough and dibbling to fill up gaps. (c) N.A. (d) 2½' × 2'. (e) N.A. (v) Nil. (vi) 216 F. (vii) N.A. (viii) 1 thinning, 3 weedings, 2 hoeings and one *desi* plough run in between the rows. (ix) 13.05°. (x) 5 pickings from 6.10.1953 to 13.12.1953.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 2 levels of P<sub>2</sub>O<sub>5</sub> as Super : P<sub>0</sub>=0 and P<sub>1</sub>=60 lb./ac.(2) 5 levels of N as A/S : N<sub>0</sub>=0, N<sub>1</sub>=20, N<sub>2</sub>=40, N<sub>3</sub>=60 and N<sub>4</sub>=80 lb./ac.

Super applied in furrows behind the plough at the time of sowing. N broadcast at the time of sowing.

## 3. DESIGN :

(i) 2 × 5 Fact. in R.B.D. (ii) (a) 10. (b) N.A. (iii) 4. (iv) (a) 20' × 42' and 22½' × 42'. (b) 15' × 36'. (v) Block border=3' along breadth and 4' along length. plot border=2' along the length and 2½' along breadth, breadth of channel=4'. (vi) Yes.

## 4. GENERAL :

(i) Poor germination, stand very poor due to defective germination and lack of sufficient moisture. (ii) Severe attack of stem borer in early seedling stage. (iii) Height branches, flowering, bolls, *kapas* (seed cotton), yield/plant and *kapas* yield. (iv) (a) No. (b) No. (c) Nil. (v) (a) and (b) Nil. (vi) Nil. (vii) The experiment was conducted by B.R.C.

## 5. RESULTS :

- (i) 753.7 lb./ac.  
(ii) 136.0 lb./ac.  
(iii) Only N effect is significant.  
(iv) Av. yield of *kapas* in lb./ac.

	N <sub>0</sub>	N <sub>1</sub>	N <sub>2</sub>	N <sub>3</sub>	N <sub>4</sub>	Mean
P <sub>0</sub>	748.4	798.2	644.9	736.7	863.3	758.3
P <sub>1</sub>	674.6	759.9	578.4	855.9	877.3	749.2
Mean	711.5	779.0	611.6	796.3	870.3	753.7

S.E. of marginal mean of N

=48.10 lb./ac.

S.E. of marginal mean of P

=30.42 lb./ac.

S.E. of body of table

=68.02 lb./ac.

Crop :- Cotton.

Ref :- U.P. 51(51).

Site :- Govt. Cotton Res. Stn., Bulandshahr.

Type :- 'M'.

Object :- To test the effect of pre-soaking Cotton seed in solutions on the yield and quality.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) and (c) N.A. (ii) (a) Sandy loam. (b) N.A. (iii) 4.6.1951. (iv) (a) Ploughed by *desi* and victory ploughs. (b) Sown behind the plough. (c) 10 lb./ac. (d) 2' x 1'. (e) N.A. (v) No. (vi) 35/1 (medium). (vii) N.A. (viii) N.A. (ix) N.A. (x) N.A.

## 2. TREATMENTS :

Pre-soaking of cotton seeds in solutions :  $S_0$  = Nil,  $S_1$  = A/S,  $S_2$  = Ammo. Phos.,  $S_3$  = Cowdung,  $S_4$  = Boron solution and  $S_5$  = Mono Potassium Phosphate.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) 36' x 14'. (b) 32' x 10'. (v) 2' around. (vi) Yes.

## 4. GENERAL :

(i) Satisfactory. (ii) No. (iii) Yield of cotton and plant no. (iv) (a) 1951 to 1952. (b) and (c) No. (v) (a) and (b) No. (vi) Nil. (vii) Experiment conducted by E.B. (C). Treatment  $S_4$  dropped for analysis due to low yield.

## 5. RESULTS :

- (i) 465.8 lb./ac.  
 (ii) 122.2 lb./ac.  
 (iii) Treatment differences are not significant.  
 (iv) Av. yield of *kapas* in lb./ac.

Treatment	Av. yield
$S_0$	410.5
$S_1$	399.8
$S_2$	544.5
$S_3$	538.1
$S_5$	436.1
S.E./mean	-61.09 lb./ac.

Crop :- Cotton.

Ref :- U.P. 53(130).

Site :- Govt. Cotton Res. Sub-Stn., Raya.

Type :- 'M'.

Object :- To find out the comparative efficiency of A/S and C/N on *desi* and American Cotton at different levels of N.

## 1. BASAL CONDITIONS :

(i) (a) Cotton—Pea—Green manuring—Wheat. (b) Wheat. (c) Green manuring. (ii) (a) Sandy loam. (b) Refer soil analysis, Raya. (iii) 23.5.1953. (iv) (a) 3 ploughings in May. (b) Sown behind the plough. (c) N.A. (d) 2' x 1.5'. (e) N.A. (v) Nil. (vi) *Desi* 35/1 and American 216 F. (vii) Irrigated. (viii) 2 harrowing, 2 weedings and 3 intercultures by cultivator and 1 thinning. (ix) 14.98°. (x) 4 pickings for *desi* and 3 for American Cotton.

## 2. TREATMENTS :

All combinations of (1) and (2) + a control.

(1) 2 sources of N :  $S_1$  = A/S and  $S_2$  = C/N.

(2) 3 levels of N :  $N_1$  = 30,  $N_2$  = 60 and  $N_3$  = 90 lb./ac.

The treatments were applied to the two varieties *desi* 35/1 and American 216 F separately.

## 3. DESIGN :

(i) R.B.D. (ii) 7 for each variety. (b) N.A. (iii) 6. (iv) (a) 38' x 12'. (b) 34' x 8'. (v) 2' around. (vi) Separately done for each variety.

## 4. GENERAL :

(i) Good. (ii) Mild attack of leaf roller. Assistance of plant protection staff was taken to control the pest. (iii) *Kapas* yield and plant stand. (iv) (a) to (c) No. (v) (a) and (b) Nil. (vi) Nil. (vii) Analysis of covariance technique was applied. Experiment conducted by E.B. (C).

## 5. RESULTS :

## Variety 216 F.

- (i) 1322 lb./ac.  
 (ii) 137.1 lb./ac.  
 (iii) Only control vs treated effect is highly significant.  
 (iv) Av. yield of cotton in lb./ac.

Treatment	Av. yield
Control	997
S <sub>1</sub> N <sub>1</sub>	1404
S <sub>1</sub> N <sub>2</sub>	1360
S <sub>1</sub> N <sub>3</sub>	1377
S <sub>2</sub> N <sub>1</sub>	1288
S <sub>2</sub> N <sub>2</sub>	1447
S <sub>2</sub> N <sub>3</sub>	1381
S.E./mean	=55.97 lb./ac.

## Variety 35/1

- (i) 1319 lb./ac.  
 (ii) 181.4 lb./ac.  
 (iii) N and control vs treated effects are highly significant while other effects are not significant.  
 (iv) Av. yield of cotton in lb./ac.

Treatment	Av. yield
Control	926
S <sub>1</sub> N <sub>1</sub>	1269
S <sub>1</sub> N <sub>2</sub>	1415
S <sub>1</sub> N <sub>3</sub>	1342
S <sub>2</sub> N <sub>1</sub>	1222
S <sub>2</sub> N <sub>2</sub>	1515
S <sub>2</sub> N <sub>3</sub>	1544
S.E./mean	=74.04 lb./ac.

Crop :-Cotton.

Site :-Govt. Cotton Res. Sub-Strn., Raya.

Ref :-U.P. 52(270).

Type :-'M'.

Object :-To find the availability of N from A/S by addition of organic matter.

## 1. BASAL CONDITIONS :

(i) (a) to (c) N.A., (ii) (a) Sandy loam. (b) Refer soil analysis, Raya. (iii) 31.5.1952. (iv) (a) Ploughing with *desi* and victory plough. (b) Sown behind plough. (c) 12 lb./ac. (d) Rows 2' apart. (e) N.A. (v) N.A. (vi) 35/1. (vii) Irrigated. (viii) 5 intercultures with cultivator and digging. (ix) N.A. (x) 20.9.1952, 11 and 22.10.1952, 9, 18 and 30.11.1952 and 5.12.1952.

## 2. TREATMENTS :

All combinations (1) and (2)

- (1) 3 levels of A/S : A<sub>0</sub>=0, A<sub>1</sub>=2 and A<sub>2</sub>=4 cwts./ac.  
 (2) 3 levels of F.Y.M. : F<sub>0</sub>=0, F<sub>1</sub>=2 and F<sub>2</sub>=5 ton/ac.  
 A/S top dressed on 31.5.1952 and F.Y.M. on 22.5.1952.

## 3. DESIGN :

(i) 3×3 Fact. in R.B.D. (ii) (a) 9. (b) N.A. (iii) 4. (iv) (a) 78'×10'. (b) 72'×10'. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) N.A. (iii) Plant stand and cotton yield. (iv) (a) 1952 to 1955. (b) and (c) N.A. (v) (a) and (b) N.A. (vi) Nil. (vii) Experiment was conducted by E.B.(C).

## 5. RESULTS :

- (i) 389 lb./ac.  
 (ii) 33.00 lb./ac.  
 (iii) Only interaction A×P is significant.  
 (iv) Av. yield of cotton in lb./ac.

	A <sub>0</sub>	A <sub>1</sub>	A <sub>2</sub>	Mean
F <sub>0</sub>	355	361	306	341
F <sub>1</sub>	346	385	388	373
F <sub>2</sub>	388	326	649	454
Mean	363	357	448	389

S.E. of any marginal mean  
 S.E. of body of table

= 9.52 lb./ac.  
 =16.50 lb./ac.

Crop :- Cotton.

Ref :- U.P. 53(132).

Site :- Govt. Cotton Res. Sub-Stn., Raya.

Type :- 'M'.

Object :- To find out the availability of N from A/S by addition of organic matter.

## 1. BASAL CONDITIONS :

(i) (a) Cotton—Pea—G.M.—Wheat. (b) Wheat. (c) Green manuring. (ii) (a) Sandy loam. (b) Refer soil analysis, Raya. (iii) 25.5.1953. (iv) (a) 3 ploughings with *desi* plough and 1 harrowing. (b) Sown behind the plough. (c) 16 lb./ac. (d) 2'×1'. (e) N.A. (v) Nil. (vi) *Desi* cotton 35/1. (vii) Irrigated. (viii) 3 weedings, 3 intercultures by cultivator and 1 thinning. (ix) 14.98". (x) 6 pickings from 27.9.1953 to 12.11.1953.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 3 levels of A/S :  $A_0=0$ ,  $A_1=2$  and  $A_2=4$  cwt/ac.(2) 3 levels of compost :  $C_0=0$ ,  $C_1=2$  and  $C_2=5$  ton/ac.

Compost applied on 10.5.1953 and A/S top dressed on 14.8.1953.

## 3. DESIGN :

(i) 3×3 Fact. in R.B.D. (ii) (a) 9. (b) N.A. (iii) 4. (iv) (a) 84'×16' (b) 78'×12'. (v) 3'×2' (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) The crop was slightly affected by wilt. No control measures were taken. (iii) *Kapas* yield and plant stand. (iv) (a) 1952 to 1955. (b) and (c) No. (v) (a) and (b) No. (vi) Nil. (vii) Experiment was conducted by E.B.(C). As analysis of covariance technique was applied only one S.E. has been given and marginal means have not been given.

## 5. RESULTS :

(i) 989 lb./ac.

(ii) 60.96 lb./ac.

(iii) A effect is highly significant, C effect is significant while interaction A×C is not significant.

(iv) Av. yield of *kapas* in lb./ac.

	$A_0$	$A_1$	$A_2$
$C_0$	650	1092	1083
$C_1$	713	1141	1154
$C_2$	684	1171	1207

Av. S.E./mean (adjusted) = 30.48 lb./ac.

Crop :- Cotton.

Ref :- U.P. 52(272).

Site :- Govt. Cotton Res. Sub-Stn., Raya.

Type :- 'M'.

Object :- To find the availability of N from A/S by addition of organic matter.

## 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis, Raya. (iii) 9.6.1952. (iv) (a) Ploughed by victory and *desi* ploughs. (b) Sown behind plough. (c) 12 lb./ac. (d) 2'×1'. (e) N.A. (v) N.A. (vi) 100 F. (vii) Irrigated. (viii) 5 intercultures with cultivator, 2 weedings, 1 digging and 1 thinning. (ix) N.A. (x) 22.10.1952, 10, 23.11.1952 and 11.12.1952.

## 2. TREATMENTS :-

All combinations of (1) and (2)

(1) 3 levels of A/S :  $A_0=0$ ,  $A_1=2$  and  $A_2=4$  cwt/ac.(2) 3 levels of F.Y.M. :  $F_0=0$ ,  $F_1=2$  and  $F_2=5$  ton/ac.



## 3. DESIGN :

(i) 3×3 Fact. in R.B.D. (ii) (a) 9. (b) N.A. (iii) 4. (iv) (a) 78'×12'. (b) 72'×12'. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) and (ii) N.A. (iii) Plant stand and cotton yield. (iv) (a) 1952 to 1955. (b) and (c) N.A. (v) (a) and (b) N.A. (vi) Nil. (vii) Experiment was conducted by E.B.(C).

## 5. RESULTS:

- (i) 483 lb./ac.  
 (ii) 93.80 lb./ac.  
 (iii) None of the effects is significant.  
 (iv) Av. yield of cotton in lb./ac.

	A <sub>0</sub>	A <sub>1</sub>	A <sub>2</sub>	Mean
F <sub>0</sub>	467	475	399	447
F <sub>1</sub>	615	577	456	549
F <sub>2</sub>	447	448	461	452
Mean	510	500	439	483

S.E. of any marginal mean = 27.08 lb./ac.  
 S.E. of body of table = 46.90 lb./ac.

Crop :- Cotton.

Ref :- U.P. 53(131).

Site :- Govt. Cotton Res. Sub-Stn., Raya.

Type :- 'M'.

Object :- To find out the availability of N from A/S by addition of organic matter.

## 1. BASAL CONDITIONS :

(i) (a) Cotton—Pea—G.M.—Wheat. (b) Wheat. (c) G.M. (ii) (a) Sandy loam. (b) Refer soil analysis, Raya. (iii) 24.5.1953. (iv) (a) N.A. (b) Sown behind the plough. (c) 16 lb./ac. (d) 2'×1.5'. (e) N.A. (v) Nil. (vi) 216 F. (vii) Irrigated. (viii) 1 harrowing, 2 weedings, 2 intercultures and 1 thinning. (ix) 14.98" (x) 10.10.1953 and 20.11.1953.

## 2. TREATMENTS :

All combinations of (1) and (2).

- (1) 3 levels of A/S : A<sub>0</sub>=0, A<sub>1</sub>=2 and A<sub>2</sub>=4 cwt/ac.  
 (2) 3 levels of compost : C<sub>0</sub>=0, C<sub>1</sub>=2 and C<sub>2</sub>=5 cwt./ac.  
 Compost and A/S top dressed.

## 3. DESIGN :

(i) 3×3 Fact. in R.B.D. (ii) (a) 9. (b) N.A. (iii) 4. (iv) (a) 84'×16'. (b) 78'×12'. (v) One row on either side and 5' at each end of every plot. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) The crop had a mild attack of leaf roller. Assistance of plant protection staff was secured to control the pest. (iii) *Kapas* yield and plant stand. (vi) (a) 1952-1955. (b) and (c) No. (v) (a) and (b) No. (vi) Nil. (vii) The experiment was conducted by E.B. (C). As analysis of covariance technique was applied only one S.E. has been given and marginal means have not been given.

## 5. RESULTS :

- (i) 1310 lb./ac.  
 (ii) 119.60 lb./ac.  
 (iii) Only A effect is highly significant.

(iv) Av. yield of cotton in lb./ac.

	A <sub>0</sub>	A <sub>1</sub>	A <sub>2</sub>
C <sub>0</sub>	1066	1333	1364
C <sub>1</sub>	974	1437	1606
C <sub>2</sub>	977	1459	1523

Av. S.E./mean Adjusted = 59.8 lb./ac.

Crop :- Cotton.

Ref :- U.P. 50(48).

Site :- Govt. Cotton Res. Sub-Stn., Raya.

Type :- 'M'.

Object :- To find the effect of different doses of N from C/N.

## 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis, Raya. (iii) 19.5.1950. (iv) (a) Ploughing once with victory plough and twice with *desi* plough. (b) Sown behind the plough. (c) 20 lb./ac. (d) and (e) N.A. (v) Nil. (vi) P. American (medium). (vii) Irrigated. (viii) 1 harrowing, 3 hoeings, 3 weedings and 1 thinning. (ix) 17.63°. (x) 8.10.1950, 24.11.1950 and 14.11.1950.

## 2. TREATMENTS :

4 doses of N as C/N : N<sub>0</sub>=0, N<sub>1</sub>=20, N<sub>2</sub>=40 and N<sub>3</sub>=60 lb./ac.  
N applied on 20.9.1950.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 4. (iv) (a) and (b) 60' × 18'. (v) No. (vi) Yes.

## 4. GENERAL :

(i) Normal. (ii) No. (iii) Plant stand and cotton yield. (iv) (a) to (c) No. (v) (a) and (b) No. (vi) Nil. (vii) The experiment was conducted by E.B. (C).

## 5. RESULTS :

- (i) 401.10 lb./ac.  
(ii) 64.18 lb./ac.  
(iii) Treatment differences are not significant.  
(iv) Av. yield of cotton in lb./ac.

Treatment	Av. yield
N <sub>0</sub>	371.8
N <sub>1</sub>	432.8
N <sub>2</sub>	423.9
N <sub>3</sub>	375.7
S.E/mean	= 32.09 lb./ac.

Crop :- Cotton.

Ref :- U.P. 51(216).

Site :- Govt. Cotton Res. Sub-Stn., Raya.

Type :- 'M'.

Object :- To find the effect of manures as basal dose in combination with inorganic manures.

## 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis, Raya. (iii) 9.6.1951. (iv) (a) Once cultivated with victory plough and once with *desi* plough. (b) Sown behind plough. (c) 12 lb./ac. (d) 2' × 1'. (e) N.A. (v) N.A. (vi) 100 F. (vii) Irrigated. (viii) 1 harrowing, 1 hoeing and 1 thinning. (ix) N.A. (x) 24.10.1951.

## 2. TREATMENTS :

1. Control (no manure).
2. 20 lb./ac. of N as C/N.
3. 40 lb./ac. of N as C/N.
4. 60 lb./ac. of N as C/N.
5. 40 lb./ac. of N as A/S.

## 3. DESIGN :

- (i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 6. (iv) (a) 80'×14'. (b) 76'×10'. (v) One row on either side and 2' at each end of every plot. (vi) Yes.

## 4. GENERAL :

- (i) N.A. (ii) N.A. (iii) *kapas* yield. (iv) (a) No. (b) and (c) N.A. (v) (a) and (b) N.A. (vi) Nil. (vii) Experiment conducted by E.B. (C).

## 5. RESULTS :

- (i) 677 lb./ac.  
 (ii) 44.18 lb./ac.  
 (iii) Treatments are highly significantly different.  
 (iv) Av. yield of *kapas* in lb./ac.

Treatment	Av. yield
1.	551
2.	684
3.	777
4.	739
5.	633
S.E./mean	=18.04 lb./ac.

Crop :- Cotton.

Ref :- U.P. 53(129).

Site :- Govt. Cotton Res. Sub-Stn., Raya.

Type :- 'M'.

Object :- To find out the reaction of lime in addition to the application of A/S and C/N.

## 1. BASAL CONDITIONS :

- (i) (a) Cotton—Peas—G. M.—Wheat. (b) Wheat. (c) G. M. (ii) (a) Sandy loam. (b) Refer soil analysis, Raya. (iii) 21.5.1953. (iv) (a) 3 ploughings with *desi* plough. (b) Sown behind the plough. (c) 16 lb./ac. (d) 2'×1.5'. (e) N.A. (v) Nil. (vi) American cotton 216 F. (vii) Irrigated. (viii) 1 harrowing, 1 weeding with *khurpi*, 2 intercultures by cultivator and 1 thinning. (ix) 14.98%. (x) 3 pickings on 8.10.1953, 29.10.1953 and 25.11.1953.

## 2. TREATMENTS :

All combinations of (1) and (2)

- (1) 2 levels of lime :  $L_0=0$  and  $L_1=300$  lb./ac.

- (2) 5 levels of N :  $N_0=$ No manure,  $N_1=40$  lb./ac. of N as A/S,  $N_2=60$  lb./ac. of N as A/S,  $N_3=40$  lb./ac. of N as C/N and  $N_4=60$  lb./ac. of N as C/N.

Lime applied on 23.8.1953 and A/S, C/N applied on 30.8.1953.

## 3. DESIGN :

- (i) 2×5 Fact. in R.B.D. (ii) (a) 10. (b) N.A. (iii) 6. (iv) (a) 78'×12'. (b) 72'×8'. (v) One row on either side and 3' at each end of every plot. (vi) Yes.

## 4. GENERAL :

- (i) Good. (ii) The crop had a mild attack of leaf roller, assistance of plant protection staff was secured to control the pest. (iii) *Kapas* yield and plant stand. (iv) (a) to (c) No. (v) (a) and (b) No. (vi) Nil. (vii) The experiment conducted by E.B. (C). Analysis of covariance technique applied.

## 5. RESULTS :

- (i) 984 lb./ac.  
 (ii) 828.1 lb./ac.

- (iii) None of the effects is significant.  
 (iv) Av. yield of *kapas* in lb./ac.

	N <sub>0</sub>	N <sub>1</sub>	N <sub>2</sub>	N <sub>3</sub>	N <sub>4</sub>
L <sub>0</sub>	933	986	978	903	996
L <sub>1</sub>	911	1048	990	1052	1043

Av. S.E./mean (adjusted)

=338.1 lb /ac.

Crop :- Cotton.

Ref :- U.P. 48(88).

Site :- Govt. Cotton Res. Sub-Stn., Raya.

Type :- 'M'.

Object :- To find out the effect of application of A/S at flowering of Cotton.

1. BASAL CONDITIONS :

- (i) (a) N.A. (b) Barley. (c) Nil. (ii) (a) Sandy loam. (b) Refer soil analysis, Raya. (iii) 21, 27.5.1948.  
 (iv) (a) 1 ploughing by victory plough, 1 ploughing by *desi* plough and ploughed by cultivator. (b) Sown behind the plough. (c) 20 lb./ac. (d) 2' x 1.5'. (e) N.A. (v) N.A. (vi) C-520 (medium). (vii) Irrigated.  
 (viii) 3 harrowings, 4 weedings and 1 thinning. (ix) 28.48". (x) 29, 30.9.1948, 10, 11, 16, 17, 25.10.1948 and 8.11.1948.

2. TREATMENTS:

1. Control.  
 2. 40 lb./ac. of N as A/S applied at flowering time on 4.9.1948.

3. DESIGN :

- (i) R.B.D. (ii) (a) 2. (b) N.A. (iii) 20. (iv) (a) 42' x 80'. (b) 32' x 74'. (v) 3 rows on either side and 3' at each end of every plot. (vi) Yes.

4. GENERAL :

- (i) N.A. (ii) N.A. (iii) Yield of cotton. (iv) (a) No. (b) and (c) No. (v) (a) and (b) N.A. (vi) Nil.  
 (vii) Experiment conducted by E.B.(C).

5. RESULTS :

- (i) 790.9 lb./ac.  
 (ii) 117.0 lb./ac.  
 (iii) Treatment difference is highly significant.  
 (iv) Av. yield of cotton in lb./ac.

Treatment	Av. yield
1.	731.5
2.	850.4
S.E./mean	=26.16 lb./ac.

Crop :- Cotton.

Ref :- U.P. 48(86).

Site :- Govt. Cotton Res. Sub-Stn., Raya.

Type :- 'M'.

Object :- To study the effect of T.C. on Cotton.

1. BASAL CONDITIONS :

- (i) (a) to (c) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis, Raya. (iii) 4.6.1948. (iv) (a) Ploughing by victory plough, ploughings with *desi* plough twice on 4.6.1948. (b) Sown behind the plough. (c) 20 lb./ac. (d) 2' x 2'. (e) N.A. (v) N.A. (vi) P. American (medium). (vii) Irrigated. (viii) 3 weedings, 2 harrowings, 1 thinning and 1 cultivation. (ix) 27.76". (x) 22.10.1948, 7.11.1948 and 23.11.1948.

2. TREATMENTS :

- 4 doses of N as T.C. : N<sub>0</sub>=0, N<sub>1</sub>=50, N<sub>2</sub>=100 and N<sub>3</sub>=150 lb./ac.  
 Manures applied on 3.6.1948.

**3. DESIGN :**

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 6. (iv) (a) 60'×18'. (b) 54'×10'. (v) 2 rows and 3' at each end of plot. (vi) Yes.

**4. GENERAL :**

(i) N.A. (ii) No. (iii) Yield of cotton. (iv) (a) 1945—1948. (b) and (c) No. (v) (a) and (b) No. (vi) Nil. (vii) Experiment conducted by E.B.(C).

**5. RESULTS :**

(i) 471.4 lb./ac.  
 (ii) 133.5 lb./ac.  
 (iii) Treatment differences are significant.  
 (iv) Av. yield of cotton in lb./ac.

Treatment	Av. yield
N <sub>0</sub>	361.8
N <sub>1</sub>	393.1
N <sub>2</sub>	564.9
N <sub>3</sub>	565.7
S.E./mean	=54.51 lb./ac.

Crop :- Cotton.

Site :- Govt. Cotton Res. Sub-Stn., Raya.

Ref :- U.P. 49(13).

Type :- 'M'.

Object :- To study the effect of Coconut cake on Cotton yield.

**1. BASAL CONDITIONS :**

(i) (a) G. M.—Wheat—Cotton—Peas. (b) Wheat. (c) G.M. (ii) (a) Sandy loam. (b) Refer soil analysis. Raya. (iii) 31.5.1949. (iv) (a) 2 ploughings by *desi* plough, and 1 ploughing by victory plough. (b) N.A. (c) 20 lb./ac. (d) N.A. (e) N.A. (v) Nil. (vi) C 520. (vii) Irrigated. (viii) Harrowing and weeding. (ix) 38.86°. (x) 4 pickings on 8, 17 and 29.10.1949 and 10.11.1949.

**2. TREATMENTS :**

5 levels of N : N<sub>0</sub>=0, N<sub>1</sub>=25, N<sub>2</sub>=50, N<sub>3</sub>=75 and N<sub>4</sub>=100 lb./ac.  
 N as Coconut cake applied on 9.7.1949.

**3. DESIGN :**

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 6. (iv) (a) 42'×26'. (b) 34'×20'. (v) 2 rows and 3' at each end. (vi) Yes.

**4. GENERAL :**

(i) Good. (ii) Nil. (iii) Plant stand and cotton yield. (iv) (a) to (c) No. (v) (a) and (b) No. (vi) Nil. (vii) Experiment was conducted by E.B.(C).

**5. RESULTS :**

(i) 493.4 lb./ac.  
 (ii) 101.5 lb./ac.  
 (iii) Treatment differences are not significant.  
 (iv) Av. yield of cotton in lb./ac.

Treatment	Av. yield
N <sub>0</sub>	399.1
N <sub>1</sub>	486.6
N <sub>2</sub>	493.8
N <sub>3</sub>	559.7
N <sub>4</sub>	527.5
S.E./mean	=41.46 lb./ac.

Crop :- Cotton.  
Site :- Govt. Cotton Res. Sub-Stn., Raya.

Ref :- U.P. 50(269).  
Type :- 'M'.

Object :- To study the effect of N on the incidence of Cotton leaf roller.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Loam. (b) Refer soil analysis; Raya. (iii) N.A. (iv) (a) to (c) N.A. (v) N.A. (vi) 100-F (early and P.American. (vii) Irrigated. (viii) Thinning. (ix) N.A. (x) N.A.

2. TREATMENTS :

3 levels of N :  $N_0=0$ ,  $N_1=40$  and  $N_2=80$  lb./ac.

3. DESIGN :

(i) R.B.D. (ii) (a) 3. (b) N.A. (iii) 4. (iv) (a) and (b) 1/43 acre. (v) N.A. (vi) Yes.

4. GENERAL :

(i) N.A. (ii) As under study. (iii) % incidence. (iv) (a) to (c) No. (v) (a) Kalyanpur. (b) N.A. (vi) Nil. (vii) The experiment was conducted by Ento. (K). Transformed back mean percentages are given after applying bias correction.

5. RESULTS :

Variety : 100-F

(i) 29.09 degrees.  
(ii) 7.221 degrees.  
(iii) Treatment differences are highly significant.  
(iv) Incidence observations.

Treatment	Mean angle	Transformed back mean%
$N_0$	14.62	6.84
$N_1$	26.59	20.30
$N_2$	46.05	51.81
S.E./mean	=3.610 degrees.	

Variety : P. American

(i) 34.93 degrees.  
(ii) 14.352 degrees.  
(iii) Treatments are not significantly different.  
(iv) Incidence observations.

Treatment	Mean angle	Transformed back mean%
$N_0$	32.21	28.62
$N_1$	38.71	39.22
$N_2$	33.68	30.94
S.E./mean	=7.176 degrees.	

Crop :- Cotton.  
Site :- Govt. Cotton Res. Stn., Bulandshahr.

Ref :- U.P. 52(271).  
Type :- 'MV'.

Object :- To study the effect of different manurial solutions on Cotton yield.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) and (c) N.A. (ii) (a) Sandy loam. (b) N.A. (iii) 5.6.1952. (iv) (a) Ploughed by *desi* and victory plough. (b) Sown behind plough. (c) 10 lb./ac. (d) Rows 2' apart. (e) N.A. (v) N.A. (vi) As per treatments. (vii) N.A. (viii) Thinning. (ix) and (x) N.A.

2. TREATMENTS :

Main-plot treatments :

8 different manures :  $M_0$  = No manure,  $M_1$  = A/S at 2 lb./ac. of N,  $M_2$  = Ammo. Phos. at 1-2 lb./ac. of  $P_2O_5$ ,  $M_3$  = Cowdung at 0.05 lb./ac. of N,  $M_4$  = Bora solution at 4 oz./ac.,  $M_5$  = Pot. Phos. at 1-2 lb./ac. of  $K_2O$ ,  $M_6$  = Soaking in water for 3 hours and  $M_7$  = Mixture of ash, cowdung and A/S.

Sub-plot treatments :

2 varieties :  $V_1=35/1$  and  $V_2=100-F$ .

Cowdung at 3 times the seed weight and ash equal to seed weight given to form mixture.

3. DESIGN :

(i) Split-plot. (ii) (a) 8 main-plots/block and 2 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 20' x 12'. (b) 16' x 8'. (v) One row on either side and at each end. (vi) Yes.

4. GENERAL :

(i) and (ii) N.A. (iii) Cotton yield. (iv) (a) 1951-1952. (b) No. (c) N.A. (v) (a) and (b) Nil. (vi) Due to poor germination treatment  $M_4$  was dropped out from analysis. (vii) Experiment conducted by E.B. (C).

## 5. RESULTS :

- (i) 520 lb./ac.  
 (ii) (a) 119.3 lb./ac.  
 (b) 128.2 lb./ac.  
 (iii) Treatment differences are not significant.  
 (iv) Av. yield of *kapas* in lb./ac.

	M <sub>0</sub>	M <sub>1</sub>	M <sub>2</sub>	M <sub>3</sub>	M <sub>4</sub>	M <sub>5</sub>	M <sub>6</sub>	M <sub>7</sub>	Mean
V <sub>1</sub>	643	659	468	596	479	500	495		549
V <sub>2</sub>	505	452	489	505	463	580	447		492
Mean	574	556	478	550	471	540	471		574

## S.E. of difference between two

1. M marginal means = 59.66 lb./ac.  
 2. V marginal means = 34.27 lb./ac.  
 3. V means at the same level of M = 90.68 lb./ac.  
 4. M means at the same level of V = 87.58 lb./ac.

Crop :- Cotton (*Kharif*).

Ref :- U.P. 50(267).

Site :- Govt. Agri. Res. Farm, Kalyanpur.

Type :- 'MV'.

Object :- To study the effect of N on the incidence of Cotton leaf roller.

## 1. BASAL CONDITIONS :

- (i) (a) to (c) N.A. (ii) (a) Loam. (b) N.A. (iii) N.A. (iv) (a) to (e) N.A. (v) N.A. (vi) As per treatments. (vii) Irrigated. (viii) Thinning and weeding etc. (ix) and (x) N.A.

## 2. TREATMENTS :

All combinations of (1) and (2)

- (1) 2 varieties : V<sub>1</sub>=P. American and V<sub>2</sub>=100 F.  
 (2) 3 levels of N : N<sub>0</sub>=0, N<sub>1</sub>=40 and N<sub>2</sub>=60 lb./ac.

## 3. DESIGN :

- (i) 3x2 Fact. in R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 78'x20'. (v) N.A. (vi) Yes.

## 4. GENERAL :

- (i) N.A. (ii) Under study. (iii) Percentage of incidence of cotton leaf roller. (iv) (a) to (c) No. (v) (a) Raya. (b) N.A. (vi) Nil. (vii) The experiment was conducted by Ento (K).

## 5. RESULTS :

- (i) 71.02 degrees.  
 (ii) 6.488 degrees.  
 (iii) Only N effect is highly significant.  
 (iv) Incidence of cotton leaf roller.

## Mean angle

	V <sub>1</sub>	V <sub>2</sub>	Mean
N <sub>0</sub>	60.86	58.04	59.45
N <sub>1</sub>	72.81	75.49	74.15
N <sub>2</sub>	76.77	82.20	79.48
Mean	70.15	71.89	71.02

## Transformed back mean percentages of incidence

	V <sub>1</sub>	V <sub>2</sub>
N <sub>0</sub>	76.04	71.78
N <sub>1</sub>	90.89	93.26
N <sub>2</sub>	94.35	97.68

- S.E. of V marginal mean = 1.873 degree.  
 S.E. of N marginal mean = 2.294 degree.  
 S.E. of body of table = 3.244 degree.

Crop :- Cotton.

Ref :- U.P. 52 (147).

Site :- Govt. Cotton Res. Stn., Bulandshahr.

Type :- 'C'.

Object :- To study the effect on Cotton yield when taken after *rabi* crops.

## 1. BASAL CONDITIONS :

(i) (a) and (b) As per treatments. (c) N.A. (ii) (a) Sandy loam. (b) N.A. (iii) 27.5.1952. (iv) (a) Ploughed by *desi* and victory plough. (b) Sown behind the *desi* plough. (c) 10 lb./ac. (d) and (e) N.A. (v) No. (vi) 35/1 (medium). (vii) N.A. (viii) Weedings, hoeing and thinning. (ix) N.A. (x) N.A.

## 2. TREATMENTS :

1. Cotton after wheat.
2. Cotton after barley.
3. Cotton after pea.
4. Cotton after lentil.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 4. (iv) (a) 36'×12'. (b) 32'×8'. (v) One row on either side and 2' at each end. (vi) Yes.

## 4. GENERAL :

(i) Normal. (ii) No. (iii) Cotton yield and plant stand. (iv) (a) 1952—1953. (b) and (c) No. (v) (a) and (b) No. (vi) Nil. (vii) Experiment conducted by E.B. (C).

## 5. RESULTS :

- (i) 1917 lb./ac.
- (ii) 171.2 lb./ac.
- (iii) Treatment differences are not significant.
- (iv) Av. yield of cotton in lb./ac.

Treatment	Av. yield
1.	1874
2.	1890
3.	2002
4.	1901
S.E./mean	=85.62 lb./ac.

Crop :- Cotton.

Ref :- U.P. 51(52).

Site :- Govt. Cotton Res. Stn., Bulandshahr.

Type :- 'C'.

Object :- To study the effect on Cotton yield when taken after *rabi* crops.

## 1. BASAL CONDITIONS :

(i) (a) and (b) As per treatments. (c) N.A. (ii) (a) Sandy loam. (b) N.A. (iii) 11.6.1951. (iv) (a) N.A. (b) Behind the plough. (c) 10 lb./ac. (d) Rows 2' apart and plants 1½' apart. (e) N.A. (v) Nil. (vi) C. 520 (medium). (vii) N.A. (viii) Thinning (ix) N.A. (x) Pickings on 26.9.1951, 5.10.1951, 16.10.1951 and 29.10.1951.

## 2. TREATMENTS :

1. Cotton after wheat in *rabi*.
2. Cotton after barley in *rabi*.
3. Cotton after pea in *rabi*.
4. Cotton after pea + barley in *rabi*.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 4. (iv) (a) 45'×18'. (b) 41'×14'. (v) One row on either side and 2' at each end. (vi) Yes.

## 4. GENERAL :

(i) Normal. (ii) No. (iii) Plant stand and cotton yield. (iv) (a) 1951—1952. (b) and (c) No. (v) (a) and (b) No. (vi) Nil. (vii) Experiment conducted by E.B. (C).



## 5. RESULTS :

- (i) 654.6 lb./ac.  
 (ii) 104.1 lb./ac.  
 (iii) Treatment differences are not significant.  
 (iv) Av. yield of *kapas* in lb./ac.

Treatment	Av. yield
1.	717.4
2.	694.9
3.	569.4
4.	636.8
S.E./mean	=52.05 lb./ac.

Crop :- Cotton.

Ref :- U.P. 51(217).

Site :- Govt. Cotton Res. Stn., Bulandshahr.

Type :- 'CM'.

Object :—To find out a method to increase the Cotton yield by the best combination of treatments and work out the economics.

## 1. BASAL CONDITIONS :

- (i) (a) to (c) N.A. (ii) (a) and (b) N.A. (iii) N.A. (iv) (a) N.A. (b) Sown behind plough. (c) 10 lb./ac. (d) and (e) N.A. (v) N.A. (vi) 35/1. (vii) to (x) N.A.

## 2. TREATMENTS :

- Control—no manure, one hand weeding and one bullock interculture.
- 60 lb./ac. of N as A/S applied at early flowering, two hand weedings and two bullock intercures during early growing period.

## 3. DESIGN :

- (i) R.B.D. (ii) (a) 2. (b) N.A. (iii) 12. (iv) (a) 78'×20'. (b) 72'×16'. (v) N.A. (vi) Yes.

## 4. GENERAL :

- (i) N.A. (ii) N.A. (iii) Cotton yield. (iv) (a) No. (b) and (c) N.A. (v) (a) and (b) N.A. (vi) Nil. (vii) The experiment was conducted by E.B. (C).

## 5. RESULTS :

- (i) 1006 lb./ac.  
 (ii) 115.2 lb./ac.  
 (iii) Treatment difference is highly significant.  
 (iv) Av. yield of cotton in lb./ac.

Treatment	Av. yield
1.	862
2.	1150
S.E./mean	= 56.35 lb./ac.

Crop :- Cotton.

Ref :- U.P. 48(87).

Site :- Govt. Cotton Res. Sub-Stn., Raya.

Type :- 'CM'.

Object :—To study the effect on Cotton yield when taken after leguminous crops.

## 1. BASAL CONDITIONS :

- (i) (a) to (c) As per treatments. (ii) (a) Sandy loam. (b) Refer soil analysis, Raya. (iii) 7,8.6.48. (iv) (a) 4 ploughings with victory plough. (b) Sown behind *desi* plough. (c) 20 lb./ac. (d) Rows 1½' apart. (e) N.A. (v) Nil. (vi) CO.520 (medium). (vii) Irrigated. (viii) harrowings, 4 weedings and thinning. (ix) 27.76'. (x) 6, 7, 15 and 23.10.1948 and 7.11.1948.

## 2. TREATMENTS :

## Main-plot treatments :

All combinations of (1) and (2)

(1) 4 *rabi* crops : R<sub>1</sub>=wheat, R<sub>2</sub>=gram, R<sub>3</sub>=barley and R<sub>4</sub>=peas.(2) 2 manures given to *rabi* crops : P<sub>0</sub>=no manure and P<sub>1</sub>=30 lb./ac. of P<sub>2</sub>O<sub>5</sub> as Super.

## Sub-plot treatments :

2 manures given to cotton crop : N<sub>0</sub>=no manure and N<sub>1</sub>=30 lb./ac. of N as A/S.

A/S given on 4.9.1948 as top dressing.

## 3. DESIGN :

(i) Split-plot. (ii) (a) 8 main-plots/replication ; 2 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 80'×18'.  
(b) 70'×12'. (v) Two rows on either side and 5' at each end of every plot. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) N.A. (iii) Plant stand and cotton yield. (iv) (a) 1946 to 1949. (b) Yes. (c) N.A. (v) (a) and (b) No. (vi) Nil. (vii) The experiment was conducted by E.B. (C).

## 5. RESULTS :

- (i) 448.5 lb./ac.  
 (ii) (a) 188.2 lb./ac.  
 (b) 61.4 lb./ac.  
 (iii) None of the effects is significant.  
 (iv) Av. yield of cotton in lb./ac.

	N <sub>0</sub>	N <sub>1</sub>	Mean	P <sub>0</sub>	P <sub>1</sub>
R <sub>1</sub>	419.7	485.5	452.6	358.1	547.1
R <sub>2</sub>	392.8	432.7	412.8	419.9	405.7
R <sub>3</sub>	423.4	435.4	429.4	476.2	382.6
R <sub>4</sub>	504.9	493.9	499.4	556.0	442.8
Mean	435.2	461.9	448.5	452.5	444.5
P <sub>0</sub>	439.3	465.8			
P <sub>1</sub>	431.1	458.0			

## S.E. of the difference of two

1. R marginal means =66.53 lb./ac.  
 2. P marginal means =47.04 lb./ac.  
 3. N marginal means =15.36 lb./ac.  
 4. N means at the same level of R =30.72 lb./ac.  
 5. N means at the same level of P =21.72 lb./ac.  
 6. R means at the same level of N =69.98 lb./ac.  
 7. P means at the same level of N =49.49 lb./ac.  
 S.E. of body of R × P table =66.53 lb./ac.

Crop :- Cotton.

Ref :- U.P. 49(179)/48(87).

Site :- Govt. Cotton Res. Sub-Stn., Raya,

Type :- 'CM'.

Object :- To study the effect on Cotton yield when taken after leguminous crops.

## 1. BASAL CONDITIONS :

- (i) (a) to (c) As per treatments. (ii) (a) Sandy loam. (b) Refer soil analysis, Raya. (iii) 6, 7.6.1949. (iv) (a) 3 ploughings with victory plough. (b) Behind the plough. (c) 20 lb./ac. (d) Rows 1½' apart. (e) N.A. (v) Nil. (vi) CO-520 (medium). (vii) Irrigated. (viii) One harrowing, 4 weedings and thinning. (ix) 38.86°. (x) Pickings on 4, 5.10.1949, 14, 26, 27.10.1949, 11, 12, 23.11.1949.

## 2. TREATMENTS :

## Main-plot treatments :

All combinations of (1) and (2)

(1) 4 *rabi* crops : R<sub>1</sub>=gram, R<sub>2</sub>=wheat, R<sub>3</sub>=peas and R<sub>4</sub>=barley.(2) 2 manures given to *rabi* crops : P<sub>0</sub>=no manure and P<sub>1</sub>=30 lb./ac. of P<sub>2</sub>O<sub>5</sub> as Super.

## Sub-plot treatments :

2 manures given to cotton crop : N<sub>0</sub>=no manure and N<sub>1</sub>=30 lb./ac. of N as A/S.

A/S given on 26.8.1949 as top dressing.

## 3. DESIGN :

(i) Split-plot. (ii) (a) 8 main-plots/replication and 2 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 80'×18'.  
(b) 70'×12'. (v) Two rows on either side and 5' at each end of every plot. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) N.A. (iii) Plant number and yield of cotton. (iv) (a) 1946—1949. (b) Yes. (c) N.A. (v)  
(a) and (b) No. (vi) Nil. (vii) Experiment conducted by E.B.(C).

## 5. RESULTS :

(i) 534.9 lb./ac.

(ii) (a) 161.8 lb./ac.

(b) 63.0 lb./ac.

(iii) Only N effect is highly significant.

(iv) Av. yield of cotton in lb./ac.

	N <sub>0</sub>	N <sub>1</sub>	Mean	P <sub>0</sub>	P <sub>1</sub>
R <sub>1</sub>	452.9	568.8	510.9	447.5	574.2
R <sub>2</sub>	429.6	533.4	481.5	516.3	446.7
R <sub>3</sub>	519.6	589.2	554.4	545.9	563.0
R <sub>4</sub>	547.6	638.0	592.8	571.3	614.2
Mean	487.4	582.3	534.9	520.2	549.5
P <sub>0</sub>	482.3	558.2			
P <sub>1</sub>	492.5	606.5			

## S.E. of difference of two

1. R marginal means	=57.22 lb./ac.
2. P marginal means	=40.46 lb./ac.
3. N marginal means	=15.76 lb./ac.
4. N means at the same level of R	=31.51 lb./ac.
5. R means at the same level of N	=61.40 lb./ac.
6. N means at the same level of P	=22.28 lb./ac.
7. P means at the same level of N	=43.42 lb./ac.
S.E. of body of R×P table	=57.22 lb./ac.

Crop :- Cotton.

Ref :- U.P. 51(50).

Site :- Govt. Cotton Res. Sub-Stn., Raya.

Type :- 'CM'.

Object :- To find out a method to increase Cotton yield by the best combination of treatments and work out economics.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) N.A. (c) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis, Raya. (iii) 9.6.1951. (iv)  
(a) Ploughed by victory plough once and twice by *desi* plough. (b) Sown behind the plough. (c)  
10 lb./ac. (d) 2'×1.5'. (e) N.A. (v) Nil. (vi) 35/1 (early). (vii) Irrigated. (viii) 1 harrowing, 1 culti-  
vator, 1 *Akola* and 1 thinning. (ix) 16.63°. (x) 10.11.1951.

## 2. TREATMENTS :

1. Control—no manure, one hand weeding and one bullock inter culture.  
2. 60 lb./ac. of N as A/S applied at early flowering ; 2 hand weedings and 2 bullock inter cultures during  
early growing periods.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 2. (b) N.A. (iii) 12. (iv) (a) 78'×20'. (b) 72'×16'. (v) 3'×2'. (vi) Yes.

## 4. GENERAL :

(i) Normal. (ii) No. (iii) Yield of cotton and plant number. (iv) (a) 1951—1952. (b) to (c) No. (v) (a) and (b) No. (vi) Nil. (vii) Experiment conducted by E.B.(C).

## 5. RESULTS :

- (i) 819 lb./ac.  
 (ii) 95.60 lb./ac.  
 (iii) Treatment difference is highly significant.  
 (iv) Av. yield of cotton in lb./ac.

Treatment	Av. yield
1.	577
2.	1062
S.E./mean	=27.60 lb./ac.

Crop :-Cotton.

Ref :-U.P. 52(148).

Site :-Govt. Cotton Res. Sub-Stn., Raya.

Type :-'CM'.

Object :-To find out a method to increase Cotton yield by the best combination of treatments and work out the economics.

## 1. BASAL CONDITIONS :

(i) (a) No. (b) Fallow. (c) No. (ii) (a) Sandy loam. (b) Refer soil analysis, Raya. (iii) 31.5.1952. (iv) (a) 1 ploughing with victory plough and 3 ploughings with *desi* plough. (b) Sown behind the plough. (c) N.A. (d) Rows 2' apart. (e) N.A. (v) Nil. (vi) 35/1 (late). (vii) Irrigated. (viii) 2 weedings and 2 cultivators. (ix) N.A. (x) 7 pickings from 20.9.1952 to 5.12.1952.

## 2. TREATMENTS :

- Control—no manure, one hand weeding and one bullock interculture.
- 60 lb./ac. of N as A/S applied at early stages of flowering, 2 hand weedings and 2 intercultures.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 2. (b) N.A. (iii) 12. (iv) (a) 78'×20'. (b) 72'×16'. (v) One row on either side and 3' at each end of every plot. (vi) Yes.

## 4. GENERAL :

(i) Normal. (ii) No. (iii) Cotton yield and plant stand. (iv) (a) 1951—1952. (b) and (c) No. (v) (a) and (b) No. (vi) Nil. (vii) Expt. was conducted by E.B.(C).

## 5. RESULTS :

- (i) 384.5 lb./ac.  
 (ii) 92.04 lb./ac.  
 (iii) Treatment difference is highly significant.  
 (iv) Av. yield of cotton in lb./ac.

Treatment	Av. yield
1.	272.4
2.	496.6
S.E./mean	=26.57 lb./ac.

Crop :- Cotton.

Ref :- U.P. 50(228).

Site :- Govt. Agri. Res. Farm, Kalyanpur.

Type :- 'CMV'.

Object :- To study the effect of various cultural practices on the yield of Cotton.

## 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Loam (b) N.A. (iii) 26.5.1950. (iv) (a) Field ploughed by cultivator. (b) Sown by cotton planter in lines and broadcast. (c) N.A. (d) As per treatments. (e) N.A. (v) N.A. (vi) N.A. (vii) N.A. (viii) As per treatments. (ix) N.A. (x) N.A.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 3 cultural and manurial treatments :  $C_1=60$  lb./ac. of N+2 weedings+6 hoeings+spacing  $2' \times 1\frac{1}{2}'$ ,  $C_2=40$  lb./ac. of N+2 weedings+4 hoeings+spacing  $2' \times 1\frac{1}{2}'$  and  $C_3=$ No manure+2 weedings+4 hoeings and broadcast-ing seed.

(2) 4 medium varieties :  $V_1=C$  520,  $V_2=35/1$ ,  $V_3=$ Perso American and  $V_4=100$  F.

## 3. DESIGN :

(i)  $4 \times 3$  Fact. in R.B.D. (ii) (a) 12. (b) N.A. (iii) 4. (iv) (a) N.A. (b)  $78' \times 20'$ . (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) N.A. (iii) Cotton yield. (iv) (a) and (b) No. (c) N.A. (v) (a) No. (b) N.A. (vi) Nil. (vii) The experiment was conducted by E.B.(C).

## 5. RESULTS :

- (i) 667.9 lb./ac.  
 (ii) 125.5 lb./ac.  
 (iii) Both V and C effects are highly significant. Interaction  $V \times C$  is not significant.  
 (iv) Av. yield of cotton in lb./ac.

	$C_1$	$C_2$	$C_3$	Mean
$V_1$	708.1	775.2	352.3	611.9
$V_2$	1302.2	1117.3	674.9	1031.5
$V_3$	703.2	631.8	345.5	560.2
$V_4$	568.5	500.8	334.8	468.0
Mean	820.5	756.3	426.9	667.9

S.E. of marginal mean of V

=36.22 lb./ac.

S.E. of marginal mean of C

=31.37 lb./ac.

S.E. of body of table

=62.73 lb./ac.

Crop :- Cotton (Kharif).

Ref :- U.P. 50 (268).

Site :- Govt. Cotton Res. Sub-Strn., Raya.

Type :- 'CMV'.

Object :- To study the effect of manuring and interculture operations on Cotton varieties in controlling the infection of pests and diseases.

## 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) and (b) Refer soil analysis, Raya. (iii) 28.5.1950. (iv) (a) to (e) N.A. (v) N.A. (vi) As per treatments. (vii) N.A. (viii) As per treatments. (ix) and (x) N.A.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 2 varieties :  $V_1=$ Perso American and  $V_2=100$  F.

(2) 3 manurial and intercultural operations :  $C_1=2$  weedings,  $C_2=40$  lb./ac. of N+2 weedings+2 hoeings, and  $C_3=60$  lb./ac. of N+2 weedings+4 hoeings.

## 3. DESIGN :

(i) 3×2 Fact. in R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) 78'×18'. (b) 72'×12'. (v) 3' around. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) Under study. (iii) % of infected plants. (iv) (a) to (c) No. (v) (a) and (b) No. (vi) Nil. (vii) The experiment was conducted by Ento (K). Transformed back mean percentage are given after applying bias correction.

## 4. RESULTS :

- (i) 31.90 degrees.  
 (ii) 11.48 degrees.  
 (iii) Only C effect is significant.  
 (iv) Av. mean angles.

	Transformed back mean percentages of infected plants.		
	V <sub>1</sub>	V <sub>2</sub>	Mean
C <sub>1</sub>	14.62	32.23	23.42
C <sub>2</sub>	28.24	36.42	32.33
C <sub>3</sub>	36.42	43.86	39.96
Mean	29.64	34.17	31.90

	Transformed back mean percentages of infected plants.	
	V <sub>1</sub>	V <sub>2</sub>
C <sub>1</sub>	6.84	28.62
C <sub>2</sub>	22.68	35.40
C <sub>3</sub>	51.83	31.24

S.E. of V marginal means = 3.364 degree.  
 S.E. of C marginal means = 4.058 degree.  
 S.E. of body of table = 5.739 degree.

Crop :- Cotton.

Ref :- U.P. 50 (49).

Site :- Govt. Cotton Res. Sub-Stn., Raya.

Type :- 'CMV'.

Object :- To work out the economics of optimum cultivation practices in relation to the out-turn of *Kapas*.

## 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis, Raya. (iii) 28.5.1950. (iv) (a) 1 ploughing with victory plough and 2 ploughings with *desi* plough. (b) Sown behind the plough. (c) 20 lb./ac. (d) 2'×1.5'. (e) —. (v) Nil. (vi) As per treatments. (vii) Irrigated. (viii) 2 weedings, 6 hoeings and 1 thinning. (ix) 36.26°. (x) N.A.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 3 cultural and manurial treatments : C<sub>1</sub> = 60 lb./ac. of N+2 weedings+6 hoeings+spacing 2'×1½',  
 C<sub>2</sub> = 40 lb./ac. of N+2 weedings+4 hoeings+2 spacing'×1½' and  
 C<sub>3</sub> = No manure +2 weedings+ 4 hoeings and broadcasting of seed.

(2) 4 medium varieties : V<sub>1</sub> = C.520, V<sub>2</sub> = 35/1, V<sub>3</sub> = Perso American and V<sub>4</sub> = 100.F.

## 3. DESIGN :

(i) 3×4 Fact. in R.B.D. (ii) (a) 12. (b) N.A. (iii) 4. (iv) (a) 78'×18'. (b) 72'×14'. (v) 2'×3'. (vi) Yes.

## 4. GENERAL :

(i) Normal. (ii) No. (iii) Plant stand and *kapas* yield. (iv) (a) to (c) No. (v) (a) and (b) No. (vi) Nil. (vii) Experiment was conducted by E.B. (C).

## 5. RESULTS :

- (i) 805.2 lb./ac.  
 (ii) 159.4 lb./ac.  
 (iii) Both V and C effects are highly significant while interaction is not sig.  
 (iv) Av. yield of kapas in lb./ac.

	C <sub>1</sub>	C <sub>2</sub>	C <sub>3</sub>	Mean
V <sub>1</sub>	805.5	848.3	852.1	835.3
V <sub>2</sub>	754.5	1011.7	1058.3	941.5
V <sub>3</sub>	572.2	832.5	1022.2	808.9
V <sub>4</sub>	593.9	620.5	690.7	635.0
Mean	681.5	828.3	905.8	805.2

S.E. of marginal mean of V = 45.31 lb./ac.  
 S.E. of marginal mean of C = 39.85 lb./ac.  
 S.E. of body of table = 79.71 lb./ac.

Crop :- Cotton (*Kharif*).

Ref :- U.P. 53 3:3.

Site :- Govt. Agri. Res. Farm., Belatal.

Type :- 'D'.

Object :- To study the effect of different control measures against the spotted bollworms of Cotton.

## 1. BASAL CONDITIONS :

- (i) (a) to (c) N.A. (ii) (a) Loam. (b) N.A. (iii) 18.7.1953. (iv) (a) to (e) N.A. (v) Nil. (vi) 35/l. (vii) Irrigated. (viii) Weeding and hoeing. (ix) N.A. (x) Oct. and Nov. 1953.

## 2. TREATMENTS :

- Dusting with 5% D.D.T. (Guesrol 405, 5% D.D.T.)
- Dusting with 5% BHC. (Gammexane 5% B.H.C.)
- Spraying with 0.2% BHC. (Agroicide wett powder 5% BHC.)
- Spraying with 0.2% D.D.T. (Guesrol 550, 5% D.D.T.)
- Removal of tops of seedlings from below the bored plants and destruction of insect within, followed by treatment.
- Control.

Dust at 8 lb./ac. Sprays at 20 gallons/ac. First application on 15.8.1953. Second application on 6.9.1953.

## 3. DESIGN :

- (i) (a) R.B.D. (ii) (a) 6. (b) N.A. (iii) 3. (iv) (a) N.A. (b) 22' x 12'. (v) N.A. (iv) Yes.

## 4. GENERAL :

- (i) Fair. (ii) Under study. (iii) % incidence of pest before and after application of treatments. (20 plants were examined for each plot). (iv) (a) 1953- contd. (b) No. (c) N.A. (v) (a) No. (b) N.A. (vi) N.A. (vii) Inverse transformation has been done after applying bias correction. The experiment was conducted by Ento (K).

## 5. RESULTS :

(i) to (iv)

Treatment	Mean value	% incidence of pest on 26.9.1953/plot (transformed back)
1.	43.08	46.68
2.	43.09	46.70
3.	40.10	41.56
4.	42.12	45.03
5.	43.08	46.68
6.	44.03	48.32
S.E./mean	2.058 lb./ac.	

Crop :- Cotton (*Kharif*).

Ref :- U.P. 53(133).

Site :- Govt. Cotton Res. Stn., Bulandshahar

Type :- 'D'.

Object :- To find out the effect of treating cotton seed with perenox upon the yield of 35/1 and 126 F Cotton varieties.

## 1. BASAL CONDITIONS :

(i) (a) Green manuring—Wheat - Cotton—Pea—*Sana*i. (b) Wheat. (c) Green manuring with *sana*i. (ii) (a) and (b) Loamy. (iii) 28.5.1953. (iv) (a) N.A. (b) Sown in lines behind the plough. (c) 16 lb./ac. (d) 2'×1.5' (e) —. (v) Nil. (vi) 35/1 (*desi*) and 216 F (early). (vii) Irrigated. (viii) Thinning done after one month of sowing. (ix) 18.52'. (x) 5 pickings for 35/1 variety on 25.9.1953, 4, 11, 23.10.1953 and 14.11.1953. and 3 pickings for 216F variety on 12.10.1953 and 21.11.1953.

## 2. TREATMENTS :

1. Control.
2. Seed dressed with 1 part of Perenox to 300 parts of seed weight.
3. Seed dressed with 1 part of Perenox to 400 parts of seed weight.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 3. (b) N.A. (iii) 6. (iv) (a) 38'×12' (b) 34'×8'. (v) One row on either side and 2' at each end. (vi) Yes.

## 4. GENERAL :

(i) Fair. (ii) N.A. (iii) *Kapas* yield. (iv) (a) 1953-1954. (b) No. (c) Nil. (v) Govt. Cotton Res. Sub-Stn., Raya. (vi) Nil. (vii) The experiment was conducted by E.B. (C).

## 5. RESULTS :

Variety : 35/1		Variety 216F	
(i) 996 lb./ac.		(i) 1218 lb./ac.	
(ii) 134.9 lb./ac.		(ii) 121.3 lb./ac.	
(iii) Treatment differences are not significant.		(iii) Treatment differences are not significant.	
(iv) Av. yield of cotton in lb./ac.		(iv) Av. yield of cotton in lb./ac.	
Treatment	Av. yield	Treatment	Av. yield
1.	928	1.	1193
2.	1026	2.	1204
3.	1033	3.	1258
S.E./mean	=55.06 lb./ac.	S.E./mean	=49.45 lb./ac.

Crop :- Cotton (*Kharif*).

Ref :- U.P. 50(298).

Site :- Govt. Agri. Farm, Kanpur.

Type :- 'D'.

Object :- To study the effect of different control measures against Cotton leaf roller.

## 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) and (b) N.A. (iii) N.A. (iv) (a) to (e) N.A. (v) N.A. (vi) Perso American and 100 F. (vii) N.A. (viii) N.A. (ix) N.A. (x) N.A.

## 2. TREATMENTS :

1. Spraying with 0.5% D.D.T. suspension in water.
2. Spraying with 0.5% BHC. suspension.
3. Dusting with pyrodust 400.
4. Dusting with toxaphene dust.

Dust used at 50 lb./ac. and spray at 100 gallons/ac. ; application in 1st week of September, 1950 for all treatments.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 3 for each variety. (iv) (a) N.A. (b) 78'×20'. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) Under study. (iii) 50 plants were examined for leaf roller disease. (iv) (a) No. (b) and (c) Nil. (v) (a) and (b) Nil (vi) Nil. (vii) The analysis has been done after transforming the data to  $\sin^{-1}\sqrt{p}$  where  $p = \%$  of plants having rolled leaves. Transformation has been done after applying bias correction. The experiment was conducted by Ento (K).



## 5. RESULTS :

Variety : Perso American

(i) to (iv)

Treatment	Mean angle per plot	% of plants having rolled leaves (transformed back)
1.	73.71	91.68
2.	66.09	83.33
3.	65.96	83.07
4.	71.69	90.70
G.M.	69.36	
S.E./mean	3.486	
Significance	Not significant	

Variety 100 F

(i) to (iv)

Treatment	Mean angle per plot	% of plants having rolled leaves (transformed back)
1.	74.67	92.57
2.	54.89	66.83
3.	76.69	94.25
4.	84.52	98.61
G.M.	72.69	
S.E./mean	5.401	
Significance	Significant	

Crop :- Cotton (*Kharif*).

Ref :- U.P. 49(216).

Site :- Govt. Cotton Res. Sub. Stn., Raya.

Type :- 'D'.

Object :- To study the effect of different control measures against the Cotton leaf roller.

## 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) N.A. (b) Refer soil analysis, Raya. (iii) 19.5.1949. (iv) (a) to (c) N.A. (v) N.A. (vi) Perso American (early). (vii) N.A. (viii) N.A. (ix) N.A. (x) 2nd picking on 9.11.1949.

## 2. TREATMENTS :

1. Hand picking of rolled leaves.
2. Dusting with sodium fluosilicate.
3. Dusting with 5% benzene-hexachloride dust.
4. Dusting with 5% D.D.T. dust.
5. Control.

Insecticides dusted at 80 lb./ac. in last week of August and first week of October.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 6. (iv) (a) N.A. (b) 36' x 30'-3". (v) 4' all round the plot. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) Under study. (iii) Yield and number of plants. (iv) (a) No. (b) and (c) No. (v) (a) No. (b) Nil. (vi) Nil. (vii) The experiment was conducted by Ento (K).

## 5. RESULTS :

- (i) 322 lb./ac.
- (ii) 90.19 lb./ac.
- (iii) Treatment differences are not significant.
- (iv) Av. yield of cotton in lb./ac.

Treatment	Av. yield
1.	374
2.	255
3.	328
4.	368
5.	283
S.E./mean	=36.82 lb./ac.

Crop :- Cotton (*Kharif*).

Ref :- U.P. 50(266).

Site :- Govt. Cotton Res. Sub-Stn., Raya.

Type :- 'D'.

Object :- To study the effect of different control measures against Cotton leaf roller.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) Wheat. (c) N.A. (ii) (a) N.A. (b) Refer soil analysis, Raya. (iii) 19 and 21.5.1950. (iv) (a) to (c) N.A. (v) N.A. (vi) N.A. (vii) N.A. (viii) N.A. (ix) N.A. (x) 11.10.1950, 10.11.1950 and 13.12.1950.

## 2. TREATMENTS :

1. Hand picking of rolled leaves and destruction of larvae and pupae inside the leaves.
  2. Dusting with sodium fluosilicate in the ratio of 1 : 8 to ash.
  3. Dusting with gammexane.
  4. Dusting with (guesrol 405) 5% D.D.T. dust.
  5. Spraying with (guesrol 550) 0.5% D.D.T.
  6. Control.
- Dusted at 50 lb./ac. and suspension liquid at 100 gallon per acre once in last week of August.

## 3. DESIGN :

- (i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 6. (iv) (a) N.A. (b) 36'×30'. (v) N.A. (vi) Yes.

## 4. GENERAL :

- (i) N.A. (ii) Under study. (iii) Percentage of plants having rolled leaves, one week and one month after application of treatments. (iv) (a) 1949-1950 (modified this year). (b) and (c) No. (v) (a) and (b) No. (vi) Nil. (vii) The data has been converted into  $\sin^{-1}\sqrt{p}$  and then analysed. The experiment was conducted by Ento(K).

## 5. RESULTS :

Treatment	(i) to (iv) % of rolled leaves one week after application		(iv) to (iv) % of rolled leaves one month after application.	
	Mean angle	Mean % of rolled leaves (transformed back)	Mean angle	Mean % of rolled leaves (transformed back)
1	14.92	7.03	11.04	4.11
2.	25.88	19.36	16.23	8.23
3.	19.18	11.19	11.64	4.53
4.	13.51	5.94	8.53	2.68
5.	12.33	5.01	4.09	1.00
6.	.53	0.88	0.96	0.53
G.M.	14.89		8.75	
S.E./mean	2.379		2.146	
Significance	Highly significant		Highly significant	

Crop :- Cotton (*Kharif*).

Ref :- U.P. 53(312).

Site :- Govt. Cotton Res. Sub-Strn., Raya.

Type :- 'D'.

Object :- To study the effect of different control measures against the spotted boll worms of Cotton.

## 1. BASAL CONDITIONS :

- (i) (a) Wheat or *Rabi* crop—Cotton. (b) and (c) N.A. (ii) (a) Loam. (b) Refer soil analysis, Raya. (iii) 20.5.1953. (iv) (a) to (e) N.A. (v) Nil. (vi) Perso American and 216 F. (vii) Irrigated. (viii) weeding and hoeing. (ix) N.A. (x) October and November, 1953.

## 2. TREATMENTS :

1. Dusting with 5% D.D.T. (guesrol 405, 5% D.D.T.).
2. Dusting with 5% BHC. (gammexane D.O. 25, 5% BHC.).
3. Spraying with 2% BHC. (agrocide wettable powder, 50% BHC.).
4. Spraying with 0.2% (guesral 550, 50% D.D.T.).
5. Removal of tops of seedlings from below the bored plant and destruction of insect within, followed by a treatment.
6. Control.

Dust at 8 lb./ac. and sprays at 20 gallons/ac ; first application on 9.8.1953.

## 3. DESIGN :

- (i) R.B.D. (ii) (a) 6. (b) N.A. (iii) N.A. (iv) (a) N.A. (b) 40'×27.2' (v) N.A. (vi) Yes.

## 4. GENERAL :

- (i) Fair. (ii) Under study. (iii) % incidence of pest before and 10 days after application. (iv) (a) and (b) No. (c) N.A. (v) (a) No. (b) N.A. (vi) Nil. (vii) Bias correction has been applied while transforming back the means. The data has been converted into  $\sin^{-1}\sqrt{p}$  where p is the % incidence and then analysed. The experiment was conducted by Ento (K).

## 5. RESULTS :

(i) to (iv) % incidence 10 days after 1st application.

Treatment	Mean angle	% incidence of pest (transformed back)
1.	44.04	48.34
2.	43.07	46.66
3.	43.08	46.68
4.	36.66	35.79
5.	42.12	45.03
6.	49.32	57.45
G.M.	43.05	
S.E./mean	1.364	
Significance	Highly significant	

Crop :- Cotton (*Kharif*).

Ref :- U.P. 53(135).

Site :- Govt. Cotton Res. Sub-Stn., Raya.

Type :- 'D'.

Object :- To find out the effect of treating Cotton seed with Perenox on its yield.

## 1. BASAL CONDITIONS :

(i) (a) Cotton-Pea-G.M.-Wheat. (b) Wheat. (c) G.M. (ii) (a) Sandy loam. (b) Refer soil analysis, Raya. (iii) 9.6.1953. (iv) (a) N.A. (b) Sown behind plough. (c) N.A. (d) Rows 2' apart ; plant to plant 1½'. (e) N.A. (v) Nil. (vi) 216 F and 35/1 (*desi* cotton). (vii) Irrigated. (viii) Harrowing, 3 weedings and hoeing. (ix) 14.98°. (x) Picking dates for 216 F : 16.10.1953, 9.11.1953 and 24.11.1953. Picking dates for 35/1: 1.10.1953, 16.10.1953, 24.10.1953, 9.11.1953 and 24.11.1953.

## 2. TREATMENTS :

- Control.
- Seed dressed with 1 part of Perenox to 300 parts of seed by weight.
- Seed dressed with 1 part of Perenox to 400 parts of seed by weight.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 3. (b) N.A. (iii) 6. (iv) (a) 74' × 12'. (b) 66' × 8'. (v) One row on either side and 4 ft. at each end of every plot. (vi) Yes.

## 4. GENERAL :

(i) Fair. (ii) Attack of leaf roller on 216 F plots only. (iii) Yield of *kapas*. (iv) (a) 1953—1954. (b) No. (c) Nil. (v) (a) and (b) Cotton Research Station, Bulandshahar. (vi) Nil. (vii) The experiment was conducted by E.B.(C).

## 5. RESULTS :

Variety : 216 F

- (i) 581.1 lb /ac.  
(ii) 68.5 lb /ac.  
(iii) Treatment differences are significant.  
(iv) Av. yield of *kapas* in lb./ac.

Treatment	Av. yield
1.	575.8
2.	599.9
3.	567.7
S.E./mean	=27.9 lb./ac.

Variety : 35/1

- (i) 477.7 lb./ac.  
(ii) 86.6 lb./ac.  
(iii) Treatment differences are not significant.  
(iv) Av. yield of *kapas* in lb./ac.

Treatment	Av. yield
1.	454.7
2.	477.4
3.	501.1
S.E./mean	=35.4 lb./ac.

Crop :- Tobacco.

Ref :- U.P. 53(385).

Site :- College Farm, B.H.U., Varanasi.

Type :- 'M'.

Object :- To study the effect of single and split application of A/S on growth, yield and quality of Tobacco.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fa.l. w (c) Nil. (ii) (a) Medium loam. (b) Refer soil analysis, B.H.U., Varanasi. (iii) N.A. (iv) (a) Ploughed with victory plough, twice with Meston plough and twice with *desi* plough and planking. (b) Transplanting. (c) —. (d) Between rows 2½'; between plants 2'. (e) 2 seedlings/hole; 1 seedling/hole. (v) A mixture of 1 lb. triple Super and 1 lb. Pot. Sul. per plot. (vi) I.P. 58 (Improved chewing and *hooka* type). (vii) Irrigated. (viii) Thinning, topping and suckering. (ix) N.A. (x) N.A.

## 2. TREATMENTS :

All combinations of (1) and (2) + a control.

(1) 3 doses of N as A/S :  $N_1 = 30$ ,  $N_2 = 60$  and  $N_3 = 90$  lb./ac.

(2) 3 applications of doses :  $F_1 =$  single dose,  $F_2 = \frac{2}{3}$  dose at transplanting +  $\frac{1}{3}$  dose 2 months after transplanting and  $F_3 = \frac{1}{3}$  dose at transplanting +  $\frac{2}{3}$  dose 2 months after transplanting.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 10. (b) N.A. (iii) 4. (iv) (a) 24' × 22.5'. (b) 20' × 17.5'. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) N.A. (iii) Fresh and dry weight of plant, no. of leaves, ht. of plant etc. (iv) (a) No. (b) No. (c) Nil. (v) (a) and (b) Nil. (vi) Nil. (vii) The experiment was conducted by B.H.U.

## 5. RESULTS :

(i) 771.2 lb./ac.

(ii) 15.1 lb./ac.

(iii) Effect of N and control vs. treated are highly significant.

(iv) Av. yield of tobacco in lb./ac.

Control = 631.4 lb./ac.

	$F_1$	$F_2$	$F_3$	Mean
1	720.5	722.5	715.4	719.5
$N_2$	790.5	794.2	785.4	790.0
3	850.6	861.2	840.4	850.7
Mean	787.2	792.6	780.4	786.7

S.E. of any marginal mean

= 4.36 lb./ac.

S.E. of body of table

= 7.56 lb./ac.

Crop :- Jute (*Kharif*).

Ref :- U.P. 51(298).

Site :- Jute Exptl. and Demon. Farm, Gograghat.

Type :- 'C'.

Object :- To compare different methods of sowing Jute.

## 1. BASAL CONDITIONS :

(i) (a) and (b) Nil. (c) N.A. (ii) (a) Sandy loam. (b) N.A. (iii) 25.3.1951. (iv) (a) N.A. (b) As per treatments. (c) N.A. (d) Plant to plant distance = 3" and between rows as per treatments. (e) N.A. (v) N.A. (vi) and (vii) N.A. (viii) Weeding. (ix) 10.68". (x) N.A.

## 2. TREATMENTS :

4 methods of sowing :

1. Sowing by broadcasting.
2. Sowing at a distance of 1'—3" line by line.
3. Sowing at a distance of 1'—6" line by line.
4. Sowing at a distance of 1'—0" line by line.

## 3. DESIGN:

(i) R.B.D. (ii) (a) 4. (b) 175'×10'. (iii) 4. (iv) (a) 40'×10'. (b) 1/144 ac. (v) Distance between plots—3', and distance between blocks—3'. (vi) Yes.

## 4. GENERAL :

(i) and (ii) N.A. (iii) Wt. of green jute plant, wt. of wet fibre and wt. of dry fibre. (iv) (a) to (c) No. (v) (a) and (b) No. (vi) Nil. (vii) The experiment was conducted by J.D.O.

## 5. RESULTS :

(i) 1564 lb./ac.

(ii) 703.1 lb./ac.

(iii) Treatment differences are not significant.

(iv) Av. yield of dry fibre in lb./ac.

Treatment	Av. yield
1.	1606
2.	1509
3.	1699
4.	1444
S.E./mean	= 351.6 lb./ac.

Crop :- Jute (*Kharif*).

Ref :- U.P. 51(299).

Site :- Jute Exptl. and Demon. Farm, Gograhat.

Type :- 'C'.

Object :- To compare different methods of sowing Jute.

## 1. BASAL CONDITIONS :

(i) (a) and (b) N.A. (c) N.A. (ii) (a) Sandy loam. (b) N.A. (iii) 19.3.1851. (iv) (a) N.A. (b) As per treatments. (c) N.A. (d) Plant to plant distance=3'-4" and distance between lines as per treatments. (e) N.A. (v) to (vii) N.A. (viii) Weeding. (ix) 10.68". (x) N.A.

## 2. TREATMENTS :

3 methods of sowing

1. Sowing by broadcasting and *pata*.

2. Sowing in lines at a distance of 6" apart and *pata*.

3. Sowing in lines at a distance of 1' apart and *pata*.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 3. (b) 135'×20'. (iii) 4. (iv) (a) 42'×20'. (b) 1/60.5 ac. (v) Distance between blocks=3' and distance between plots=2'. (vi) Yes.

## 4. GENERAL :

(i) and (ii) N.A. (iii) Wt. of green jute plant, wt. of wet fibre and wt. of dry fibre. (iv) (a) to (c) No. (v) (a) and (b) No. (vi) Nil. (vii) The experiment was conducted by J.D.O.

## 5. RESULTS :

(i) 1248 lb./ac.

(ii) 393.3 lb./ac.

(iii) Treatment differences are not significant.

(iv) Av. yield of dry fibre in lb./ac.

Treatment	Av. yield
1.	931
2.	1598
3.	1213
S.E./mean	= 196.6 lb./ac.

Crop :- Jute (*Kharif*).

Ref :- U.P. 52(341).

Site :- Jute Exptl. and Demon. Farm, Gograhat.

Type :- 'C'.

Object :- To compare different seed rates.

## 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Sandy loam. (b) N.A. (iii) 4.7.1952. (iv) (a) N.A. (b) N.A. (c) As per treatments. (d) N.A. (e) N.A. (v) N.A. (vi) D-154. (vii) N.A. (viii) N.A. (ix) 15.50". (x) N.A.

## 2. TREATMENTS :

3 seed rates :  $S_1=3$ ,  $S_2=4$  and  $S_3=4\frac{1}{2}$  seer/ac.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 3. (b) N.A. (iii) 4. (iv) (a)  $42' \times 20'$ . (b) 1/60.3 ac. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) N.A. (iii) Wt. of green jute plant, wt. of wet fibre, and wt. of dry fibre. (iv) (a) No. (b) No. (c) Nil. (v) (a) and (b) Nil. (vi) Nil. (vii) The experiment was conducted by J.D.O.

## 5. RESULTS :

(i) 821.8 lb./ac.  
(ii) 401.6 lb./ac.  
(iii) Treatment differences are not significant.  
(iv) Av. yield of dry fibre in lb./ac.

Treatment	Av. yield
$S_1$	368.3
$S_2$	1184.2
$S_3$	912.9
S.E./mean	=200.8 lb./ac.

Crop :- Groundnut (*Kharif*).

Ref :- U.P. 53(28).

Site :- Govt. Agri. Res. Farm, Kalyanpur.

Type :- 'CV'.

Object :- To find out the best time of harvesting different varieties of Groundnut.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Chari* and gram. (c) No. (ii) (a) Sandy loam. (b) N.A. (iii) 5.7.1953. (iv) (a) to (e) N.A. (v) No. (vi) As per treatments. (vii) Unirrigated. (viii) N.A. (ix) 13.375". (x) As per treatments.

## 2. TREATMENTS :

All combinations (1) and (2)

(1) 4 dates of harvesting :  $D_1=9.10.1953$ ,  $D_2=19.10.1953$ ,  $D_3=29.10.1953$  and  $D_4=9.11.1953$ .(2) 4 varieties :  $V_1=R.B. 1$  (early),  $V_2=T.M.V. 2$  (early),  $V_3=A.K. 12-24$  (early) and  $V_4=T.19$  (late).

## 3. DESIGN :

(i)  $4 \times 4$  Fact. in R.B.D. (ii) (a) 16. (b) N.A. (iii) 3. (iv) (a) and (b)  $24' \times 19\frac{1}{2}'$ . (v) No. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) No. (iii) % of germination, growth, 50% flowering date, yield, weight of two parts in gm., no. of kernels in 100 parts, wts of kernels in gm., kernel size, % of oil content, free fatty acids and wt. of unhealthy kernel and their %. (iv) (a) 1953—N.A. (b) No. (c) N.A. (v) (a) No. (b) N.A. (vi) Nil. (vii) The experiment was conducted by E.B.(O).

## 5. RESULTS :

(i) 203.8 lb./ac.  
(ii) 101.9 lb./ac.  
(iii) V effect is highly significant.

(iv) Av. yield of pod in lb./ac.

	D <sub>1</sub>	D <sub>2</sub>	D <sub>3</sub>	D <sub>4</sub>	Mean
V <sub>1</sub>	161.2	176.7	83.7	96.1	129.4
V <sub>2</sub>	139.5	136.4	167.4	133.3	144.2
V <sub>3</sub>	158.1	130.2	89.9	117.8	124.0
V <sub>4</sub>	430.9	471.2	362.7	406.1	417.7
Mean	222.4	228.6	175.9	188.3	203.8

S.E. of any marginal mean

= 29.43 lb./ac.

S.E. of body of table

= 58.87 lb./ac.

Crop :- Groundnut (*Kharif*).

Ref :- U.P. 53(27).

Site :- Govt Agri. Res. Farm, Kalyanpur.

Type :- 'CV'.

Object :- To find out the best seed rate and spacing for different varieties of Groundnut.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Chari* and gram. (c) No. (ii) (a) Sandy loam. (b) N.A. (iii) 5.7.1953. (iv) (a) and (b) N.A. (c) and (d) As per treatments. (e) N.A. (v) Nil. (vi) As per treatments. (vii) Unirrigated. (viii) N.A. (ix) 13.375". (x) N.A.

## 2. TREATMENTS :

Main-plot treatments :

2 spacings between rows : S<sub>1</sub>=1½' and S<sub>2</sub>=2'.

Sub-plot treatments :

All combinations of (1) and (2)

(1) 2 varieties : V<sub>1</sub>=T-25 (late) and V<sub>2</sub>=EC 1699.(2) 3 seed rates : R<sub>1</sub>=40, R<sub>2</sub>=60 and R<sub>3</sub>=80 lb./ac.

## 3. DESIGN :

(i) Split-plot. (ii) (a) 2 main-plots/block and 6 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) and (b) 46'×18'. (v) Nil. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) No. (iii) % germination, growth, 50% flowering date and groundnut yield. (iv) (a) 1953—N.A. (b) No. (c) N.A. (v) (a) No. (b) N.A. (vi) Nil. (vii) The experiment was conducted by E.B. (O).

## 5. RESULTS :

(i) 238.2 lb./ac.

(ii) (a) 24.64 lb./ac.

(b) 87.36 lb./ac.

(iii) V and R effect and interaction V×R are significant. Others are not significant.

(iv) Av. yield of pod in lb./ac.

	S <sub>1</sub>	S <sub>2</sub>	Mean	V <sub>1</sub>	V <sub>2</sub>
R <sub>1</sub>	209.6	143.8	176.7	255.2	98.2
R <sub>2</sub>	224.5	259.5	242.0	229.7	254.3
R <sub>3</sub>	297.3	294.6	295.9	356.0	235.9
Mean	243.8	232.6	238.2		
V <sub>1</sub>	291.7	268.9	280.3		
V <sub>2</sub>	195.8	196.4	196.1		

S.E. of difference of two	
1. S marginal means	= 8.21
2. V marginal means	=29.12 lb./ac.
3. R marginal means	=35.66 lb./ac.
4. V means at a level of S	=41.18 lb./ac.
5. S means at a level of V	=30.27 lb./ac.
6. R means at a level of S	=50.44 lb./ac.
7. S means at a level of R	=42.01 lb./ac.
S.E. of body of V×R table	=35.66 lb./ac.

Crop :- Groundnut (*Kharif*).  
Site :- Govt. Res. Farm, Kanpur.

Ref :- U.P. 52(250).  
Type :- 'CV'.

Object :- To find out the best time of harvesting different varieties of Groundnut.

#### 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) and (b) N.A. (iii) N.A. (iv) (a) to (e) N.A. (v) N.A. (vi) As per treatments (vii) N.A. (viii) N.A. (ix) N.A. (x) As per treatments.

#### 2. TREATMENTS :

All combinations of (1) and (2)

(1) 4 dates of harvesting :  $D_1=12$ , 13.10.1952,  $D_2=21$ , 22.10.1952,  $D_3=28$ , 29.10.1953 and  $D_4=4$ , 5.11.1952.

(2) 4 varieties :  $V_1=T.19$  (late),  $V_2=T.M.V-2$  (late),  $V_3=R.B. 1$  (late) and  $V_4=A.K. 12-24$  (late).

#### 3. DESIGN :

(i) 4×4 Fact. in R.B.D. (ii) (a) 16. (b) N.A. (iii) 3. (iv) (a) and (b) 24'×50'. (v) Nil. (vi) Yes.

#### 4. GENERAL :

(i) N.A. (ii) N.A. (iii) Germination, growth, flowering and yield of pods. (iv) (a) 1952—N.A. (b) N.A. (c) Nil. (v) (a) and (b) N.A. (vi) Nil. (vii) Data considered only for two replications because in one replication pig destroyed many plots. The original plot-wise data was not available, the analysis and the average yield has been given by research station. The experiment was conducted by E.B. (O).

#### 5. RESULTS :

- (i) 1132 lb./ac.  
(ii) 176.0 lb./ac.  
(iii) None of the effects is significant.  
(iv) Av. yield of pod in lb./ac.

	$V_1$	$V_2$	$V_3$	$V_4$	Mean
$D_1$	1009	1338	1122	1009	1119
$D_2$	1243	1147	1289	1234	1228
$D_3$	1129	1149	1045	1123	1112
$D_4$	1252	916	1036	1056	1065
Mean	1158	1136	1123	1106	1132

S.E. of any marginal mean = 62.3 lb./ac.  
S.E. of body of table = 124.5 lb./ac.



Crop :-Groundnut (*Kharif*).  
Site :-Govt. Res. Farm, Kanpur.

Ref :-U.P. 50(250).  
Type :-'D'.

Object :-To test the efficacy of various seed treatments on germination and stand of Groundnut.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) and (c) N.A. (ii) (a) Loam. (b) N.A. (iii) 27.6.1950. (iv) (a) to (e) N.A. (v) N.A. (vi) Local. (vii) to (x) N.A.

2. TREATMENTS :

1. Agrosan G.N.
2. Ceresan.
3. Copper carbonate.
4. Spergon (dust).
5. Spergon (wetable).
6. Phygonel.
7. Control.

3. DESIGN :

(i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 2. (iv) (a) and (b) 2 rows/plot. (v) Nil. (vi) Yes.

4. GENERAL :

(i) N.A. (ii) N.A. (iii) % of germination. (iv) 1950-1952. (b) No. (c) N.A. (v) (a) No. (b) N.A. (vi) Nil. (vii) The experiment was conducted by P.P. Transformed back mean percentages are given after applying bias correction. The yield data could not be taken due to damage by Porcupines.

5. RESULTS :

(i) to (iv)

Treatment	Mean angle	% germination (transformed back)
1.	62.48	78.41
2.	56.17	68.81
3.	54.78	66.53
4.	58.44	72.37
5.	54.84	66.63
6.	47.06	53.56
7.	51.20	60.59
S.E./mean	55.00	
Significance	Significant	

Crop :-Groundnut (*Kharif*).

Ref :-U.P. 51(244).

Site :-Govt. Res. Farm, Kanpur.

Type :-'D'.

Object :-To test the efficacy of various seed dressings on germination and stand of Groundnut.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Loam. (iii) 8.6.1951. (iv) (a) and (b) N.A. (c) 500 seeds/treatment (d) and (e) N.A. (v) N.A. (vi) T-25. (vii) to (x) N.A.

2. TREATMENTS :

- |                       |                      |
|-----------------------|----------------------|
| 1. Agrosan G.N.       | 5. Phygon.           |
| 2. Ceresan.           | 6. Tillex.           |
| 3. Spergon.           | 7. Copper carbonate. |
| 4. Spergon (wetable). | 8. Control.          |

3. DESIGN :

(i) R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a) and (b) 4 rows/plot. (v) Nil. (vi) Yes.

4. GENERAL :

(i) N.A. (ii) N.A. (iii) % germination. (iv) (a) 1950-1952. (b) No. (c) N.A. (v) (a) No. (b) N.A. (vi) Nil. (vii) The experiment was conducted by P.P. The data has been converted in  $\text{Sin}^{-1}\sqrt{p}$  and then analysed.

## 5. RESULTS :

- (i) 65.42 degrees.  
 (ii) 4.933 degrees.  
 (iii) Treatment differences are highly significant.  
 (iv) % germination.

Treatment	Mean angle	transformed back mean %	Treatment	Mean angle	transformed back mean %
1.	73.63	91.53	5.	61.06	76.33
2.	60.91	76.14	6.	69.42	87.22
3.	68.88	86.63	7.	64.82	81.58
4.	64.34	80.99	8.	60.33	75.25
		S.E./mean = 2.467			

Crop :-Groundnut (*Kharij*).

Ref :-U.P. 52(292).

Site :-Govt. Res. Farm, Kanpur.

Type :-'D'.

Object :-To test the efficacy of various seed treatments on germination, stand and yield of Groundnut.

## 1. BASAL CONDITIONS :

- (i) (a) Nil. (b) and (c) N.A. (ii) (a) and (b) N.A. (iii) 22.7.1952. (iv) (a) to (c) N.A. (v) N.A.  
 (vi) T. 25 for 1st expt. and T. 27 for 2nd expt. (vii) to (x) N.A.

## 2. TREATMENTS :

- Control.
- Tritisag 1 : 30 dosage.
- Agrosan G.N. 1 : 30 dosage.
- Ceresan 1 : 30 dosage.
- Tillex 1 : 30 dosage.
- Sperguson 1 : 30 dosage.
- Hevasan 1 : 30 dosage.

## 3. DESIGN :

- (i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 4 for 1st expt. and 2 for 2nd expt. (iv) (a) and (b) 1st expt.—single row of 40' and 2nd expt.—single row of 80'. (v) Nil. (vi) Yes.

## 4. GENERAL :

- (i) and (ii) N.A. (iii) Percentage of germination. (iv) (a) 1950—1952. (b) and (c) N.A. (v) (a) and (b) N.A. (vi) Nil. (vii) Transformed back mean percentages are given after applying bias correction. The data has been converted into  $\sin^{-1}\sqrt{p}$  and then analysed. The experiment was conducted by P.P.

## 5. RESULTS :

1st expt. : (i) to (iv)			2nd expt. : (i) to (iv)		
Treatment	Mean angle in degrees	Mean %— transformed back	Treatment	Mean angle in degrees	Mean %— transformed back
1.	48.23	55.54	1.	37.38	38.03
2.	44.40	49.01	2.	41.48	43.96
3.	36.25	35.17	3.	35.59	34.06
4.	37.32	36.83	4.	38.05	38.12
5.	49.42	57.62	5.	45.58	50.99
6.	47.66	54.55	6.	44.42	49.01
7.	46.05	51.77	7.	43.26	47.03
G.M.	44.19		G.M.	40.82	
S.E./mean	4.036		S.E./mean	3.998	
Significance	N.S.		Significance	N.S.	

Crop :- Groundnut.  
Site :- Govt. Res. Farm, Kanpur.

Ref :- U.P. 50(251).  
Type :- 'D'.

Object :- To study the efficacy of sulphur dusting at different intervals in controlling leaf spots of Groundnut.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) and (c) N.A. (ii) (a) Loam. (b) N.A. (iii) 27.6.1950. (iv) (a) to (e) N.A. (v) N.A. (vi) T. 27 (late) and T. 31 (early). (vii) to (x) N.A.

2. TREATMENTS :

1. 7 sulphur dustings at an interval of 7 days.
  2. 5 sulphur dustings at an interval of 10 days.
  3. 3 sulphur dustings at an interval of 15 days.
  4. Control (no dusting).
- Sulphur dusting from 20.8.1950 at the rate of 30 lb./ac.

3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 2. (iv) (a) N.A. (b) 10'x8'. (v) N.A. (vi) Yes.

4. GENERAL :

(i) N.A. (ii) Leaf spot—as per treatments. (iii) % of affected leaves and pod yield. (iv) (a) 1950—1953. (b) No. (c) N.A. (v) (a) No. (b) N.A. (vi) Nil. (vii) Transformed back mean percentages are given after applying bias correction. The data has been converted into  $\sin^{-1}\sqrt{p}$  and then analysed. The experiment was conducted by P.P.

5. RESULTS :

Variety T. 27 : (i) to (iv)			Variety T. 31 : (i) to (iv)		
Treatment	Mean angle in degrees	Mean %— transformed back	Treatment	Mean angle in degrees	Mean %— transformed back
1.	55.02	66.93	1.	52.58	62.97
2.	43.85	48.12	2.	60.04	74.84
3.	53.75	64.85	3.	59.86	74.55
4.	66.88	84.32	4.	70.18	88.12
G.M.	54.88		G.M.	60.66	
S.E./mean	3.423		S.E./mean	2.926	
Significance	Significant		Significance	N.S.	

Crop :- Groundnut (*Kharif*).  
Site :- Govt. Res. Farm, Kanpur.

Ref :- U.P. 51(241).  
Type :- 'D'.

Object :- To study the efficacy of sulphur dusting at different intervals in controlling leaf spots of Groundnut.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) and (c) N.A. (ii) (a) Loam. (b) N.A. (iii) 27 and 28.6.1951. (iv) (a) to (e) N.A. (v) N.A. (vi) T.25 (late) T.31 and B.1 (early). (vii) to (x) N.A.

2. TREATMENTS :

1. No dusting (control).
  2. 5 sulphur dustings at an interval of 10 days.
  3. 4 sulphur dustings at an interval of 15 days.
- Sulphur dusting started on 29.8.1951 at the rate of 16 lb./ac.

3. DESIGN :

(i) R.B.D. (ii) (a) 3. (b) N.A. (iii) 5. (iv) (a) N.A. (b) 10'x8'. (v) N.A. (vi) Yes.

4. GENERAL :

(i) N.A. (ii) Leaf spot—as per treatment. (iii) % of diseased area in a leaf and groundnut yield. (iv) (a) 1950—1953. (b) No. (c) N.A. (v) (a) No. (b) N.A. (vi) Nil. (vi) The experiment was conducted by P.P.

## 5. RESULTS :

Groundnut late variety (*Kharif*)  
 (i) 2113 lb./ac.  
 (ii) 357.9 lb./ac.  
 (iii) Treatment differences are significant.  
 (iv) Av. yield of pod in lb./ac.

Treatment	Av. yield
1.	1750
2.	2506
3.	2128
S.E./mean	= 160.0 lb./ac.

Groundnut early variety (*kharif*).  
 (i) 1171 lb./ac.  
 (ii) 494.9 lb./ac.  
 (iii) Treatment differences are not significant.  
 (iv) Av. yield of pod in lb./ac.

Treatment	Av. yield
1.	1400
2.	840
3.	1274
S.E./mean	= 221.3 lb./ac.

Crop :- Groundnut (*Kharif*).  
 Site :- Govt. Res. Farm, Kanpur.

Ref :- U.P. 52(293).  
 Type :- 'D'.

Object :- To test the efficacy of sulphur dusting at different intervals in controlling the leaf spots of Groundnut.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) and (c) N.A. (ii) (a) and (b) N.A. (iii) 8.7.1952. (iv) (a) to (e) N.A. (v) N.A. (vi) T.25 (late) (vii) to (x) N.A.

## 2. TREATMENTS :

- Control.
  - Sulphur dusting at an interval of 10 days.
  - Sulphur dusting at an interval of 15 days.
  - Copper sandoz dust ( $7\frac{1}{2}$  metallic copper) at an interval of 15 days.
- Date of 1st dusting 7.10.1952.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 6. (iv) (a) N.A. (b)  $10' \times 8'$ . (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) Leaf spot—as per treatments. (iii) Groundnut yield. (iv) (a) 1950—1953. (b) and (c) N.A. (v) (a) No. (b) N.A. (vi) Nil. (vii) The experiment was conducted by P.P.

## 5. RESULTS :

(i) 1158 lb./ac.  
 (ii) 494.6 lb./ac.  
 (iii) Treatment differences are not significant.  
 (iv) Av. yield of pod in lb./ac.

Treatment	Av. yield
1.	1132
2.	1038
3.	1400
4.	1062
S.E./mean	= 20.19 lb./ac.

Crop :- Groundnut (*Kharif*).  
 Site :- Govt. Res. Farm, Kanpur.

Ref :- U.P. 53(19).  
 Type :- 'D'.

Object :- To test the efficiency of sulphur dusting at different intervals in controlling leaf spots of Groundnut.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) (a) Loam. (b) N.A. (iii) 6.7.1953. (iv) (a) 2 ploughings. (b) N.A. (c) N.A. (d) 9 rows in a plot and distance between plots 6'. (e) N.A. (v) Nil. (vi) T-25 (late). (vii) Unirrigated. (viii) One weeding done. (ix) 33.28". (x) 12.11.1953.

## 2. TREATMENTS :

1. Control.
  2. Dusting at the interval of 10 days.
  3. Dusting at the interval of 15 days.
- Dusting done at the rate of 16 lb./ac. of sulphur mixed with finer powdered dust.

## 3. DESIGN :

- (i) R.B.D. (ii) (a) 3. (b) N.A. (iii) 6. (iv) (a) and (b) 10' x 8'. (v) Nil. (vi) Yes.

## 4. GENERAL :

- (i) Poor. (ii) Badly damaged by pocupines. Sulphur dusting as per treatments. (iii) % leaf affected and yield. (iv) (a) 1950—1953. (b) No. (c) N.A. (v) (a) No. (b) N.A. (vi) The disease appeared in mild form and therefore only two dustings were given. There was heavy rainfall just after sowing which affected germination of seed in general. (vii) The experiment was conducted by P.P.(G).

## 5. RESULTS :

- (i) 233.4 lb./ac.  
 (ii) 139.3 lb./ac.  
 (iii) Treatment differences are not significant.  
 (iv) Av. yield of pods in lb./ac.

Treatment	Av. yield
1.	221.7
2.	256.7
3.	221.7
S.E./mean	=56.9 lb./ac.

Crop :-Groundnut (*Kharif*).

Ref :-U.P. 50(252).

Site :-Govt. Res. Farm, Kanpur.

Type :-'D'.

Object :-To determine the efficacy of various fungicide sprays in controlling leaf spots of Groundnut.

## 1. BASAL CONDITIONS :

- (i) (a) Nil. (b) N.A. (c) N.A. (ii) (a) and (b) N.A. (iii) 28.6.1950. (iv) (a) to (e) N.A. (v) N.A. (vi) T-27 (late) ; T-31 (early). (vii) Unirrigated. (viii) N.A. (ix) N.A. (x) N.A.

## 2. TREATMENTS :

1. Bordeaux mixture + linseed oil.
2. Perenox (4.5 ozs. in 10 gallons) + linseed oil.
3. Dilhan Z.78 + linseed oil.
4. Dilhan D-14 + linseed oil.
5. Control.

Number of sprays—3. Interval between sprays 15 days. First spraying on 21.8.1950.

## 3. DESIGN :

- (i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 2. (iv) (a) N.A. (b) 10' x 8'. (v) N.A. (vi) Yes.

## 4. GENERAL :

- (i) N.A. (ii) Attack of leaf spots—as per treatments. (iii) Percentages of affected pods. (iv) (a) 1950—1951. (b) No. (c) N.A. (v) (a) and (b) No. (vi) Nil. (vii) Transformed back mean percentages are given after applying the bias correction. The data has been converted into  $\sin^{-1}\sqrt{p}$  and then analysed. The experiment was conducted by P.P.

## 5. RESULTS :

Variety T-27 : (i) to (iv)			Variety T-31 : (i) to (iv)		
Treatment	Mean angle in degrees	mean %— transformed back	Treatment	Mean angle in degrees	mean %— transformed back
1.	43.80	47.92	1.	38.58	39.01
2.	52.86	63.36	2.	51.06	60.40
3.	61.03	76.23	3.	53.76	64.82
4.	70.28	88.22	4.	70.59	88.56
5.	77.34	94.75	5.	79.86	96.43
G.M.	61.06		G.M.	58.77	
S.E./mean	=2.469		S.E./mean	=6.883	
Significance	Highly significant.		Significance	N.A.	

Crop :-Groundnut (*Kharif*).  
Site :-Govt. Res. Farm, Kanpur.

Ref :-U.P. 51(245).  
Type :-'D'.

Object :-To determine the efficacy of various copper fungicidal sprays in controlling leaf spots of Groundnut.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) and (b) N.A. (iii) 28.6.1951. (iv) (a) to (e) N.A. (v) N.A. (vi) T-25 (late), T-31 and RB1 (early) maturing variety. (vii) to (x) N.A.

2. TREATMENTS :

1. Control (no spraying).
2. Bordeaux mixture (2 : 2 : 5) + linseed oil as sticker.
3. Perenox 0.15% + linseed oil.
4. Cupravite 0.15% + linseed oil.

Spraying done at an interval of 15 days. Number of spraying is 4. 1st spraying on 4.9.1951.

3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 10' x 8'. (v) N.A. (vi) Yes.

4. GENERAL :

(i) N.A. (ii) N.A. (iii) Groundnut yield. (iv) (a) 1950-1951. (b) and (c) N.A. (v) (a) and (b) No. (vi) Nil. (vii) The experiment was conducted by P.P. As exact percentage of disease was not given replication—wise only yield data was analysed.

5. RESULTS :

Variety T-25 :  
(i) 2770 lb/ac.  
(ii) 355.6 lb/ac.  
(iii) Treatment differences are not significant.  
(iv) Av. yield of pods in lb./ac.

Treatment	Av. yield
1.	2398
2.	2730
3.	2853
4.	3098
S.E./mean	= 177.8 lb./ac.

Variety T-31+RB1 :  
(i) 1321 lb./ac.  
(ii) 557.3 lb./ac.  
(iii) Treatment differences are not significant.  
(iv) Av. yield of pods in lb./ac.

Treatment	Av. yield
1.	1453
2.	1085
3.	1400
4.	1348
S.E./mean	= 278.7 lb./ac.

Crop :-Castor.  
Site :-Govt. Agri. Res. Farm, Kalyanpur.

Ref :-U.P. 53(29).  
Type :-'C'.

Object :-To see the effect of time of sowing and spacing on the growth of Castor.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Charl* and gram. (c) Nil. (ii) (a) Sandy loam. (b) N.A. (iii) As per treatments. (iv) (a) and (b) N.A. (c) 144 seeds or 1½ chk /plot. (d) As per treatments. (e) 2 seeds/hole. (v) Nil. (vi) T-3 (late). (vii) Unirrigated. (viii) N.A. (ix) 13.38". (x) N.A.

2. TREATMENTS :

Main-plot treatments :

4 dates of sowing : D<sub>1</sub> = 7.7.1953, D<sub>2</sub> = 7.8.1953, D<sub>3</sub> = 12.9.1953 and D<sub>4</sub> = 1st week of October.

Sub-plot treatments :

3 spacings : S<sub>1</sub> = 3' - 2", S<sub>2</sub> = 3' - 3" and S<sub>3</sub> = 3' - 4".

3. DESIGN :

(i) Split-plot. (ii) (a) 4 main-plots/block and 3 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 12' x 24'. (b) 6' x 24'. (v) 3' along breadth only. (vi) No.

4. GENERAL :

(i) Good. (ii) Attack of alternaria. (iii) No. of plants, flowering %, growth, disease and pest incidences, ht. of plants and length of spikes, maturity and yield. (iv) (a) 1953—N.A. (b) No (c) N.A. (v) (a) No. (b) N.A. (vi) Nil. (vii) The experiment was conducted by E.B.O.

## 5. RESULTS :

- (i) 459.6 lb./ac.  
 (ii) (a) 250.9 lb./ac.  
 (b) 135.4 lb./ac.  
 (iii) Only D effect is significant.  
 (iv) Av. yield of castor in lb./ac.

	S <sub>1</sub>	S <sub>2</sub>	S <sub>3</sub>	Mean
D <sub>1</sub>	813.0	554.3	627.3	664.9
D <sub>2</sub>	520.3	535.0	617.5	557.6
D <sub>3</sub>	413.3	310.8	340.7	354.9
D <sub>4</sub>	287.0	277.2	218.6	260.9
Mean	508.4	419.3	451.0	459.6

S.E. of the difference of two

1. D marginal means = 102.4 lb./ac.  
 2. S marginal means = 47.9 lb./ac.  
 3. S means at the same level of D = 95.7 lb./ac.  
 4. D means at the same level of S = 128.8 lb./ac.

Crop :- Linseed (*Rabi*).

Ref :- U.P. 52(246)/51(190).

Site :- Students' Instructional Farm, Kanpur. Type :- 'MV'.

Object :- To study the effect of different organic and inorganic manures on Linseed.

## 1. BASAL CONDITIONS :

- (i) (a) Nil. (b) *Jowar* for fodder. (c) No. (ii) (a) Loam. (b) N.A. (iii) 18.10.1952. (iv) (a) Two deep ploughings by victory plough and the stubble removed with a chain harrow and 3 ploughings by country plough. (b) Sown in rows. (c) N.A. (d) Rows 1' apart. (e) N.A. (v) N.A. (vi) As per treatments. (vii) Irrigated. (viii) One weeding. (ix) 2.34". (x) 20.3.1953.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 2 varieties : V<sub>1</sub>=T-1193-2 (early) and V<sub>2</sub>=T-477-3/2 (late).(2) 7 applications of manures : M<sub>0</sub>=no manure, M<sub>1</sub>=F.Y.M., M<sub>2</sub>=G.N.C., M<sub>3</sub>=Blood manure, M<sub>4</sub>=A/S, M<sub>5</sub>=Super and M<sub>6</sub>=Pot. Sul.

Amount of manure applied—N.A.

## 3. DESIGN :

- (i) 7×2 Fact. in R.B.D. (ii) (a) 14. (b) N.A. (iii) 4. (iv) (a) 34'×22'. (b) 30'×18'. (v) 2' all round the net plot. (vi) Yes.

## 4. GENERAL :

- (i) Poor germination. (ii) N.A. (iii) Flowering, maturity of crop, height of plant, no. of basal branches/plot, no. of seed bell and yield of linseed. (iv) (a) 1951—1952. The experiment was cancelled in 1951. (b) Yes. (c) Nil. (v) (a) and (b) No. (vi) Nil. (vii) The experiment was conducted by P.A.C. (K). Original data were not available, only summary and the analysis were available.

## 5. RESULTS :

- (i) 1001 lb./ac.  
 (ii) 129.6 lb./ac.  
 (iii) Both M and V effects are highly significant.  
 (iv) Av. yield of linseed in lb./ac.

Treatment	Av. yield	Treatment	Av. yield
M <sub>0</sub>	900	V <sub>1</sub>	1081
M <sub>1</sub>	1062	V <sub>2</sub>	921
M <sub>2</sub>	946	S.E./mean=	24.49 lb./ac.
M <sub>3</sub>	1120		
M <sub>4</sub>	1181		
M <sub>5</sub>	857		
M <sub>6</sub>	942		
S.E./mean=	45.82 lb./ac.		

Crop :- Til (*Kharif*).

Ref :- U.P. 49(56).

Site :- Govt. Res. Farm, Kanpur.

Type :- 'CV'.

Object :- To study the effect of different sowing dates on different *Til* varieties.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) and (c) N.A. (ii) (a) Loam. (b) N.A. (iii) As per treatments. (iv) (a) to (c) N.A. (v) Nil. (vi) As per treatments. (vii) Unirrigated. (viii) 4 thinnings. (ix) N.A. (x) 23, 27.9.1949 and 3 to 13.10.1949.

## 2. TREATMENTS :

Main-plot treatments :

4 dates of sowing :  $D_1=16.6.1949$ ,  $D_2=27.6.1949$ ,  $D_3=8.7.1949$  and  $D_4=18.7.1949$ .

Sub-plot treatments :

4 varieties :  $V_1=T-10$  (early),  $V_2=T-11$  (early),  $V_3=T-17$  (early) and  $V_4=Kalyanpur$  local (mid-early).  $D_4$  was not included in analysis as germination was very poor.

## 3. DESIGN :

(i) Split-plot. (ii) (a) 3 main-plots/block and 4 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) N.A. (b)  $15' \times 53'$ . (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) Not satisfactory. (ii) Attack of phyllody and wilt. (iii) Yield of *til*. (iv) (a) 1949—1950. (b) No. (c) N.A. (v) (a) No. (b) N.A. (vi) Soon after 4th sowing, there were very heavy and continuous rains, hence there was practically no germination. The plots were resown on 7 August to see if very late sowing proves successful but again the germination was poor and the growth was far from normal. So 4th sowing was neglected from analysis. (vii) The experiment was conducted by E.B. (O).

## 5. RESULTS :

(i) 130.4 lb./ac.

(ii) (a) 78.37 lb./ac.

(b) 38.32 lb./ac.

(iii) Only V effect and interaction  $D \times V$  are highly significant.(iv) Av. yield of *til* in lb./ac.

	$V_1$	$V_2$	$V_3$	$V_4$	Mean
$D_1$	169.1	119.8	31.3	172.6	132.2
$D_2$	191.1	210.5	106.5	121.1	157.3
$D_3$	170.4	98.6	69.1	104.8	110.7
Mean	176.9	143.0	69.0	132.8	130.4

S.E. of difference of two

1. D marginal means = 27.71 lb./ac.

2. V marginal means = 15.64 lb./ac.

3. V means at a level of D = 27.10 lb./ac.

4. D means at a level of V = 36.31 lb./ac.

Crop :- Til (*Kharif*).

Ref :- U.P. 50(46).

Site :- Govt. Res. Farm, Kanpur.

Type :- 'CV'.

Object :- To study the effect of different sowing dates on *Til* varieties.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) and (c) N.A. (ii) (a) Loam. (b) N.A. (iii) As per treatments. (iv) (a) and (b) N.A. (c) 15 oz/plot. (d) and (e) N.A. (v) No. (vi) As per treatments. (vii) N.A. (viii) 3 thinnings and 3 weedings. (ix) N.A. (x)  $D_1=18$  and 20.9.1950 and 9.10.1950,  $D_2=30.9.1950$ ,  $D_3=23.10.1950$  and  $D_4=16.11.1950$ .



**2. TREATMENTS :****Main-plot treatments :**4 dates of sowing :  $D_1=18.6.1950$ ,  $D_2=3.7.1950$ ,  $D_3=22.7.1950$  and  $D_4=17.8.1950$ .**Sub-plot treatments :**4 varieties  $V_1=T.10$  (early),  $V_2=T.11$  (early),  $V_3=T.17$  (early) and  $V_4=Kanpur$  local (medium early).**3. DESIGN :**(i) Split-plot. (ii) (a) 4 main-plots/block and 4 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) N.A. (b)  $16' \times 44'$ . (v) N.A. (vi) Yes.**4. GENERAL :**(i) Normal. (ii) Damage by rust. (iii) *Til* yield. (iv) (a) 1949—1950. (b) No. (c) N.A. (v) (a) No. (b) N.A. (vi) Nil. (vii) The experiment was conducted by E.B. (O).**5. RESULTS :**

- (i) 116.5 lb./ac.  
 (ii) (a) 129.7 lb./ac.  
 (b) 67.0 lb./ac.  
 (iii) D effect is significant. Effect of V and interaction  $D \times V$  are highly significant.  
 (iv) Av. yield of *til* in lb./ac.

	$V_1$	$V_2$	$V_3$	$V_4$	Mean
$D_1$	253.6	225.8	35.8	102.9	154.5
$D_2$	314.8	243.7	22.9	208.8	197.5
$D_3$	84.0	54.2	96.5	78.6	78.3
$D_4$	13.4	49.7	48.2	30.8	35.5
Mean	166.4	143.3	50.8	105.3	116.5

**S.E. of difference of two**

- D marginal means =45.9 lb./ac.
- V marginal means =23.7 lb./ac.
- V means at a level of D =47.4 lb./ac.
- D means at a level of V =61.5 lb./ac.

**Crop :- Mustard (Rabi).****Ref :- U.P. 54(386).****Site :- Agri. College, B.H.U., Varanasi.****Type :- 'M'.****Object :-**To study the effect of N, P and K on the yield, growth and oil content of Mustard.**1. BASAL CONDITIONS :**

(i) (a) Nil. (b) and (c) N.A. (ii) (a) Medium loam. (b) Refer soil analysis, Agriculture College, B.H.U., Varanasi (iii) 26.10.1953. (iv) 5 ploughings and planking after every ploughing. (b) Drilling. (c) 3 seers/ac. (d) Rows 2' apart. (e) —. (v) N.A. (vi) R.T.11. (vii) Irrigated. (viii) Hoeing, thinning and weeding. (ix) N.A. (x) 4.3.1954.

**2. TREATMENTS :**

All combinations of (1), (2) and (3)

- 2 levels of N:  $N_0=0$  and  $N_1=45$  lb./ac.
- 2 levels of  $P_2O_5$ :  $P_0=0$  and  $P_1=20$  lb./ac.
- 2 levels of  $K_2O$ :  $K_0=0$  and  $K_1=20$  lb./ac.

**3. DESIGN :**(i)  $2^3$  Fact. in R.B.D. (ii) (a) 8. (b)  $36.5' \times 176'$ . (iii) 3. (iv) (a)  $22' \times 36.5'$ . (b)  $20' \times 33.5'$ . (v)  $1' \times 11'$  all round the plot. (vi) Yes.

## 4. GENERAL :

(i) Very poor. (ii) Crop badly damaged by aphids—B.H.C. (5%) dusted on 8.1.1954, tobacco—decoction sprayed at 60 gallons/ac. on 17.1.1954. The field was heavily infected with white ants. These damaged many plots. (iii) Oil content of seed, weight of shoot and yield. (iv) (a) to (c) Nil. (v) (a) and (b) No. (vi) Nil. (vii) The experiment was conducted by B.H.U.

## 5. RESULTS :

- (i) 194.4 lb./ac.  
 (ii) 73.0 lb./ac.  
 (iii) Only main effect of N is significant.  
 (iv) Av. yield of mustard in lb./ac.

	P <sub>0</sub>	P <sub>1</sub>	Mean	K <sub>0</sub>	K <sub>1</sub>
N <sub>0</sub>	147.2	159.2	153.2	138.8	167.7
N <sub>1</sub>	233.4	238.0	235.7	216.8	254.4
Mean	190.3	198.6	194.4	177.8	211.1
K <sub>0</sub>	176.5	179.1			
K <sub>1</sub>	204.1	218.1			

S.E. of any marginal mean = 21.1 lb./ac.  
 S.E. of body of any table = 29.8 lb./ac.

Crop :- Mustard (*Rabi*).

Ref :- U.P. 53(390).

Site :- Agri. College, B.H.U., Varanasi.

Type :- 'MV'.

Object :- To study the effect of F.Y.M., neem cake and fertilizer mixture on growth, yield and chemical composition of different varieties of Mustard.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) (a) Medium loam. (b) Refer soil analysis, Agricultural College, B.H.U., Varanasi. (iii) N.A. (iv) (a) 8 ploughings and planking and harrowing after every ploughing. (b) Sown in lines in 2" deep furrows. (c) N.A. (d) Line to line distance—2'. (e) N.A. (v) N.A. (vi) R.T. 11 (early) and AGH—A (late). (vii) to (x) N.A.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 4 manures : M<sub>0</sub>=control (no manure), M<sub>1</sub>=F.Y.M. at 50 lb./ac. of N, M<sub>2</sub>=neem cake at 50 lb./ac. of N and M<sub>3</sub>=fertilizer mixture (N, P and K) in the proportion 50 : 100 : 50 at 50 lb./ac. of N.

(2) 2 varieties : V<sub>1</sub>=R.T. 11 and V<sub>2</sub>=AGH—A.

## 3. DESIGN :

(i) 4×2 Fact. in R.B.D. (ii) (a) 8. (b) 62'×106'. (iii) 3. (iv) (a) N.A. (b) 29'×25'. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) and (ii) N.A. (iii) Mustard yield, fat % etc. (iv) (a) and (b) No. (c) Nil. (v) (a) and (b) Nil. (vi) Nil. (vii) The experiment was conducted by B.H.U.

## 5. RESULTS :

- (i) 526.8 lb./ac.  
 (ii) 102.8 lb./ac.  
 (iii) Main effects of V and M are highly significant. Interaction M×V is not significant.

(iv) Av. yield of mustard in lb./ac.

	M <sub>0</sub>	M <sub>1</sub>	M <sub>2</sub>	M <sub>3</sub>	Mean
V <sub>1</sub>	550.8	572.8	797.1	831.1	676.7
V <sub>2</sub>	234.3	320.4	444.6	508.7	377.0
Mean	392.6	424.1	620.8	669.9	526.8

S.E. of M marginal mean = 42.0 lb./ac.  
 S.E. of V marginal mean = 29.7 lb./ac.  
 S.E. of body of table = 59.4 lb./ac.

Crop :- Mustard.

Ref :- U.P. 53(389).

Site :- Agri. College, B.H.U., Varanasi.

Type :- 'CMV'.

Object :- To study the effect of spacing and fertilizers on different varieties of Mustard.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) (a) Medium loam. (b) Refer soil analysis, B.H.U., Varanasi.  
 (iii) 26.10.1953. (iv) (a) 5 ploughings and planking after every ploughing. (b) Dibbled in furrows. (c) 3 scers/ac. (d) As per treatments. (e) —. (v) N.A. (vi) As per treatments. (vii) Irrigated. (viii) Thinning, light hoeing and weeding. (ix) N.A. (x) 1.3.1954.

## 2. TREATMENTS :

All combinations of (1), (2) and (3)

(1) 2 spacings between rows : S<sub>1</sub> = 1½' and S<sub>2</sub> = 2½'.(2) 2 varieties : V<sub>1</sub> = RT. 11 (early) and V<sub>2</sub> = AGH—A (late).(3) 3 levels of fertilizers : M<sub>0</sub> = no manure, M<sub>1</sub> = 40 lb./ac. of N + 20 lb./ac. of P<sub>2</sub>O<sub>5</sub> + 20 lb./ac. of K<sub>2</sub>O and M<sub>2</sub> = 80 lb./ac. of N + 40 lb./ac. of P<sub>2</sub>O<sub>5</sub> + 40 lb./ac. of K<sub>2</sub>O.

## 3. DESIGN :

(i) 2 × 2 × 3 Fact. in R.B.D. (ii) (a) 12. (b) 36' × 136'. (iii) 3. (iv) (a) 11'-4" × 36'. (b) 9'-4" × 33'. (v) One row left as border around. (vi) Yes.

## 4. GENERAL :

(i) Not satisfactory. (ii) Attack of white ants and aphids B.H.C. dusted at 30 lb./ac. and spraying with tobacco decoction at 50 gallon/ac. (iii) Seed yield, no. of seeds per pod, height of plant, etc. (iv) (a) and (b) No. (c) Nil. (v) (a) and (b) Nil. (vi) Nil. (vii) The experiment was conducted by B.H.U.

## 5. RESULTS :

(i) 143.6 lb./ac.

(ii) 61.3 lb./ac.

(iii) Only main effects of M, V and S are highly significant.

(iv) Av. yield of mustard in lb./ac.

	M <sub>0</sub>	M <sub>1</sub>	M <sub>2</sub>	Mean	S <sub>1</sub>	S <sub>2</sub>
V <sub>1</sub>	107.5	184.8	233.3	175.2	207.0	143.4
V <sub>2</sub>	69.7	126.9	139.4	112.0	142.4	81.6
Mean	88.6	155.8	186.3	143.6	174.7	112.5
S <sub>1</sub>	103.0	195.4	225.7			
S <sub>2</sub>	74.2	116.3	146.9			

S.E. of marginal mean of M = 17.7 lb./ac.  
 S.E. of marginal mean of V or S = 14.4 lb./ac.  
 S.E. of body of M × V or M × S table = 25.0 lb./ac.  
 S.E. of body of S × V table = 20.4 lb./ac.

Crop :-Mustard.

Ref :-U.P. 53(196).

Site :-Agri. College, B.H.U., Varanasi.

Type :-'CMV'.

Object :-To study the effect of date of sowing and fertilizers an different varieties of Mustard.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) G.M. (c) N.A. (ii) (a) Medium loam: (b) Refer soil analysis, Agricultural College, B.H.U., Varanasi. (iii) As per treatments. (iv) (a) 5 ploughings and planking after every ploughing. (b) Sown in furrows. (c) 3 srs./ac. (d) Between rows 1½'; between plants 9". (e) —. (v) G.M. applied Quantity N.A. (vi) As per treatments. (vii) Irrigated. (viii) 2 wædings, thinning and hoeing. (ix) N.A. (x) 26.2.1954.

## 2. TREATMENTS :

All combinations of (1), (2) and (3)

(1) 2 varieties :  $V_1=RT. 11$  (early) and  $V_2=AGH-A$  (late).(2) 2 dates of sowing :  $D_1=24.10.1953$  and  $D_2=3.11.1953$ .(3) 3 levels of fertilizers :  $M_0=no$  manure,  $M_1=40$  lb./ac. of N+20 lb./ac. of  $P_2O_5$ +20 lb./ac. of  $K_2O$  and  $M_2=80$  lb./ac. of N+40 lb./ac. of  $P_2O_5$ +40 lb./ac. of  $K_2O$ .N as A/S,  $P_2O_5$  as Super and  $K_2O$  as Pot. Sul.

The fertilizers were applied 20 days after sowing as top dressing in between rows of the plants.

## 3. DESIGN :

(i) 2×2×3 Fact. in R.B.D. (ii) (a) 12. (b) 38.5'×180'. (iii) 3. (iv) (a) 38.5'×15'. (b) 35.5'×12'. (v) 1½' around the net plot. (vi) Yes.

## 4. GENERAL : -

(i) Poor. (ii) The crop was severely infested with aphids ; first dusted with B.H.C. (5%) at 40 lb./ac. on 5.1.1954 and subsequently tobacco decoction was sprayed on 15.1.1954 at 60 gallon/ac. Attack of white ants also. (iii) Mustard yield, height of plant and no. of seeds/plot. (iv) (a) and (b) No. (c) Nil. (v) (a) No. (b) Nil. (vi) Nil. (vii) The expt. was conducted by B.H.U.

## 5. RESULTS :

- (i) 259.6 lb /ac.  
 (ii) 93.8 lb./ac.  
 (iii) Only main effects of M, V and D are highly significant.  
 (iv) Av. yield of mustard in lb./ac.

	$M_0$	$M_1$	$M_2$	Mean	$D_1$	$D_2$
$V_1$	201.3	384.7	408.8	331.6	472.6	190.6
$V_2$	121.5	216.8	224.6	187.6	322.1	53.2
Mean	161.4	300.8	316.7	259.6	397.3	121.9
$D_1$	254.9	457.0	480.0			
$D_2$	67.9	144.6	153.3			

S.E. of marginal mean of M =27.1 lb /ac.

S.E. of marginal mean of V or D =22.1 lb./ac.

S.E. of body of M×V or M×D table =38.3 lb./ac.

S.E. of V×D table =31.3 lb./ac.

Crop :-Mustard (Rabi).

Ref :-U.P. 49(213).

Site :-Govt. Res. Farm, Kanpur.

Type :-'D'.

Object :-To test the efficacy of D.D.T. and Gamexane against Mustard aphids.

## 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) and (b) N.A. (iii) N.A. (iv) (a) to (e) N.A. (v) N.A. (vi) Rai type-9. (vii) N.A. (viii) N.A. (ix) N.A. (x) N.A.

## 2. TREATMENTS :

1. Dusting with Gammexane (5% B.H.C.) at 60 lb./ac.
2. Spraying with 0.25% D.D.T. emulsion (16% D.D.T. diluted with water in the ratio of 1 : 63) at 300 gallons/ac.
3. Spraying with 2% soap solution at 300 gallons/ac.
4. No treatment.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 27'×40'. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) Attack of aphids. Control means as per treatments. (iii) Volume of mustard aphids. (iv) No. (b) and (c) N.A. (v) (a) and (b) N.A. (vi) Nil. (vii) The expt. was conducted by Ento.(K).

## 5. RESULTS :

(i) to (iv)

Treatment	Av. vol. of aphids in c.c.		
	24 hrs. after application	3 days after application	7 days after application
1.	3.80	4.38	4.80
2.	2.55	1.70	1.25
3.	1.25	1.42	1.75
4.	3.90	4.42	4.88
Mean	2.88	2.98	3.17
S.E./mean	0.064	0.096	0.05
Significance	highly significant	highly significant	highly significant

Crop :- Mustard (Rabi).

Ref :- U.P. 49(215).

Site :- Regional Res. Stn., Meerut.

Type :- 'D'.

Object :- To test the efficacy of D.D.T. and gamexane against Mustard aphids.

## 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) and (b) N.A. (iii) 11.1.1948. (iv) (a) to (c) N.A. (v) N.A. (vi) Rai type-9. (vii) N.A. (viii) N.A. (ix) N.A. (x) N.A.

## TREATMENTS :

1. Dusting with gammexane (5% B.H.C.) at 60 lb./ac.
2. Spraying with 0.25% D.D.T. emulsion at 30 gallon/ac.
3. Dusting with 2% soap solution at 30 gallon/ac.
4. No treatment (control).

Treatments applied on 27.1.1949.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 33'×33'. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) Attack of aphids. Control means as per treatments. (iii) Volume of aphids. (iv) (a) to (c) No. (v) (a) Kanpur. (b) N.A. (vi) Nil. (vii) No. of aphids per c.c.=1000 approximately. The experiment was conducted by Ento. (K).

## 5. RESULTS :

(i) to (iv)

Treatment	Av. vol. of aphids in c.c.		
	24 hrs. after application	3 days after application	7 days after application
1.	13.62	16.50	17.05
2.	1.18	0.88	0.35
3.	0.45	1.15	1.60
4.	13.62	18.12	18.32
Mean	7.22	9.16	9.33
S.E./mean	0.186	0.455	0.141
Significance	highly significant	highly significant	highly significant

Crop :- Rape (*Rabi*).  
Site :- Matkota (Nainital).

Ref :- U.P. 52(279).  
Type :- 'M'.

Object :- To draw out a fertilizer schedule for agriculturally important soil types.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) One block on loam (slightly calcareous), two blocks on sandy loam and one block on clay loam. (iii) N.A. (iv) Improved. (v) (a) After manuring, levelling by *pata*. (b) Seeds sown in lines parallel to the fertilizer band. (c) N.A. (d) 1"-2" away from the fertilizer line. (e) N.A. (vi) N.A. (vii) N.A. (viii) N.A. (ix) N.A. (x) N.A.

2. TREATMENTS :

1. Control.
2. 25 lb./ac of  $P_2O_5$ .
3. 50 lb./ac. of  $P_2O_5$ .

$P_2O_5$  as Super placed at a depth of about 3"-4" at the sole of the furrow and in the side of the row made either by the iron plough or two *dest* ploughs one behind the other in the same furrow.

3. DESIGN :

(i) and (ii) R.B.D. with 4 replications. (iii) (a) and (b) N.A. (iv) N.A.

4. GENERAL :

(i) Good. (ii) N.A. (iii) Yield of grain and straw. (iv) (a) No. (b) and (c) N.A. (v) N.A. (vi) Nil. (vii) The experiment was conducted by A.C. on cultivator's fields.

5. RESULTS :

- (i) 1185 lb./ac.
- (ii) 141.5 lb./ac.
- (iii) Treatment differences are highly significant.
- (iv) Av. yield of rape in lb./ac.

Treatment,	Av. yield
1.	850
2.	1290
3.	1415
S.E./mean	= 70.8 lb./ac.

Crop :- Berseem (*Rabi*).  
Site :- Agri. Institute, Allahabad.

Ref :- U.P. 53(372).  
Type :- 'M'.

Object :- To study the response of Berseem to the application of fertilizers.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Fine sandy loam. (b) Refer soil analysis, Agri. Institute, Allahabad. (iii) 31.10.1953. (iv) (a) N.A. (b) N.A. (c) 10 scers/ac. (d) N.A. (e) N.A. (v) N.A. (vi) N.A. (vii) Irrigated. (viii) N.A. (ix) 12". (x) Four cuttings on 25 to 28.10.1954, 6.3.1954, 10.4.1954 and 5.5.1954.

2. TREATMENTS :

All combinations of (1), (2) and (3) +  $T_1$  (40 lb./ac. of N + 120 lb./ac. of Mg).

- (1) 2 levels of  $P_2O_5$  as Super :  $P_0=0$  and  $P_1=40$  lb./ac.
- (2) 2 levels of N as A/S :  $N_0=0$  and  $N_1=40$  lb./ac.
- (3) 2 levels of K as Pot. Chloride :  $K_0=0$  and  $K_1=41.5$  lb./ac.

Fertilizers were spread on the ploughed land and mixed with the surface soil by cultivation just before the crop was planted.

3. DESIGN :

(i) R.B.D. (ii) (a) 9. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 9' x 36'. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) N.A. (iii) Yield of dry matter per acre from 4 cuttings, height of berseem plants before taking the first cutting, estimated amount of red leaflets on plants prior to taking the first cutting, yield of dry matter in the weeds in the first cutting. Height of weeds at the time of first cutting. (iv) (a) No. (b) No. (c) Nil. (v) (a) and (b) No. (vi) Nil. (vii) Weeds, particularly *bathwa*, were present on all the plots of berseem. Information collected from the "Allahabad Farmer". No original records or the plotwise yield data were available. Experiment was conducted by A.A.I. on cultivators' fields.

## 5. RESULTS :

- (i) 9501 lb./ac.  
 (ii) 935.9 lb./ac.  
 (iii) Main effect of P, interaction N×P, N×K are significant. Other effects are not significant.  
 (iv) Av. yield of dry berseem in lb./ac.

$$T_1 = 9652 \text{ lb./ac.}$$

	P <sub>0</sub>	P <sub>1</sub>	Mean	K <sub>0</sub>	K <sub>1</sub>
N <sub>0</sub>	8336	10195	9265	9467	9064
N <sub>1</sub>	8957	10442	9699	9467	9932
Mean	8646	10319	9482		
K <sub>0</sub>	8755	10179	9467		
K <sub>1</sub>	8537	10459	9498		

S.E. of any marginal mean = 234.0 lb./ac.  
 S.E. of body of any table or T<sub>1</sub> mean = 330.9 lb./ac.

Crop :- Berseem (*Rabi*).

Ref :- U.P. 53(125).

Site :- Students' Instructional Farm, Kanpur.

Type :- 'D'.

Object :- To study the effect of Ammonium molybdate on the yield of berseem fodder.

## 1. BASAL CONDITIONS :

- (i) (a) *Chari*-Berseem. (b) *Chari*. (c) 80 mds/ac. of F.Y.M. (ii) (a) Sandy loam. (b) N.A. (iii) 9.10.1953.  
 (iv) (a) Two ploughings with soil turning plough and two with *desi* plough. (b) Broadcast. (c) 12 seers/ac.  
 (d) N.A. (e) N.A. (v) Nil. (vi) Local. (vii) Irrigated. (viii) Nil. (ix) N.A. (x) 1st cutting on 2.12.1953, 2nd cutting on 8.1.1954, 3rd cutting on 17.1.1954 and final harvest on 1.5.1954.

## 2. TREATMENTS:

1. Treated with Ammonium molybdate at 1 lb./ac.
2. Control.

## 3. DESIGN :

- (i) R.B.D. (ii) (a) 2. (b) N.A. (iii) 12. (iv) (a) 15'×16'. (b) 13'×4'. (v) 1'×6'. (vi) Yes.

## 4. GENERAL :

- (i) Normal. (ii) Nil. (iii) Yield of berseem fodder, *bhusa* and seed. (iv) (a) and (b) No. (c) N.A. (v) (a) No. (b) N.A. (vi) Nil. (vii) The experiment was conducted by P.A.C. or cultivators' field.

## 5. RESULTS :

- |  |  |
|--|--|
| (i) 332.1 lb./ac.                              | (j) 49145 lb./ac.                              |
| (ii) 52.8 lb./ac.                              | (ii) 5336 lb./ac.                              |
| (iii) Treatment difference is not significant. | (iii) Treatment difference is not significant. |
| (iv) Av. yield of berseem seed in lb./ac.      | (iv) Av. yield of berseem fodder in lb./ac.    |
| Treatment                                      | Treatment                                      |
| 1.   | 1.   |
| 2.   | 2.   |
| S.E./mean                                      | S.E./mean                                      |
| Av. yield                                      | Av. yield                                      |
| 345.5  | 48447  |
| 318.6  | 49843  |
| =15.23 lb./ac.                                 | =1540 lb./ac.                                  |

Crop :- Guar.

Ref :- U.P. 51(125).

Site :- Crop Physiological Res. Stn., Lucknow.

Type :- 'M'.

Object :- To study the effect of different doses of P and CaO on yield and growth of *Guar*.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Wheat. (c) N.A. (ii) (a) Sandy loam. (b) N.A. (iii) 27.7.1951. (iv) (a) Hot weather cultivation. (b) Broadcast. (c) 8 seers/ac. (d) and (e) N.A. (v) 50 lb./ac. of N in the form of stable manure on 25.7.1951. (vi) *Guar* local (medium). (vii) to (ix) N.A. (x) 30.11.1951.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 3 levels of  $P_2O_5$  :  $P_0=0$ ,  $P_1=30$  and  $P_2=60$  lb./ac.(2) 3 levels of CaO :  $C_0=0$ ,  $C_1=30$  and  $C_2=60$  lb./ac. $P_2O_5$  as Super and CaO as Gypsum. Date of manuring 27.7.1951.

## 3. DESIGN :

(i)  $3 \times 3$  Fact. in R.B.D. (ii) (a) 9. (b) N.A. (iii) 3. (iv) (a)  $25' \times 20'$ . (b)  $22' \times 17'$ , (v)  $1\frac{1}{2}'$  around the net plot. (vi) Yes.

## 4. GENERAL :

(i) Poor. (ii) Nil. (iii) Grain yield. (iv) (a) to (c) No. (v) (a) and (b) No. (vi) Crop suffered badly due to lack of rains. (vii) Experiment was conducted by C.P. on cultivator's field.

## 5. RESULTS :

(i) 535.9 lb./ac.

(ii) 178.1 lb./ac.

(iii) None of the effects is significant.

(iv) Av. yield of grain in lb./ac.

	$P_0$	$P_1$	$P_2$	Mean
$C_0$	658.6	698.9	404.3	587.3
$C_1$	564.5	684.3	359.5	536.1
$C_2$	469.3	509.6	473.8	484.2
Mean	564.1	630.9	412.5	535.9

S.E. of any marginal mean = 72.7 lb./ac.

S.E. of body of table = 102.8 lb./ac.

Crop :- Kakun (*Kharif*).

Ref :- U.P. 50(45).

Site :- Govt. Agri. Farm, Kalyanpur.

Type :- 'CV'.

Object :- To study the effect of different dates of sowing on different varieties of *Kakun*.

## 1. BASAL CONDITIONS :

(i) (a) No. (b) and (c) N.A. (ii) (a) Sandy loam. (b) N.A. (iii) As per treatments. (iv) (a) and (b) N.A. (c) 3.21 seers/ac. (d) Between rows  $1'$ . (e) N.A. (v) N.A. (vi) As per treatments. (vii) Unirrigated. (viii) Weeding. (ix) N.A. (x) 18 and 19.8.1950.

## 2. TREATMENTS :

Main-plot treatments :

4 dates of sowing :  $D_1=5.6.1950$ ,  $D_2=20.6.1950$ ,  $D_3=5.7.1950$  and  $D_4=20.7.1950$ .

Sub-plot treatments :

2 varieties :  $V_1=T4A/2-1$  (early) and  $V_2=T43A/1-1$  (early).

## 3. DESIGN :

(i) Split-plot. (ii) (a) 4 main-plots/replication and 2 sub-plots/main-plot. (b) N.A. (iii) 5. (iv) (a)  $17' \times 55'$ . (b)  $16' \times 53'$ . (v)  $\frac{1}{2}'$  along breadth on both sides. (vi) Yes.



## 4. GENERAL :

(i) Good. (ii) N.A. (iii) Germination, flowering, tillering and grain yield. (iv) (a) No. (b) and (c) No. (v) (a) and (b) No. (vi) The experiment was actually laid with two crops the two varieties each of *sawan* and *kakun* being taken in the sub-plots. There were 4 sub-plots in each main-plot, two for each crop. Another proforma has been filled in for the *sawan* crop. (vii) Experiment conducted by E.B. (Oil-seeds) to Govt., U.P., Kanpur.

## 5. RESULTS :

- (i) 978 lb./ac.  
 (ii) (a) 408.8 lb./ac.  
 (b) 336.1 lb./ac.  
 (iii) Only D effect is highly significant.  
 (iv) Av. yield of grain in lb./ac.

	D <sub>1</sub>	D <sub>2</sub>	D <sub>3</sub>	D <sub>4</sub>	Mean
V <sub>1</sub>	547	1753	1003	659	990
V <sub>2</sub>	713	1683	1049	417	965
Mean	630	1718	1026	538	978

## S.E. of difference of two

1. D marginal means =182.8 lb./ac.  
 2. V marginal means =106.3 lb./ac.  
 3. V means at a level of D =212.6 lb./ac.  
 4. D means at a level of V =236.7 lb./ac.

Crop :-Sawan (*Kharif*).

Ref :-U.P. 50(299).

Site :-Govt. Agri. Res. Farm, Kalyanpur.

Type :-'CV'.

Object :-To study the effect of different dates of sowing on different varieties of *Sawan*.

## 1. BASAL CONDITIONS :

(i) (a) No. (b) and (c) N.A. (ii) (a) Sandy loam. (b) N.A. (iii) As per treatments. (iv) (a) and (b) N.A. (c) 3.21 seer/ac. (d) Between. rows 1'. (e) N.A. (v) N.A. (vi) As per treatments. (vii) Unirrigated. (viii) Weeding. (ix) N.A. (x) V<sub>2</sub> on 18, 19.8.1950. and V<sub>1</sub> on 2.9.1950.

## 2. TREATMENTS :

Main-plot treatments :

4 dates of sowing : D<sub>1</sub>=5.6.1950, D<sub>2</sub>=20.6.1950, D<sub>3</sub>=5.7.1950 and D<sub>4</sub>=20.7.1950.

Sub-plot treatments :

2 varieties : V<sub>1</sub>=T 46 (early) and V<sub>2</sub>=T 4108 (early).

## 3. DESIGN :

(i) Split-plot. (ii) (a) 4 main-plots/replication and 2 sub-plots/main-plot. (b) N.A. (iii) 5. (iv) (a) 17' x 53'. (b) 16' x 53'. (v) ½' along the breadth on both sides. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) N.A. (iii) Germination, flowering, tillering and grain yield. (iv) (a) and (b) No. (c) N.A. (v) (a) and (b) No. (vi) The experiment was actually laid with two crops the two varieties each of *sawan* and *kakun* being taken in the sub-plots. There were 4 sub-plots in each main-plot, two for each crop. Another proforma has been filled in for the *kakun* crop. (vii) The experiment was conducted by E.B. (oil seed) to Govt. U.P., Kanpur.

## 5. RESULTS :

- (i) 1174 lb./ac.  
 (ii) (a) 235.3 lb./ac.  
 (b) 252.8 lb./ac.  
 (iii) D and V effects are highly significant. Interaction D x V is significant.

(iv) Av. yield of grain in lb./ac.

	D <sub>1</sub>	D <sub>2</sub>	D <sub>3</sub>	D <sub>4</sub>	Mean
V <sub>1</sub>	1667	1942	1181	671	1365
V <sub>2</sub>	941	1361	981	649	983
Mean	1304	1652	1081	660	1174

S.E. of difference of two

- |                            |                |
|----------------------------|----------------|
| 1. D marginal means        | =105.3 lb./ac. |
| 2. V marginal means        | = 80.0 lb./ac. |
| 3. V means at a level of D | =160.0 lb./ac. |
| 4. D means at a level of V | =154.7 lb./ac. |

Crop :-Sanai (*Kharif*).

Ref :-U.P. 52(340).

Site :-B.R. College Farm, Bichpuri (Agra)

Type :-'M'.

Object :-To study the effect of P<sub>2</sub>O<sub>5</sub> on the growth of *Sanai* and the effect of different dates of green manuring with *Sanai* on the succeeding Wheat crop.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Wheat. (c) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis, Bichpuri Farm, Agra. (iii) 6.7.1952. (iv) (a) Field harrowed two times (before sowing of *sanai*) by disc harrow after rains. (b) Broadcast. (c) 40 seer/ac. (d) and (e) N.A. (v) Nil. (vi) C 12. (vii) Nil. (viii) Nil. (ix) 43.3°. (x) As per treatments.

## 2. TREATMENTS :

Main-plot treatments :

3 dates of burying *sanai* : D<sub>1</sub>=3.8.1952, D<sub>2</sub>=31.8.1952 and D<sub>3</sub>=16.9.1952.

Sub-plot treatments :

3 doses of P<sub>2</sub>O<sub>5</sub> as Super : P<sub>0</sub>=0, P<sub>1</sub>=80 and P<sub>2</sub>=160 lb./ac.P<sub>2</sub>O<sub>5</sub> broadcast on 6.7.1952 before sowing of *sanai* and then mixed in soil by harrowing with disc harrow.

## 3. DESIGN :

(i) Split-plot. (ii) (a) 3 main-plots/block and 3 sub-plots/main-plot. (b) N.A. (iii) 6. (iv) (a) 37'×26', 39'×26', 39'×28' and 37'×28'. (b) 33'×22'. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) Satisfactory. (ii) Nil. (iii) Germination count, height of plants, root length, number and size of nodules. Periodic nitrogen contribution to field after ploughing in of *sanai* and yield of green matter. (iv) (a) No. (b) and (c) Nil. (v) (a) and (b) Nil. (vi) Nil. (vii) The experiment was conducted by B.R.C. No original plot-wise yield data or analysis is given and hence S.E.'s and results could not be given.

## 5. RESULTS :

- (i) 24768 lb./ac.  
(ii) N.A.  
(iii) N.A.  
(iv) Av. yield of *sanai* in lb./ac.

	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>	Mean
D <sub>1</sub>	13659	17938	19584	17060
D <sub>2</sub>	24521	27977	30528	27675
D <sub>3</sub>	25920	30034	32750	29568
Mean	21367	25316	27621	24768

S.E.'s—N.A.

Crop :-Sanai (*Kharif*).

Ref :-U.P. 53(384).

Site :-B.R. College Farm, Bichpuri, Agra.

Type :-'M'.

Object :-To study the effect of  $P_2O_5$  on the growth of *Sanai* and the effect of different dates of green manuring with *Sanai* on the succeeding Wheat crop.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Jowar*+*Azhar*. (c) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis, Bichpuri Farm, Agra. (iii) 27.7.1953. (iv) (a) Field harrowed once with disc harrow. (b) Broadcast. (c) 40 seers/ac. (d) and (e) N.A. (v) Nil. (vi) C. 12. (vii) and (viii) Nil. (ix) 13.05°. (x) 1, 4 and 18.9.1953.

## 2. TREATMENTS :

Main-plot treatments :

3 dates of burying *sanai* :  $D_1=1.9.1953$ ,  $D_2=14.9.1953$  and  $D_3=22.9.1953$ .

Sub-plot treatments :

3 doses of  $P_2O_5$  as Super :  $P_0=0$ ,  $P_1=80$  and  $P_2=160$  lb./ac. $P_2O_5$  broadcast on 27.7.1953 before sowing *sanai* and then mixed in soil by harrowing with disc harrow.

## 3. DESIGN :

(i) Split-plot. (ii) (a) 3 main-plots/block and 3 sub-plots/main-plot. (b) N.A. (iii) 6. (iv) (a)  $40' \times 28'$ ,  $40' \times 26'$ ,  $39' \times 28'$ ,  $37' \times 26'$ ,  $38' \times 28'$  and  $38' \times 26'$ . (b)  $33' \times 22'$ . (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) Satisfactory. (ii) Attack of caterpillar. (iii) Germination count, stand of the crop, height of plants, number of leaves, root studies, root length, length of lateral root, wt. of lateral root, no. of nodules per plant and *sanai* yield. (iv) (a) No. (b) No. (c) Nil. (v) (a) and (b) Nil. (vi) Nil. (vii) The experiment was conducted by B.R.C. No original plot-wise yield data or analysis is given and hence S.E.'s and conclusions could not be given.

## 5. RESULTS :

(i) 29001 lb./ac.

(ii) N.A.

(iii) N.A.

(iv) Av. yield of *sanai* in lb./ac.

	$P_0$	$P_1$	$P_2$	Mean
$D_1$	15634	19337	22217	19063
$D_2$	24686	30857	36041	30528
$D_3$	31433	35959	44846	37413
Mean	23918	28718	34368	29001

S.E.'s—N.A.

Crop :-Sanai (*Kharif*).

Ref :-U.P. 48(36).

Site :-Govt. Res. Farm, Kanpur.

Type :-'M'.

Object :-To study the effect of applying Super to green mature crop and its effect on the subsequent Wheat crop.

## 1. BASAL CONDITIONS :

(i) (a) *Sanai*-wheat. (b) Wheat. (c) No. (ii) (a) Loam. (b) N.A. (iii) 2.7.1948. (iv) (a) and (b) N.A. (c) 50 seers/ac. (d) and (e) N.A. (v) Nil. (vi) N.A. (vii) N.A. (viii) N.A. (ix) N.A. (x) 30 and 31.8.1948.

## 2. TREATMENTS :

1. *Sanai* grown without  $P_2O_5$ .
2. *Sanai* grown with 25 lb./ac. of  $P_2O_5$ .
3. *Sanai* grown with 50 lb./ac. of  $P_2O_5$ .
4. *Sanai* grown with 75 lb./ac. of  $P_2O_5$ .
5. *Sanai*+25 lb./ac. of  $P_2O_5$  at the time of burying of *sanai*.
6. *Sanai*+50 lb./ac. of  $P_2O_5$  at the time of burying of *sanai*.
7. *Sanai*+75 lb./ac. of  $P_2O_5$  at the time of burying of *sanai*.
8. Fallow.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 37.5'×28.5' (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) No. (iii) *Sanai* yield. (iv) (a) 1945—1954. †(experiment was cancelled in 1951.) (b) Yes. (c) N.A. (v) (a) No. (b) N.A. (vi) Nil. (vii) The object of the experiment was to study the effect of G.M. on wheat. Hence no analysis has been carried out for *sanai* crop. The experiment was conducted by A.C.

## 5. RESULTS :

Av. yield of *sanai* in lb./ac.

Treatment	Av. yield	Treatment	Av. yield
1.	6847	5.	7785
2.	7724	6.	8396
3.	8050	7.	8743
4.	8783	8.	—
	G.M.		=8047 lb./ac.

Crop :-*Sanai* ( *Kharif* ).

Site :-Govt. Res. Farm, Kanpur.

Ref :-U.P. 49(87).

Type :-'M'.

Object :-To study the effect of applying Super to green manure crop and its effect on the subsequent Wheat crop.

## 1. BASAL CONDITIONS :

(i) (a) *Sanai*—Wheat. (b) Wheat. (c) No. (ii) (a) Loam. (b) N.A. (iii) 13.6.1949. (iv) (a) and (b) N.A. (c) 50 srs/ac. (d) and (e) N.A. (v) Nil. (vi) N.A. (vii) N.A. (viii) N.A. (ix) N.A. (x) 13 and 14.8.1949.

## 2. TREATMENTS :

1. *Sanai* grown without  $P_2O_5$ .
2. *Sanai* grown with 75 lb./ac. of  $P_2O_5$ .
3. *Sanai* grown with 100 lb./ac. of  $P_2O_5$ .
4. *Sanai* grown with 125 lb./ac. of  $P_2O_5$ .
5. *Sanai*+75 lb./ac. of  $P_2O_5$  at the time of burying of *Sanai*.
6. *Sanai*+100 lb./ac. of  $P_2O_5$  at the time of burying of *Sanai*.
7. *Sanai*+125 lb./ac. of  $P_2O_5$  at the time of burying of *Sanai*.
8. Fallow.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 28.5'×37.5'. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) No. (iii) *Sanai* yield. (iv) (a) 1945—1954 (experiment. was cancelled in 1951.) (b) Yes. (c) N.A. (v) (a) No. (b) N.A. (vi) N.A. (vii) The object of expt. was to study the effect of G.M. on wheat. Hence no analysis has been carried out for *sanai* crop. The experiment was conducted by A.C.

## 5. RESULTS :

Av. yield of *sanai* in lb./ac.

Treatment	Av. yield	Treatment	Av. yield
1.	8987	5.	8732
2.	8233	6.	10495
3.	7622	7.	9262
4.	9150	8.	—
	G.M.		=8926 lb./ac.

Crop :- *Sanai (Kharif)*.

Site :- Govt. Res. Farm, Kanpur.

Ref :- U.P. 50(51).

Type :- 'M'.

Object :- To study the effect of applying Super to green manure crop and its effect on the subsequent Wheat crop.

## 1. BASAL CONDITIONS :

(i) (a) *Sanai*—Wheat. (b) Wheat. (c) No. (ii) (a) Loam. (b) N.A. (iii) 8.7.1950. (iv) (a), (b) N.A. (c) 50 ars./ac. (d) and (e) N.A. (v) Nil. (vi) N.A. (vii) N.A. (viii) N.A. (ix) N.A. (x) 23.8.1950.

## 2. TREATMENTS :

1. *Sanai* grown without  $P_2O_5$ .
2. *Sanai* grown with 75 lb./ac. of  $P_2O_5$ .
3. *Sanai* grown with 100 lb./ac. of  $P_2O_5$ .
4. *Sanai* grown with 125 lb./ac. of  $P_2O_5$ .
5. *Sanai*+ 75 lb./ac. of  $P_2O_5$  at the time of burying of *Sanai*.
6. *Sanai*+100 lb./ac. of  $P_2O_5$  at the time of burying of *Sanai*.
7. *Sanai*+125 lb./ac. of  $P_2O_5$  at the time of burying of *Sanai*.
8. Fallow.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 28.5'×37.5'. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) Satisfactory (ii) No. (iii) *Sanai* yield. (iv) (a) 1945—1954 (experiment was cancelled for 1951). (b) Yes. (c) N.A. (v) (a) No. (b) N.A. (vi) N.A. (vii) The expt. was conducted by A.C. The object of the expt. was to study the effect of G.M. on wheat. Hence no analysis has been carried out for *sanai* crop.

## 5. RESULTS :

Av. yield of *sanai* in lb./ac.

Treatment	Av. yield	Treatment	Av. yield
1.	8782	5.	9272
2.	9884	6.	10189
3.	9069	7.	10393
4.	12125	8.	—
	G.M.		=9959 lb./ac.

Crop :- *Sanai (Kharif)*.

Site :- Govt. Res. Farm, Kanpur.

Ref :- U.P. 52(164).

Type :- 'M'.

Object :- To study the effect of applying Super to G.M. crop and its effect on the subsequent Wheat crop..

## BASAL CONDITIONS:

(i) (a) *Sanai*—Wheat. (b) Wheat. (c) No. (ii) (a) Loam. (b) N.A. (iii) 8.7.1952. (iv) (a) and (b) N.A. (c) 50 seers/ac. (v) Nil. (vi) N.A. (viii) N.A. (ix) N.A. (x) 5.9.1952.

## 2. TREATMENTS :

1. *Sanai* grown without  $P_2O_5$ .
2. *Sanai* grown with 75 lb./ac. of  $P_2O_5$ .
3. *Sanai* grown with 100 lb./ac. of  $P_2O_5$ .
4. *Sanai* grown with 125 lb./ac. of  $P_2O_5$ .
5. *Sanai*+75 lb./ac. of  $P_2O_5$  at the time of burying.
6. *Sanai*+100 lb./ac. of  $P_2O_5$  at the time of burying.
7. *Sanai*+125 lb./ac. of  $P_2O_5$  at the time of burying.
8. Fallow.

## 3. DESIGN :

- (i) R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 37.5'×28.5'. (v) N.A. (vi) Yes.

## 4. GENERAL :

- (i) Satisfactory. (ii) No. (iii) Yield of *sanai*. (iv) (a) 1945—1954. (experiment was cancelled for 1951.) (b) Yes. (c) N.A. (v) (a) No. (b) N.A. (vi) Nil. (vii) The object of the experiment was to study the effect of G.M. on wheat. Hence no analysis has been carried out for *sanai* crop. The experiment was conducted by A.C.

## 5. RESULTS :

Av. yield of *sanai* in lb./ac.

Treatment	Av. yield	Treatment	Av. yield
1.	11117	5.	11657
2.	11280	6.	10994
3.	11708	7.	12197
4.	12747	8.	—
	G.M.		=11671 lb./ac.

Crop :- *Sanai* (*Kharif*).

Ref :- U.P. 53(198).

Site :- Govt. Res. Farm, Kanpur.

Type :- 'M'.

Object :- To study the effect of applying Super to G.M. crop and its effect on the subsequent Wheat crop.

## 1. BASAL CONDITIONS :

- (i) (a) *Sanai*—Wheat. (b) Wheat. (c) No. (ii) (a) Loam. (b) N.A. (iii) 9.7.1953. (iv) (a) and (b) N.A. (c) 50 seers./ac. (d) and (e) N.A. (v) Nil. (vi) N.A. (vii) Irrigated. (viii) N.A. (ix) N.A. (x) 23.9.1953.

## 2. TREATMENTS :

1. *Sanai* grown without  $P_2O_5$ .
2. *Sanai* grown with 75 lb./ac. of  $P_2O_5$ .
3. *Sanai* grown with 100 lb./ac. of  $P_2O_5$ .
4. *Sanai* grown with 150 lb./ac. of  $P_2O_5$ .
5. *Sanai*+ 75 lb./ac. of  $P_2O_5$  at the time of burying.
6. *Sanai*+100 lb./ac. of  $P_2O_5$  at the time of burying.
7. *Sanai*+150 lb./ac. of  $P_2O_5$  at the time of burying.
8. Fallow.

## 3. DESIGN :

- (i) R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 37.5'×28.5'. (v) N.A. (vi) Yes.

## 4. GENERAL :

- (i) Good. (ii) No. (iii) *Sanai* yield. (iv) (a) 1945—1954. (experiment was cancelled for 1951.) (b) Yes. (c) No. (v) (a) No. (b) N.A. (vi) Nil. (vii) The object of the experiment is to study the effect of G.M. on wheat. Hence no analysis has been carried out for *sanai* crop. The experiment was conducted by A.C.

## 5. RESULTS :

Av. yield of *sanai* in lb./ac.

Treatment	Av. yield	Treatment	Av. yield
1.	10179	5.	10780
2.	11585	6.	11361
3.	11861	7.	10842
4.	11728	8.	—
	G.M.		11191 lb./ac.

Crop :- Oats (*Rabi*).  
Site :- Matkota (Nainital).

Ref :- U.P. 52(281).  
Type :- 'M'.

Object :- To draw out a fertilizer schedule for agriculturally important soil types.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) 3 blocks on loam (slightly calcareous), one block on loam (highly calcareous), one block on sandy loam and one block on loam (non calcareous). (iii) N.A. (iv) Improved. (v) (a) After manuring the field was levelled by *pata*. (b) Seed sown in lines parallel to the fertilizer band. (c) N.A. (d) 1' to 2' away from the fertilizer line. (e) N.A. (vi) N.A. (vii) N.A. (viii) N.A. (ix) N.A. (x) N.A.

2. TREATMENTS :

1. Control.
2. 30 lb./ac. of N.
3. 30 lb./ac. of N+60 lb./ac. of  $P_2O_5$ .

N as A/S and  $P_2O_5$  as Super. N added to surface at sowing time. Super placed at a depth of 3"—4" at the sole of the furrow and on the side of the seed, row made (either by the iron plough or two *desi* ploughs one behind the other in the same furrow.

3. DESIGN :

(i), (ii) Blocks selected in the farm and R.B.D. with 6 replications laid out. (iii) (a) and (b) N.A. (iv) N.A.

4. GENERAL :

(i) Normal but attacked by rats at seed formation stage causing heavy damage. (ii) N.A. (iii) Yield of oats grain and straw. (iv) (a) No. (b) N.A. (c) N.A. (v) N.A. (vi) Nil. (vii) The experiment was conducted by A.C. on cultivators' fields.

5. RESULTS :

- (i) 498 lb./ac.
- (ii) 32.61 lb./ac.
- (iii) Treatment differences are highly significant.
- (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	405
2.	496
3.	593
S.E./mean	=13.31 lb./ac.

Crop :- Wheat and Gram.  
Site :- Govt. Agri. Farm, Atarra.

Ref :- U.P. 50(88).  
Type :- 'X'.

Object :- To study the effect of different seed rate proportions of Wheat and Gram grown mixed on yield and residual effect on the succeeding *kharif* crop.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Sugarcane. (c) N.A. (ii) (a) *Parwa* soil. (b) N.A. (iii) 30.10.1950. (iv) (a) Ploughed five times by Watt's plough and once with *desi* plough. Again ploughing by *desi* plough and subsequently covered by planking after broadcasting seed. (b) Broadcast after mixing the seeds of both crops in the given proportions. (c) Wheat 50 seers/ac. Gram 30 seers/ac. (d) and (e) N.A. (v) F.Y.M. at 40 lb./ac. of N. (vi) Wheat C-13—(early), Gram—Local (late). (vii) Unirrigated. (viii) Nil. (ix) 3.01". (x) 30.3.1951.

2. TREATMENTS :

Seed rate proportions			Seed required in chk./gross plot		
	Wheat	Gram		Wheat	Gram
1.	0	100		0	10
2.	20	80		3.2	8
3.	40	60		6.4	6
4.	50	50		8.0	5
5.	60	40		9.6	4
6.	80	20		12.8	2
7.	100	0		16.0	0

**3. DESIGN :**

(i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 4. (iv) (a) 25'×35'. (b) 22'×32'. (v) Field border 3' around, irrigation channel 3' and plot border 1½' around. (vi) Yes.

**4. GENERAL :**

(i) Very good. (ii) Nil. (iii) Yield of Wheat+Gram (*Rabi*). (iv) (a) 1950—1954. (b) Yes. (c) N.A. (iv) (a) Kalyanpur (Kanpur), Lucknow, Baharaich and Partapgarh. (b) N.A. (vi) Nil. (vii) Experiment was conducted by C.P.

**5. RESULTS :**

- (i) 1513 lb./ac.  
 (ii) 281.9 lb./ac.  
 (iii) Treatments differ significantly.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	1436
2.	1496
3.	1531
4.	1464
5.	1881
6.	1424
7.	1360
S.E./mean	=141.0 lb./ac.

Crop :- Wheat and Gram.

Ref :- U.P. 52(96).

Site :- Govt. Agri. Farm, Atarra.

Type :- 'X'.

Object :- To study the effect of different seed rate proportions of Wheat and Gram grown mixed on yield, and residual effect on the succeeding *kharif* crop.

**1. BASAL CONDITIONS :**

(i) (a) Nil. (b) Paddy. (c) N.A. (ii) (a) Light *kabar*. (b) N.A. (iii) 22' and 23.11.1952. (iv) (a) ploughings with Watt's plough and *pata*. (b) N.A. (c) As per treatments. (d) and (e) N.A. (v) 3 C.L. of well decayed F.Y.M. applied to entire field, 1½ md. of Super placed at a depth of 3"—4" in furrows behind the plough all over the field 2 days before sowing. (vi) Wheat C.13 and Gram.87. (vii) Unirrigated. (viii) N.A. (ix) N.A. (x) 5.4.1953.

**2. TREATMENTS:**

Seed rate proportions			Seed required in chk./gross plot.		
	Wheat	Gram	Gram	Wheat	
1.	0	100	0.0	20.3	
2.	20	80	5.0	16.3	
3.	40	60	10.1	12.2	
4.	50	50	12.7	10.1	
5.	60	40	15.2	8.0	
6.	80	20	20.3	4.0	
7.	100	0	25.4	0.0	

**3. DESIGN :**

(i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 4. (iv) (a) 42'×33'. (b) 39'×30'. (v) Field border—3' around and plot border—1½' around. (vi) Yes.

**4. GENERAL :**

(i) Good. (ii) No. (iii) Grain and straw yield of Wheat+Gram (iv) (a) 1950 to 1954. (experiment not conducted in 1951.). (b) and (c) No. (v) (a) Lucknow, Varanasi, Kanpur, Bahraich. Pratapgarh, Aligarh, Etawah and Jhansi. (b) N.A. (vi) Nil. (vii) Experiment was conducted by C.P. (R).



## 5. RESULTS :

- (i) 1354 lb./ac.  
(ii) 41.78 lb./ac.  
(iii) Treatment differences are highly significant.  
(iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	1496
2.	1543
3.	1237
4.	1022
5.	1627
6.	1277
7.	1277
S.E./mean	= 20.89 lb./ac.

Crop :- Wheat and Gram.

Ref :- U.P. 53(157).

Site :- Govt. Agri. Farm, Atarra.

Type :- 'X'.

Object :- To study the effect of different seed rate proportions of Wheat and Gram, grown mixed on yield and its residual effect on the succeeding *kharif* crop.

## 1. BASAL CONDITIONS :

(i) (a) Cereal—cereal. (b) Paddy. (c) Nil. (ii) (a) *Parwa*. (b) N.A. (iii) 24.11.1953. (iv) (a) 4 ploughings after harvest of paddy on 2, 7, 13 and 21.10.1953, and *palewa* on 22.10.1953. (b) Sown by local seed drill, wheat sown first in lines east-west behind the plough, subsequently gram was to be similarly sown north-south *i.e.*, across the wheat lines. (c) As per treatments. (d) and (e) N.A. (v) 3 C.L. of F.Y.M. on 10.11.1953, fertilizers on 21.11.1953—1½ md. of Super to be placed at a depth of 3"—4" in furrows behind the plough all over the sides. (vi) Wheat C.13 and gram.87 (improved). (viii) Unirrigated. (viii) N.A. (ix) N.A. (x) 16.4.1954.

## 2. TREATMENTS :

	Seed rate proportions		Seed used in chk./plot	
	Wheat	Gram	Wheat	Gram
1.	0	100	0.0	25.3
2.	20	20	5.0	16.3
3.	40	60	10.0	12.0
4.	50	50	12.5	10.0
5.	60	40	15.0	8.0
6.	80	20	20.3	4.0
7.	0	100	25.4	0.0

## 3. DESIGN :

(i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 4. (iv) (a) 42'×33'. (b) 39'×30'. (v) Field border—3' around, plot border—1½' around and irrigation channel—3'. (vi) Yes.

## 4. GENERAL :

(i) Satisfactory. (ii) No. (iii) Grain and straw yield of wheat and gram. (iv) (a) 1950 to 1954. (b) and (c) No. (v) (a) Etawah, Kalyanpur, Baharaich, Kalai and Varanasi. (b) N.A. (vi) Nil. (vi) Experiment conducted by C.P. (R).

## 5. RESULTS :

- (i) 1377 lb./ac.  
(ii) 36.15 lb./ac.  
(iii) Treatment differences are highly significant.  
(iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	1589
2.	1544
3.	1224
4.	1058
5.	1733
6.	1175
7.	1314
S.E./mean	= 18.08 lb./ac.

Crop :- Gram and Linseed.  
Site :- Govt. Agri. Farm, Atarra.

Ref :- U.P. 52(98).

Type :- 'X'.

Object :- To study the effect of different seed rate proportions of Gram and Linseed grown mixed, on yield and the residual effect on the succeeding *kharif* crop.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) N.A. (ii) (a) Light *kabar*, clay loam. (b) N.A. (iii) 26.11.1952. (iv) (a) 3 ploughings with Watt's plough and *pata*. (b) N.A. (c) As per treatments. (d) and (e) N.A. (v) 3 C.L. of well decayed F.Y.M. applied all over the field. 1½ mds. of super placed at a depth of 3"-4" in furrows behind the plough all over the field. (vi) Gram : T. 87 (late). (vii) Unirrigated. (viii) N.A. (ix) N.A. (x) 4.4.1953.

## 2. TREATMENTS :

	Seed rate proportions		Seed rate in chk./gross plot of	
	Gram	Linseed	Gram	Linseed
1.	0	100	0.0	6.1
2.	20	80	4.0	4.8
3.	40	60	8.1	3.6
4.	50	50	10.1	3.0
5.	60	40	12.2	2.4
6.	80	20	16.3	1.2
7.	100	0	20.3	0.0

## 3. DESIGN :

(i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 4. (iv) (a) 42'x33'. (b) 39'x30'. (v) Field border=3' around. Plot border=1½'. (vi) Yes.

## 4. GENERAL :

(i) Poor. (ii) No. (iii) Grain and straw yield. (iv) (a) 1952-1954. (b) and (c) No. (v) (a) Lucknow, Varanasi, Baharaich and Hamirpur. (vi) Nil. (vii) The experiment was conducted by C.P. (R).

## 5. RESULTS :

- (i) 577 lb./ac.  
(ii) 18.73 lb./ac.  
(iii) Treatment differences are highly significant.  
(iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	130
2.	288
3.	465
4.	543
5.	627
6.	892
7.	1094
S.E./mean	= 9.36 lb./ac.

Crop :- Gram and Linseed.  
Site :- Govt. Agri. Farm, Atarra.

Ref :- U.P. 53(159).

Type :- 'X'.

Object :- To study the effect of different seed rate proportions of Gram and Linseed grown mixed, on yield and residual effect on the succeeding *kharif* crop.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) Paddy. (c) Nil. (ii) (a) *Parwa*. (b) N.A. (iii) 25.11.1953. (iv) (a) 4 ploughings after harvest of paddy on 2, 7, 13 and 21.11.1953. (b) Sown by local seed drill to obtain uniform distribution of seeds all over the field. (c) As per treatments. (d) and (e) N.A. (v) F.Y.M. applied on 10.11.1953—3 C.L. Fertilizer applied on 21.11.1953—1½ mds of Super at a depth of 3"-4" in furrows behind the plough all over the field. (vi) Gram : 87 and linseed (improved). (vii) Irrigated. (viii) N.A. (ix) N.A. (x) 16.4.1954.

## 2. TREATMENTS :

	Seed rate proportions		Seed rate in chk./plot	
	Gram	Linseed	Gram	Linseed
1.	0	100	0.0	6.1
2.	20	80	4.0	4.8
3.	40	60	8.1	3.6
4.	50	50	10.1	3.0
5.	60	40	12.2	2.4
6.	80	20	16.3	1.2
7.	100	0	20.3	0.0

## 3. DESIGN :

(i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 4. (iv) (a) 42'×33'. (b) 39'×30'. (v) Field border=3' around. Plot border=1½'. Irrigation channel=3'. (vi) Yes.

## 4. GENERAL :

(i) Satisfactory. (ii) No. (iii) Grain and straw yield of gram and linseed. (iv) (a) 1952-1954. (b) and (c) No. (v) (a) Varanasi, Baharaich, Belatal (Hamirpur) and Hardoi. (vi) Nil. (vii) The experiment was conducted by C.P. (R).

## 5. RESULTS :

- (i) 538 lb./ac.  
(ii) 8.98 lb./ac.  
(iii) Treatment differences are highly significant.  
(iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	110
2.	262
3.	401
4.	553
5.	604
6.	819
7.	1018
S.E./mean	=4.49 lb./ac.

Crop :- Barley and Pea.

Site :- Govt. Agri. Farm, Atarra.

Ref :- U.P. 52(97).

Type :- 'X'.

Object :- To study the effect of different seed rate proportions of Barley and Pea grown mixed, on yield, and residual effect on the succeeding *kharif* crop.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) N.A. (ii) *Kabar*; Clay loam. (b) N.A. (iii) 25.11.1952. (iv) (a) 3 ploughings with Watt's plough and *pata*. (b) N.A. (c) As per treatments. (d) and (e) N.A. (v) Manuring on 20.11.1952. (1) 3 C.L. (45 mds.) of F.Y.M. applied to entire field. (2) 1½ mds. of super placed at a depth of 3"-4" in furrows behind the plough all over the field 2 days before sowing. (vi) Barley—C.251 (medium); Pea—T. 163 early. (vii) Unirrigated. (viii) N.A. (ix) N.A. (x) 4.4.1953.

## 2. TREATMENTS :

	Seed rate proportions		Seed required in chk./plot	
	Barley	Pea	Barley	Pea
1.	0	190	0.0	20.3
2.	20	80	4.0	16.3
3.	40	60	8.1	12.2
4.	50	50	10.1	10.1
5.	60	40	12.2	8.1
6.	80	20	16.3	4.0
7.	100	0	20.3	0.0

## 3. DESIGN :

(i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 4. (iv) (a) 42'×33'. (b) 39'×30'. (v) Field border=3' around. Plot border=1½'. (vi) Yes.

## 4. GENERAL :

(i) Poor. (ii)-No. (iii) Grain and straw yield. (iv) (a) 1952-56. (b) and (c) No. (v) (a) Lucknow, Faizabad, Etawah, Kanpur, Hardoi and Aligarh. (b) N.A. (vi) Nil. (vii) The expt. was conducted by C.P.(R).

## 5. RESULTS :

- (i) 577.8 lb./ac.  
 (ii) 16.14 lb./ac.  
 (iii) Treatment differences are highly significant.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	499.0
2.	591.2
3.	429.6
4.	677.3
5.	726.4
6.	671.3
7.	450.0
S.E./mean	= 8.07 lb./ac.

Crop :- Barley and Pea.

Site :- Govt. Agri. Farm, Atarra.

Ref :- 53(158).

Type :- 'X'.

Object :- To study the effect of different seed rate proportions of Barley and Pea grown mixed on yield and residual effect on the succeeding *kharif* crop.

## 1. BASAL CONDITIONS :

(i) (a) Legume-Cereal. (b) *Dhaincha*. (c) Nil. (ii) (a) *Parwa*. (b) N.A. (iii) 24.11.1953. (iv) (a) 4 ploughings after harvest of paddy on 4, 8, 14, 22.11.1953. *Palewa* on 29.10.1953. Barley to be sown first in lines east-west behind the plough and then pea to north-south of it across barley lines. (b) Sown by seed drill. (c) to (e) N.A. (v) F.Y.M.—3 C.L. on 11.11.1953. 1½ mds. Super at the depth of 3"-4" in furrows behind the plough all over the field 22.11.1953. (vi) Barley—201 (improved); Pea—163. (vii) Unirrigated. (viii) N.A. (ix) N.A. (x) 16.4.1954.

## 2. TREATMENTS :

	Seed rate proportions		Seed rate in chk./plot	
	Barley	Pea	Barley	Pea
1.	0	100	0.0	20.3
2.	20	80	4.0	16.3
3.	40	60	8.1	12.2
4.	50	50	10.1	10.1
5.	60	40	12.2	8.1
6.	80	20	16.3	4.0
7.	100	0	20.3	0.0

## 3. DESIGN :

(i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 4. (iv) (a) 42'×33'. (b) 39'×30'. (v) Field border=3' around. Irrigation channel=3'. Plot border=1½'. (vi) Yes.

## 4. GENERAL :

(i) Satisfactory. (ii) No. (iii) Grain and straw yield. (iv) (a) 1952-1956. (b) and (c) No. (v) (a) Varanasi, Faizabad, Kalyanpur, Kalai, Etawah. (b) N.A. (vi) Nil. (vii) The expt. was conducted by C.P.(R).

## 5. RESULTS :

- (i) 634.6 lb./ac.  
 (ii) 15.6 lb./ac.  
 (iii) Treatment differences are highly significant.

(iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	556.5
2.	640.2
3.	463.1
4.	792.2
5.	751.5
6.	704.8
7.	533.7
S.E./mean	=7.8 lb./ac.

Crop :- Wheat and Gram.

Ref :- U.P. 50(89).

Site :- Govt. Agri. Farm, Baharaich.

Type :- 'X'.

Object :- To study the effect of different seed rate proportions of Wheat and Gram grown mixed, on yield and its residual effect on the succeeding *kharif* crop.

## 1. BASAL CONDITIONS :

(i, a) Nil. (b) Sugarcane. (c) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis, Baharaich. (iii) 1.11.1950. (iv) (a) Ploughing by *desi* plough and subsequently covered by planking. (b) Broadcast after mixing the seeds in the given proportion. (c) Wheat at 50 seers/ac. and gram at 30 seers/ac. (d) and (e) N.A. (v) F.Y.M. at 40 lb./ac. of N. (vi) Wheat—NPS2 (medium-early) and gram—local (late). (vii) Irrigated. (viii) Harrowing twice. (ix) 3.08° (x) 18.4.1951.

## 2. TREATMENTS :

Seed rates	Proportion		Seed required in chk./gross plot
	Wheat	Gram	
1.	0	100	0 : 10
2.	20	80	3.2 : 8
3.	40	60	6.4 : 6
4.	50	50	8.0 : 5
5.	60	40	9.6 : 4
6.	80	20	12.8 : 2
7.	100	0	16.0 : 0

## 3. DESIGN :

(i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 4. (iv) (a) 25'×35'. (b) 22'×32'. (v) Field border=3' around, plot border=1½' around and irrigation channel=3'. (vi) Yes.

## 4. GENERAL :

(i) Satisfactory. (ii) Nil. (iii) Grain yield. (iv) (a) 1950—1953. (b) and (c) No. (v) (a) Atarra Kalyanpur, Lucknow and Partapgarh. (b) N.A. (vi) Nil. (vii) Experiment conducted by C.P.

## 5. RESULTS :

(i) 1061 lb./ac.  
(ii) - 214.9 lb./ac.  
(iii) Treatment differences are highly significant.  
(iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	175
2.	1066
3.	1034
4.	1265
5.	1352
6.	1257
7.	1281
S.E./mean	=107.5 lb./ac.

Crop :- Wheat and Gram.  
Site :- Govt. Agri. Farm, Baharaich.

Ref :- U.P. 51(71).  
Type :- 'X'.

Object :- To study the effect of different seed rate proportions of Wheat and Gram, grown mixed on yield and its residual effect on the succeeding *kharif* crop.

1. BASAL CONDITIONS :

(i) (a) No. (b) Fallow. (c) No. (ii) (a) Sandy loam. (b) Refer soil analysis, Baharaich. (iii) Last week of October. (iv) (a) Ploughings by *desi* plough and subsequently covered by planking. (b) Broadcast after mixing both the seeds in the given proportion. (c) Wheat 50 seers/ac. and gram 30 seers/ac. (d) and (e) N.A. (v) G.M. at 40 lb./ac of N. (vi) Wheat—NP. 52 (medium early) and gram—local (late). (vii) N.A. (viii) N.A. (ix) N.A. (x) N.A.

2. TREATMENTS :

Seed rate Proportions			Seed used in chk./gross plot.	
	Wheat :	Gram	Wheat :	Gram
1.	0	: 100	00	: 10.0
2.	20	: 80	3.2	: 8.0
3.	40	: 60	6.4	: 6.0
4.	50	: 50	8.0	: 5.0
5.	60	: 40	9.6	: 4.0
6.	80	: 20	12.8	: 2.0
7.	100	: 0	16.0	: 0.0

3. DESIGN :

(i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 4. (iv) (a) 25'×35'. (b) 22'×32'. (v) Field border=3' around, plot border=1½' around and irrigation channel=3'. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) Yield of wheat and gram grain. (iv) 1950—1953. (b) and (c) No. (v) (a) Partapgarh, Etawah and Kanpur. (b) N.A. (vi) Nil (vii) Experiment conducted by C.P.

5. RESULTS :

(i) 455.2 lb./ac.  
(ii) 173.9 lb./ac.  
(iii) Treatment differences are highly significant.  
(iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	103.4
2.	429.6
3.	596.7
4.	544.9
5.	461.4
6.	636.4
7.	413.7
S.E./mean	=86.96 lb./ac.

Crop :-Wheat and Gram.  
Site :-Govt. Agri. Farm, Baharaich.

Ref :-U.P. 52(83).  
Type :-'X'.

Object :-To study the effect of different seed rate proportions of Wheat and Gram, grown mixed on yield and its residual effect on the succeeding *kharif* crop.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis, Baharaich. (iii) 3.11.1952. (iv) (a) 3 ploughings on 25.10.1952 and 1, 4.11.1952. (b) N.A. (c) As per treatments. (d) N.A. (e) N.A. (v) Date of manuring 16.10.1952. (1) 3 C.L. (45 md.) of well decayed F.Y.M. all over the field. (2) 1½ md. of Super placed at a depth of 3"-4" in furrows behind the plough all over the field 2 days before sowing. (vi) Wheat—NP. 52, Gram—T-87. (vii) Irrigated. (viii) N.A. (ix) N.A. (x) 6.4.1953.

## 2. TREATMENTS :

Seed rate proportion			Seed used in chk./gross plot		
Wheat	:	Gram	Wheat	:	Gram
1. 0	:	100	0	:	15.2
2. 20	:	80	5.0	:	12.2
3. 40	:	60	10.1	:	9.1
4. 50	:	50	12.7	:	7.6
5. 60	:	40	15.2	:	6.1
6. 80	:	20	20.3	:	3.0
7. 100	:	0	25.4	:	0.0

## 3. DESIGN :

(i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 4. (iv) (a) 42'×33'. (b) 39'×30'. (v) Field border 3' around, plot border 1½'. (vi) Yes.

## 4. GENERAL :

(i) Poor. (ii) Attacked by yellow rust—35% damage. (iii) Grain and straw yield. (iv) (a) 1950—1953. (b) No. (c) No. (v) (a) Lucknow, Varanasi, Kanpur, Partapgarh, Aligarh, Banda, Etawah and Jhansi. (b) N.A. (vi) Nil. (vii) Experiment conducted by C.P.(R).

## 5. RESULTS :

(i) 627.7 lb./ac.

(ii) 211.3 lb./ac.

(iii) Treatment differences are highly significant.

(iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	256.1
2.	469.1
3.	762.3
4.	860.4
5.	777.8
6.	730.0
7.	538.5
S.E./mean	=105.7 lb./ac.

Crop :-Wheat and Gram (*Rabi*).

Site :-Govt. Agri. Farm, Baharaich.

Ref :-U.P. 53(266).

Type :-'X'.

Object :- To study the effect of different seed rate proportions of Wheat and Gram, grown mixed on yield and its residual effect on the succeeding crop.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) N.A. (c) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis, Baharaich. (iii) 3, 4.11.1953. (iv) (a) Ploughing on 6, 7.9.1953 and 1.11.1953. (b) Wheat is to be sown first in line east west behind plough, subsequently gram to be sown similarly. (c) Wheat-50 seers/ac. ; Gram-30 seers/ac. (d) N.A. (e) N.A. (v) 3 C.L. (45 md.) of well decayed F.Y.M. or compost to be applied 2-3 weeks before sowing all over the field. 1½ md. of Super to be applied at a depth of 3"-4" in furrows behind the plough all over the field, a couple of days before sowing. (vi) Wheat-NP: 52 ; Gram-T: 87. (vii) Irrigated. (viii) N.A. (ix) N.A. (x) 5.4.1954.

## 2. TREATMENTS :

Seed rate proportions			Seed used in chk./gross plot		
Wheat	:	Gram	Wheat	:	Gram
1. 0	:	100	0	:	15.2
2. 20	:	80	5.0	:	12.2
3. 40	:	60	10.1	:	9.1
4. 50	:	50	12.7	:	7.6
5. 60	:	40	15.2	:	6.1
6. 80	:	20	20.3	:	3.0
7. 100	:	0	25.4	:	2.0

## 3. DESIGN.

(i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 4. (iv) (a) 42'×33'. (b) 39'×30'. (v) Field border 3' around, plot border 1½', irrigation channel 3'. (vi) Yes.

## 4. GENERAL :

(i) Gram failed—reason not given. (ii) White rust. (iii) Grain yield. (iv) (a) 1950—1953. (b) No. (c) No. (v) (a) and (b) No. (vi) Nil. (vii) Experiment conducted by C.P.

## 5. RESULTS :

- (i) 1429 lb./ac.  
 (ii) 694.1 lb./ac.  
 (iii) Treatment differences are significant.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	451
2.	1241
3.	1902
4.	2113
5.	1229
6.	1854
7.	1212
S.E /mean	=347.1 lb./ac.

Crop :-Wheat and Gram.

Ref :-U.P. 53(216).

Site :-Govt. Agri. Farm, Baharaich.

Type :-'X'.

Object :-To study the physiological response of mixed crops to application of fertilisers.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Dhaincha*. (c) No. (ii) Sandy loam. (b) Refer soil analysis, Baharaich. (iii) 4.11.1953. (iv) (a) Ploughing on 16, 20.10.1953 and harrowing on 22.10.1953. (b) By a seed drill, gram sown in between two rows of wheat. (c) Wheat—25 seer/ac. and gram—10 seer/ac. (d) and (e) N.A. (v) Nil. (vi) Wheat—C13 (early) and gram—T. 87 (late). (vii) Irrigated. (viii) N.A. (ix) N.A. (x) 4.4.1954.

## 2. TREATMENTS :

All combinations of (1), (2), (3) and (4)

- (1) 2 levels of N as A/S :  $N_0=0$  and  $N_1=40$  lb./ac. (N)  
 (2) 2 levels of  $P_2O_5$  as Super :  $P_0=0$  and  $P_1=40$  lb./ac. (P)  
 (3) 2 levels of  $K_2O$  as Pot. Sul. :  $K_0=0$  and  $K_1=40$  lb./ac. (K)  
 (4) 2 levels of CaO as Gypsum :  $C_0=0$  and  $C_1=40$  lb./ac. (C)

Manuring on 10, 12, 26.10.1953 and 1, 2.11.1953.

## 3. DESIGN :

(i) 2<sup>4</sup> Fact. in R.B.D. (ii) (a) 16. (b) N.A. (iii) 3. (iv) (a) 22'×37'. (b) 19'×34'. (v) 1½' ring round the net plot. (vi) Yes.

## 4. GENERAL :

(i) Gram failed—reason not recorded. (ii) Wheat rust, other details—N.A. (iii) Grain yield. (iv) (a) 1953—N.A. (b) and (c) No. (v) (a) Lucknow. (b) N.A. (vi) Gram failed—reason not recorded. Hence the yield of wheat is taken for analysis. (vii) The experiment was conducted by C.P.

## 5. RESULTS :

- (i) 1445 lb./ac.  
 (ii) 294.9 lb./ac.  
 (iii) Interaction N×P is highly significant. Other effects and interactions are not significant.



Factor	Mean Response	N		P		K		C	
		Absence	Presence	Absence	Presence	Absence	Presence	Absence	Presence
N	155.9	...	...	391.3	-79.4	102.5	209.4	130.0	181.9
P	105.4	340.6	-129.7	...	...	150.2	60.6	132.2	78.0
K	82.3	28.9	135.7	127.1	37.5	...	...	89.5	75.1
C	170.4	144.4	196.4	197.8	142.9	177.6	163.2	...	...

S.E. of differential response = 120.4 lb./ac.  
S.E. of mean response = 85.1 lb./ac.

Crop :-Wheat and Barley.

Ref:-U.P. 52(82).

Site :-Govt. Agri. Farm, Baharaich.

Type :-'X'.

Object :-To study the effect of different seed rate proportions of Wheat and Barley, grown mixed on yield and its residual effect on the succeeding *kharif* crop.

#### 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Sugarcane. (c) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis, Baharaich. (iii) 3 and 4.11.1952. (iv) (a) Ploughing on 29, 30 and 31.10.1952. (b) N.A. (c) As per treatments. (d) and (e) N.A. (v) (i) 3 C.L. (45 md.) of well decayed F.Y.M. applied equally all over the field. (ii) 1½ md. of Super placed at a depth of 3"-4" in furrows behind the plough all over the field 2 days before sowing. Date of manuring 15, 16.10.1952. (vi) Wheat-NP-52 and barley-NP-31 (medium early). (vii) Irrigated. (viii) N.A. (ix) N.A. (x) 5.4.1953.

#### 2. TREATMENTS :

Seed rate proportions			Seed required in chk./gross plot		
	Wheat	Barley		Wheat	Barley
1.	0	100		0.0	20.3
2.	20	80		5.0	16.3
3.	40	60		10.1	12.2
4.	50	50		12.7	10.1
5.	60	40		15.2	8.1
6.	80	20		20.3	4.0
7.	100	0		25.4	0.0

#### 3. DESIGN :

(i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 4. (iv) (a) 42'×33'. (b) 39'×30'. (v) Field border=3' around. Plot border=1½'. (vi) Yes.

#### 4. GENERAL :

(i) Normal. (ii) Yellow rust upto stem and ears. (iii) Grain and straw yield. (iv) (a) 1952-1953. (b) and (c) No. (v) (a) Hardoi and Partapgarh. (b) N.A. (vi) Nil. (vii) The experiment was conducted by C.P. (R).

#### 5. RESULTS :

(i) 1064 lb./ac.  
(ii) 448.6 lb./ac.  
(iii) Treatment differences are not significant.  
(iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	1385
2.	1142
3.	1149
4.	973
5.	938
6.	997
7.	865
S.E./mean	=224.3 lb/ac.

Crop :- Wheat and Barley (*Rabi*).

Ref :- U.P. 53(268).

Site :- Govt. Agri. Farm, Baharaich.

Type :- 'X'.

Object :- To study the effect of different seed rate proportions of Wheat and Barley, grown mixed on yield and its residual effect on the succeeding *kharif* crop.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fallow. (c) No. (ii) (a) Sandy loam. (b) Refer soil analysis, Baharaich. (iii) 5 and 6.11.1953. (iv) (a) Ploughing on 3,4 and 12.10.1953. (b) Sown by seed drill. (c) Wheat—50 srs./ac. and barley—40 srs./ac. (d) and (e) N.A. (v) (1) 3 C.L. (45 md.) of well decayed F.Y.M. or compost to be applied equally all over the field 2—3 weeks before sowing. (2) 1½ md. of Super to be applied at depth of 3"—4" in furrows behind plough all over field a couple of days before sowing. (vi) Wheat—NP.52 and barley—NP.21. (vii) Irrigated. (viii) and (ix) N.A. (x) 4.4.1952.

## 2. TREATMENTS :

Seed rate proportions		Seed used in chk./gross plot.	
Wheat	Barley	Wheat	Barley
1. 0	: 100	0	: 20.3
2. 20	: 80	5.0	: 16.3
3. 40	: 60	10.1	: 12.2
4. 50	: 50	12.7	: 10.1
5. 40	: 60	15.2	: 8.1
6. 20	: 80	20.3	: 4.0
7. 0	: 100	25.4	: 0

## 3. DESIGN :

(i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 4. (iv) (a) 42'×33'. (b) 39'×30'. (v) Field border=3' around, plot border=1½' and irrigation channel=3'. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) Wheat rust and smut in barley. (iii) Grain yield. (iv) (a) to (c) No. (v) (a) and (b) No. (vi) Nil. (vii) Experiment conducted by C.P.

## 5. RESULTS :

(i) 1153 lb./ac.  
 (ii) 358.9 lb./ac.  
 (iii) Treatment differences are not significant.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	880
2.	1307
3.	982
4.	1046
5.	1265
6.	1321
7.	1267

S.E./mean = 179.5 lb./ac.

Crop :- Gram and Linseed.

Ref :- U.P. 52(85).

Site :- Govt. Agri. Farm, Baharaich.

Type :- 'X'.

Object :- To study the effect of different seed rate proportions of Gram and Linseed grown mixed, on yield and its residual effect on the succeeding *kharif* crop.

## 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis, Baharaich. (iii) 4.11.1952. (iv) (a) Ploughing on 2 and 8.10.1952. (b) N.A. (c) As per treatments. (d) and (e) N.A. (v) (1) 3 C.L. (45 md.) of well decayed F.Y.M. applied equally all over the field. (2) 1½ md. of Super placed at a depth of 3"—4" in furrows behind the plough 2 days before sowing. Date of manuring 29.10.1952. (vi) Gram—T.87 (late) linseed 1193. (vii) Irrigated. (viii) and (ix) N.A. (x) 6.4.1953.

## 2. TREATMENTS :

Seed rate proportion			Seeds used in chk./gross plot.		
Gram	:	Linseed	Gram	:	Linseed
1. 0	:	100	0.0	:	6.7
2. 20	:	80	3.0	:	4.8
2. 40	:	60	6.1	:	3.6
4. 50	:	50	7.6	:	3.0
5. 60	:	40	9.1	:	2.4
6. 80	:	20	12.2	:	1.2
7. 100	:	0	15.2	:	0.0

## 3. DESIGN :

(i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 4. (iv) (a) 42'×33'. (b) 39'×30'. (v) Field border=3' around and plot border=1½' around. (vi) Yes.

## 4. GENERAL :

(i) Poor. (ii) Yellow rust on stem. (iii) Grain and straw yield. (iv) (a) 1952 to 1954. (b) and (c) No. (v) Lucknow, Varansai, Hamirpur and Banda. (b) N.A. (vi) Nil. (vii) Experiment conducted by C.P. (R).

## 5. RESULTS :

(i) 570.1 lb./ac.

(ii) 110.1 lb./ac.

(iii) Treatment differences are highly significant.

(iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	663.0
2.	610.3
3.	587.6
4.	674.9
5.	561.2
6.	642.6
7.	251.3
S.E./mean	= 55.04 lb./ac.

Crop :- Gram and Linseed.

Ref :- U.P. 53(267).

Site :- Govt. Agri. Farm, Baharaich.

Type :- 'X'.

Object :- To study the effect of different seed rate proportions of Gram and Linseed grown mixed on yield and its residual effect on the succeeding *kharif* crop.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) and (c) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis, Baharaich. (iii) 8.11.1953. (iv) (a) Ploughing on 3, 4 and 24.10.1953. (b) Gram sown by seed drill in rows and linseed sown so as to obtain uniform distribution all over field. (c) As per treatments. gram=30 seers/ac. and linseed=12 seers/ac. (d) and (e) N.A. (v) (1) 3 C.L. (45 md.) of well decayed F.Y.M. or compost applied equally all over the field 2-3 weeks before sowing and (2) 1½' md. of Super to be placed at a depth of 3"-4" in furrows behind the plough all over the field, a couple of days before sowing. (vi) Gram T. 87 and linseed 1193 (vii) Irrigated. (viii) and (ix) N.A. (x) 4.4.1954.

## 2. TREATMENTS :

Seed rate proportion			Seed used in chk./gross plot		
Gram	:	Linseed	Gram	:	Linseed
1. 0	:	100	0	:	6.1
2. 20	:	80	3.0	:	4.8
3. 40	:	60	6.1	:	3.6
4. 50	:	50	7.6	:	3.0
5. 60	:	40	9.1	:	2.4
6. 80	:	20	12.2	:	1.2
7. 100	:	0	15.2	:	0

## 3. DESIGN :

(i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 4. (iv) (a) 42'×33'. (b) 39'×30'. (v) Field border=3' around, irrigation channel=3' and plot border=1½'. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) Rust. (iii) Grain yield. (iv) (a) and (b) No. (c) Nil. (v) (a) and (b) No. (vi) Nil (vii) Experiment conducted by C.P.

## 5. RESULTS :

(i) 721.8 lb./ac.  
 (ii) 310.3 lb./ac.  
 (iii) Treatment differences are not significant.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	506.2
2.	823.3
3.	852.0
4.	617.5
5.	951.4
6.	700.1
7.	601.9
S.E./mean	=155.1 lb./ac.

Crop :-Wheat and Masturd.

Ref :-U.P. 52(81).

Site :-Govt. Agri. Farm, Baharaich.

Type :- 'C'.

Object :-To study the effect of different seed rate proportions of Wheat and Mustard grown mixed on yield and residual effect on the succeeding *kharif* crop.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Moong*. (c) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis, Baharaich. (iii) 2.11.1952. (iv) (a) Ploughings on 29, 30.10.1952 and 2.11.1952. (b) N.A. (c) As per treatments. (d) and (e) N.A. (v) (1) 3 C.L. (45 md.) of well decayed F.Y.M. applied all over the field and (2) 1½ md. of Super placed at a depth of 3"-4" in furrows behind the plough 2 days before sowing. (vi) Wheat -N.P. 52 (medium early) and mustard-local. (vii) Irrigated. (viii) and (ix) N.A. (x) Wheat 5.4.1953 and mustard 15.3.1953.

## 2. TREATMENTS :

Seed rate proportion		Seeds used in chk./gross plot	
Wheat	Mustard	Wheat	Mustard
1. 0	: 100	0.0	: 1.5
2. 20	: 80	5.0	: 1.2
3. 40	: 60	10.1	: 0.9
4. 50	: 50	12.7	: 0.7
5. 60	: 40	15.2	: 0.6
6. 80	: 20	20.3	: 0.3
7. 100	: 0	25.4	: 0.0

## 3. DESIGN :

(i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 4. (iv) (a) 42'×33'. (b) 39'×30'. (v) Field border=3' around and plot border=1½'. (vi) Yes.

## 4. GENERAL :

(i) Normal. (ii) Yellow rust upto stem. (iii) Grain and straw yield. (iv) (a) 1952-1953 (experiment failed in 1953). (b) and (c) No. (v) (a) and (b) Etawah and FRaya. (b) N.A. (vi) Nil. (vii) Experiment conducted by C.P.

## 5. RESULTS :

(i) 954 lb./ac.  
 (ii) 242.5 lb./ac.  
 (iii) Treatment differences are significant.

(iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	512
2.	890
3.	932
4.	997
5.	1038
6.	1045
7.	1264
S.E./mean	=121.2 lb./ac.

Crop :- Gram and Linseed.

Ref :- U.P. 52(90).

Site :- Govt. Agri. Res. Farm, Belatal.

Type :- 'X'.

Object :- To study the effect of different seed rate proportions on Gram and Linseed mixed on yield and residual effect on the succeeding *kharif* crop.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Jowar*. (c) Nil. (ii) (a) *Kabar* mixed with *Parwa* clay loam. (b) N.A. (iii) 7.11.1952. (iv) (a) Ploughing with Watt's plough on 3.11.1952. Ploughing with *desi* plough on 4 and 5.11.1952. (b) N.A. (c) Gram 30 sr./ac. and linseed 12 sr./ac. (d) and (e) N.A. (v) F.Y.M. 3 C.L. on 2.11.1952 all over the field. Super on 7.11.1952 ; placed at a depth of 3-4" in furrows behind the plough all over the field. (vi) Gram T87 (late) Linseed T2. (vii) Irrigated. (viii) N.A. (ix) N.A. (x) Gram 27.3.1953. Linseed 2.4.1953.

## 2. TREATMENTS :

	Seed rate proportion		Seed rate in chk./gross plot.	
	Gram	Linseed	Gram	Linseed
1.	0	100	0.0	6.1
2.	20	80	3.0	4.8
2.	40	60	6.1	3.6
4.	50	50	7.6	3.0
5.	60	40	9.1	2.4
6.	80	20	12.2	1.2
7.	100	0	15.2	0.0

## 3. DESIGN :

(i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 4. (iv) (a) 42' x 33'. (b) 39' x 30'. (v) Field border = 3' around, plot border = 1 1/2'. (vi) Yes.

## 4. GENERAL :

(i) Poor. (ii) Both gram and linseed suffered from wilt. (iii) Grain and straw yield. (iv) (a) 1952-1954. (b) and (c) No. (v) (a) Lucknow, Varanasi, Baharaich and Banda. (b) N.A. (vi) Nil. (vii) The expt. was conducted by C.P.(R).

## 5. RESULTS :

- (i) 237.1 lb./ac.  
(ii) 59.89 lb./ac.  
(iii) Treatment differences are highly significant.  
(iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	76.6
2.	173.5
3.	198.6
4.	221.4
5.	327.9
6.	315.9
7.	345.8
S.E./mean	=29.94 lb./ac.

Crop :- Gram and Linseed.  
Site :- Govt. Agri. Res. Farm, Belatal.

Ref :- U.P. 53(98).

Type :- 'X'.

Object :- To study the effect of different seed rate proportions of Gram and Linseed grown mixed on yield and residual effect on the succeeding *kharif* crop.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) N.A. (c) N.A. (ii) (a) *Kabar*. (b) N.A. (iii) 21.10.1953. (iv) (a) 5 ploughings by Watt's plough and 5 with *desi* plough. (b) Gram to be sown first through seed drill in rows and after it linseed is sown uniformly; behind the plough. (c) As per treatments. (d) and (e) N.A. (v) (a) 45 md. of well decayed F.Y.M. or compost to be applied equally all over the field 2-3 weeks before sowing (b) 1.25 md. of Super to be placed at the depth of 3"-4" in furrows behind the plough all over the field a couple of days before sowing (20.10.1953). (vi) Gram T87 (late) linseed local. (vii) Nil. (viii) Nil. (ix) N.A. (x) 8.4.1954.

## 2. TREATMENTS :

	Seed rate proportion		Seed used in chk./plot	
	Gram	Linseed	Gram	Linseed
1.	0	100	0	6.1
2.	20	80	3.0	4.8
3.	40	60	6.1	3.6
4.	50	50	7.6	3.0
5.	60	40	9.1	2.4
6.	80	20	12.2	1.2
7.	100	0	15.2	0.0

## 3. DESIGN :

(i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 4. (iv) (a) 42' x 33'. (b) 39' x 30'. (v) Plot border 1.5'. field border 3' around. Block partition 3' to serve as irrigation channel. (vi) Yes.

## 4. GENERAL :

(i) Bad. (ii) Nominal damage due to wilt disease and rust to linseed. (iii) Grain and straw yield. (iv) (a) 1952-1954. (b) and (c) No. (v) (a) Banda, Baharaich. (vi) During the month of January 1954, the linseed capsuls were damaged by the frost when temperature went as low as 31°F. The gram crop escaped as it was late variety. (vii) The experiment conducted by C.P.(R).

## 5. RESULTS :

- (i) 571.7 lb./ac.  
(ii) 133.4 lb./ac.  
(iii) Treatment differences are highly significant.  
(iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	320.7
2.	432.0
3.	489.4
4.	605.5
5.	554.1
6.	746.7
7.	853.2
S.E./mean	= 66.72 lb./ac.

Crop :- Wheat and Gram.  
Site :- State Mechanised Farm, Bharari.

Ref :- U.P. 52(94).

Type :- 'X'.

Object :- To study the effect of different seed rate proportions of Wheat and Gram mixed on yield and its residual effect on the succeeding *kharif* crop.

## 1. BASAL CONDITIONS :

(i) (a) *Sanai*/Wheat. (b) *Sanai*. (c) Nil. (ii) (a) *Parwa* soil, clay loam. (b) N.A. (iii) 11, 12.11.1952. (iv) (a) Ploughing on 28.7.1952; 2 harrowings on 26, 31.10.1952. (b) N.A. (c) As per treatments. (d) N.A. (e) N.A. (v) Date of manure 1.11.1952. (1) 3 C.L. (45 md.) of well decayed F.Y.M. applied all over the field. (2) 1½ md. of Super placed at a depth of 3"-4" in furrows behind the plough all over the field 2 days before sowing. (vi) Wheat-Pb-597; Gram T-87 (late). (vii) Irrigated. (viii) N.A. (ix) N.A. (x) 24.3.1953.

## 2. TREATMENTS :

Seed rate proportion			Seeds used in chk./gross plot		
	Wheat	Gram	Wheat	Gram	
1.	0	100	0.0	20.3	
2.	20	80	5.0	16.3	
3.	40	60	10.1	12.2	
4.	50	50	12.7	10.1	
5.	60	40	15.2	8.1	
6.	80	20	20.3	4.0	
7.	100	0	25.4	0.0	

## 3. DESIGN :

(i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 4. (iv) (a) 42'×33'. (b) 39'×30'. (v) Field border 3' around. Plot border 1½'. (vi) Yes.

## 4. GENERAL :

(i) Normal. (ii) Slight rust was traceable in wheat during February. (iii) Grain and straw yield. (iv) (a) 1952-1956. (b) and (c) No. (v) (a) Lucknow, Varanasi, Kanpur, Baharaich, Pratapgarh, Aligarh, Banda and Etawah. (b) N.A. (vi) Nil. (vii) Experiment conducted by C.P.(R).

## 5. RESULTS :

- (i) 2074 lb./ac.  
(ii) 151.0 lb./ac.  
(iii) Treatment differences are highly significant.  
(iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	1429
2.	1986
3.	1965
4.	2149
5.	2353
6.	2408
7.	2226
S.E./mean	=75.52 lb./ac.

Crop :-Wheat and Gram (*Rabi*).

Site :-State Mechanised Farm, Bharari.

Ref :-U.P. 53(66).

Type :-'X'.

Object :-To study the effect of different seed rate proportions of Wheat and Gram grown mixed on yield and its residual effect on succeeding *kharif* crop.

## 1. BASAL CONDITIONS :

(i) (a) *Sanai*-Wheat. (b) *Sanai*. (c) Nil. (ii) (a) *Parwa*. (b) N.A. (iii) 17.11.1953. (iv) (a) Ploughing 8-10 times on 20.8.1953 and 28.10.1953. Harrowing on 14.11.1953. (b) Wheat to be sown first in lines east-west behind the plough; similarly gram to be sown north-south in lines. (c) Wheat 50 seers/ac.; Gram 40 seers/ac. (d) N.A. (e) N.A. (v) (1) 45 md./ac. of well decayed F.Y.M. on 10.11.1953. (2) 1.25 md./ac. of Super to be placed 3"-4" deep in soil in furrows behind the plough all over the field on 16.11.1953. (vi) Wheat-Pb 591, Gram-T-87. (vii) Irrigated. (viii) Weeding and hoeing at the proper time are common in practice. (ix) N.A. (x) 4.4.1954.

## 2. TREATMENTS :

Seed rate proportion			Seed rate lb./plot		
	Wheat	Gram	Wheat	Gram	
1.	0	100	0	2.61	
2.	20	80	0.64	2.09	
3.	40	60	1.29	1.57	
4.	50	50	1.63	1.29	
5.	60	40	1.95	1.04	
6.	80	20	2.61	0.52	
7.	100	0	3.26	0.0	

## 3. DESIGN :

(i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 4. (iv) (a) 42'×33'. (b) 39'×30'. (v) Plot border 1.5' allround and field border 3' allround and block partition 3' to serve as irrigation channel. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Slight effect of rust and frost. (iii) Grain and straw yield. (iv) (a) 1952—continued. (b) No. (c) No. (v) (a) Varanasi, Partapgarh, Kanpur, Banda, Baharaich, Aligarh and Etawah. (b) N.A. (vi) Nil. (vii) Experiment conducted by C.P.(R).

## 5. RESULTS :

- (i) 1343 lb./ac.  
 (ii) 319.1 lb./ac.  
 (iii) Treatment differences are not significant.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	1180
2.	1553
3.	1067
4.	1464
5.	1529
6.	1436
7.	1172
S.E./mean	=159.6 lb./ac.

Crop :-Barley, Gram and Mustard.

Ref :-U.P. 50(315).

Site :-Institutional Res. Farm, Bichpuri (Agra).

Type :-'X'.

Object :-To study the mixed cropping of Barley (cereal), Gram (legume) and Mustard (oil seeds) grown in alternate rows or otherwise under rainfed condition.

## 1. BASAL CONDITIONS:

(i) (a) Fallow—wheat, *guar*—fallow, *sanai*—wheat, fallow—gram, barley—mustard. (b) Fallow. (c) Nil. (ii) (a) Well drained, apparently light loam with av. fertility, porous and friable, possessing a good water holding capacity. (b) Refer soil analysis, Bichpuri. (iii) 25.10.1950. (iv) (a) 6 ploughing by tractor (5"–6") and off set disc harrow and 1 ploughing by Punjab plough and 1 by Watt's plough and 5 ploughings by *desi* plough. (b) N.A. (c) When crop raised pure. 45 seer/ac.—barley, 30 seer/ac.—gram and 3 seer/ac.—mustard. Crops when raised in mixture. Barley—22.5 seer/ac, gram—15.0 seer/ac. and mustard—1.5 seer/ac. (d) and (e) N.A. (v) N.A. (vi) Barley—C.251, gram—N.P.25. and mustard (*pili sarson*). local. (vii) N.A. (viii) No intercultural operations were done, weeds were allowed to grow as such for study. (ix) 0.49". (x) Barley and mustard on 22 to 24.3.1951. Gram on 8, 9.4.1951.

## 2. TREATMENTS :

1. Barley sown pure.
2. Gram sown pure.
3. Mustard sown pure.
4. Barley—gram sown in alternate rows of pure stand.
5. Barley—mustard sown in alternate rows of pure stand.
6. Gram—mustard sown in alternate rows of pure stand.
7. Barley—gram sown mixed in the same row.
8. Barley—mustard sown mixed in the same row.
9. Gram—mustard sown mixed in the same row.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 9. (b) 115'×82'. (iii) 4. (iv) (a) 39'×28', 39'×26', 37'×28' and 37'×26'. (b) 33'×22'. (v) Block border=4' and Plot border=2'. (vi) Yes.

## 4. GENERAL :

(i) Germination counts, highest in barley followed by mustard and gram. (ii) N.A. (iii) Germination counts, stand of crops (5 lines), height of plant, fresh and dry weight of plants number of green tillers and green branches per plant, no. of dry tillers, no. of green and dry leaves, no. of days taken for earing. No. of ear bearing tillers, number of non bearing tillers, weight of grain per plant etc. (iv) (a) No. (b) No. (c) Nil (v) (a) and (b) No. (vi) Nil. (vii) The experiment was conducted by B.R.C.



## 5. RESULTS :

- (i) 1627 lb./ac.  
 (ii) 243.8 lb./ac.  
 (iii) Treatment differences are significant.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield	Treatment	Av. yield
1.	1627	5.	1869
2.	1964	6.	1396
3.	1225	7.	1377
4.	1732	8.	1738
		9.	1712

S.E./mean = 121.9 lb./ac.

Crop :- Wheat and Mustard.

Site :- Govt. Agri. Farm, Etawah.

Ref :- U.P. 52(88).

Type :- 'X'.

Object :- To study the effect of differing seed rate proportions of Wheat and Mustard grown mixed on yield and residual effect on the succeeding *kharif* crop.

## 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Heavy loam. (b) N.A. (iii) 6.11.1952. (iv) (a) and (b) N.A. (c) As per treatments. (d) and (e) N.A. (v) (1) 3 C.L. (45 md.) of well decayed F.Y.M. applied all over the field 2-3 weeks before sowing. (2) 1½ mds of Super placed at a depth of 3"-4" in furrows behind the plough all over the field 2 days before sowing. (vi) to (ix) N.A. (x) Mustard-2.4.1953 and wheat-14.4.1953.

## 2. TREATMENTS :

Seed rate proportion			Seed required in chk./gross plot		
	Wheat	Mustard	Wheat	Mustard	
1.	0	100	0.0	1.5	
2.	20	80	5.0	1.2	
3.	40	60	10.1	0.9	
4.	50	50	12.7	0.7	
5.	60	40	15.2	0.6	
6.	80	20	20.3	0.3	
7.	100	0	25.4	0.0	

## 3. DESIGN :

(i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 4. (iv) (a) 42'×33'. (b) 39'×30'. (v) Field border 3' around. Plot border 1½'. (vi) Yes.

## 4. GENERAL :

(i) Normal. (ii) Mustardly Aphis. (iii) Grain and straw yield. (iv) (a) 1952-1954. (b) and (c) No. (v) (a) Baharaich and Raya. (b) N.A. (vi) Nil. (vii) The experiment was conducted by C.P. (R).

## 5. RESULTS :

- (i) 838 lb./ac.  
 (ii) 173.5 lb./ac.  
 (iii) Treatment differences are highly significant.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	520
2.	924
3.	820
4.	822
5.	872
6.	1003
7.	1253

S.E./mean = 86.74 lb./ac.

Crop :- Wheat and Mustard (*Rabi*).

Ref :- U.P. 53(114).

Site :- Govt. Agri. Farm, Etawah.

Type :- 'X'.

Object :- To study the effect of different seed rate proportions of Wheat and Mustard grown mixed on yield and residual effect on succeeding *kharif* crop.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) N.A. (c) N.A. (ii) (a) Loam. (b) N.A. (iii) 5.11.1953. (iv) (a) Ploughing and harrowing on 4 and 11.7.1953, 12.8.1953. 19 and 26.9.1953 and 15 and 26.10.1953, Watt's plough, cultivator plough and *desi* plough. (b) Through seed drill. (c) As per treatments. (d) and (e) N.A. (v) (1) 45 md. of well decayed F.Y.M. or compost to be applied 2-3 weeks before sowing all over the field. (2) 1.25 md. of Super to be placed at a depth of 3"-4" in furrows behind the plough all over the field, a couple of days before sowing (vi) Wheat Pb.591 and mustard T.101. (vii) Irrigated. (viii) Nil. (ix) N.A. (x) 27.4.1954

## 2. TREATMENTS :

	Seed rate Proportion		Seedrate in chk./plot.	
	Wheat	Mustard	Wheat	Mustard
1.	0	100	0	13.2
2.	20	80	4.4	10.6
3.	40	60	8.8	7.9
4.	50	50	11.0	6.6
5.	60	40	13.2	5.3
6.	80	20	17.7	2.6
7.	100	0	22.1	0

## 3. DESIGN :

(i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 4. (iv) (a) 43'x28'. (b) 40'x25'. (v) Plot border 1.5' and field border 3' around. Block partition 3' serves as irrigation channel also.

## 4. GENERAL :

(i) Good. (ii) Nil. (iii) Grain and straw yield. (iv) (a) 1952 to 1954. (b) and (c) No. (v) (a) Bahraich, and Raya (Mathura). (vi) Nil. (vii) Experiment conducted by C.P. (R).

## 5. RESULTS :

(i) 977 lb./ac.  
(ii) 234.9 lb./ac.  
(iii) Treatment differences are highly significant.  
(iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	563
2.	602
3.	989
4.	809
5.	1001
6.	1318
7.	1554
S.E./mean	= 117.5 lb./ac.

Crop :- Barley and Pea (*Rabi*).

Ref :- U.P. 52(87).

Site :- Govt. Agri. Farm, Etawah.

Type :- 'X'.

Object :- To study the effect of different seed rate proportions of Barley and Pea grown mixed, on yield and residual effect on the succeeding *kharif* crop.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) N.A. (ii) (a) Heavy loam. (b) N.A. (iii) 5.11.1952. (iv) (a) 3 ploughings with Watt's plough, 1 ploughing with *desi* plough and 2 ploughings with cultivator. (b) N.A. (c) As per treatments. (d) and (e) N.A. (v) Nil. (vi) Barley NP.21 and pea T.163 (early). (vii) Irrigated. (viii) and (ix) N.A. (x) 15.4.1953.

## 2. TREATMENTS :

	Seed rate proportion		Seed required in chk./gross plot.	
	Barley	Pea	Barley	Pea
1.	0	100	0.0	20.0
2.	20	80	5.0	16.0
3.	40	60	10.0	12.0
4.	50	50	12.5	10.0
5.	60	40	15.0	8.0
6.	80	20	20.0	4.0
7.	100	0	25.0	0.0

## 3. DESIGN :

(i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 4. (iv) (a) 42'×33'. (b) 39'×30'. (v) Field border=3' around and plot border=1½' around. (vi) Yes.

## 4. GENERAL :

(i) Normal. (ii) 2% barley attacked by smut. (iii) Grain and straw yield. (iv) (a) 1952—continued. (b) and (c) No. (v) (a) Lucknow, Faizabad, Kanpur, Hardoi, Aligarh and Banda. (b) N.A. (vi) Nil. (viii) Experiment conducted by C.P. (R).

## 5. RESULTS :

(i) 1494 lb./ac.

(ii) 287.8 lb./ac.

(iii) Treatment differences are not significant.

(iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	1373
2.	1507
3.	1551
4.	1484
5.	1508
6.	1541
7.	1497

S.E./mean = 143.9 lb./ac.

Crop :- Barley and Pea (*Rabi*).

Ref :- U.P. 53(106).

Site :- Govt. Agri. Farm, Etawah.

Type :- 'X'.

Object :- To study the effects of different seed rate proportions of Barley and Pea grown mixed on yield and residual effect on the succeeding *kharif* crop.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) N.A. (c) Nil. (ii) (a) Light loam. (b) N.A. (iii) 30.10.1953. (iv) (a) 9 ploughings and harrowings by Watt's plough, cultivator and *desi* plough. (b) Sown behind the plough, barley in east-west direction and then pea in north-south direction (c) As per treatments. (d) and (e) N.A. (v) (1) 45 mds. of well decayed F.Y.M. or compost be supplied all over the field 2—3 weeks before sowing and (2) 1.25 md. of Super to be placed at a depth of 3"—4" in furrows behind the plough all over the field a couple of days before sowing on 28.10.1953. (vi) Barley C. 251. and pea T. 163. (vii) Irrigated. (viii) Nil. (ix) N.A. (x) 28.4.1954.

## 2. TREATMENTS :

	Seed rate proportion		Seed rate in chk./plot	
	Barley	Pea	Barley	Pea
1.	0	100	0	20.0
2.	20	80	5.0	16.0
3.	40	60	10.0	12.0
4.	50	50	12.5	10.0
5.	60	40	15.0	8.0
6.	80	20	25.0	4.0
7.	100	0	25.0	0

## 3. DESIGN :

(i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 4. (iv) (a) 42'×33'. (b) 39'×30'. (v) Plot border 1.5' and field border 3' around ; block partition 3' to serve as irrigation channel. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Slight attack of cut worm in pea. (iii) Grain and straw yield. (iv) (a) 1952--continued. (b) and (c) No. (v) (a) Varanasi, Faizabad, Kanpur, Banda, Aligarh and Hardoi. (b) N.A. (vi) Nil. (vii) Experiment conducted by C.P.(R).

## 5. RESULTS :

(i) 1636 lb./ac.  
 (ii) 218.9 lb./ac.  
 (iii) Treatment differences are highly significant.  
 (iv) Av. yield of grain in ton/ac.

Treatment	Av. yield
1.	1245
2.	1538
3.	1785
4.	1589
5.	1608
6.	1747
7.	1941
S.E./mean	=109.5 lb./ac.

Crop :-Wheat and Gram (*Rabi*).

Ref :-U.P. 51(69).

Site :-Govt. Agri. Farm, Etawah.

Type :-'X'.

Object :-To study the effect of different seed rate proportions of Wheat and Gram grown mixed on yield and residual effect on the succeeding *kharij* crop.

## 1. BASAL CONDITIONS:

(i) (a) Nil. (b) Fallow. (c) No. (ii) (a) Loam. (b) N.A. (iii) N.A. (iv) (a) Ploughings by *desi* plough and seed covered by planking. (b) Broadcast after mixing both seeds in the given proportions. (c) Wheat seed rate 40—50 seers/ac. and gram seed rate 30 seers/ac. (d) and (e) N.A. (v) Green manure at 40 lb./ac. of N. (vi) Wheat—Pb. 591 (medium late) and gram—local (late). (vii) and (viii) N.A. (ix) 1.10°. (x) N.A.

## 2. TREATMENTS:

Seed rates proportion			Seed required in chk./gross plot		
	Wheat	Gram	Wheat	Gram	
1.	0	100	0	11.5	
2.	20	80	3.8	9.2	
3.	40	60	7.6	6.9	
4.	50	50	9.5	5.8	
5.	60	40	11.4	4.6	
6.	80	20	15.2	2.3	
7.	100	0	19.0	0.0	

## 3. DESIGN :

(i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 4. (iv) (a) 24'×43'. (b) 21'×40'. (v) Plot border=1½' around field border=3' around and sown space left between blocks=6'—also to be used as irrigation channel. (vi) Yes.

## 4. GENERAL :

(i) Not good. (ii) Nil. (iii) Grain yield. (iv) (a) 1951 to 1954 (b) and (c) No. (v) (a) Pratapgarh, Kanpur and Bahraich. (b) N.A. (vi) Nil. (vii) Experiment was conducted by C.P.

## 5. RESULTS :

(i) 1061 lb./ac.  
 (ii) 178.3 lb./ac.  
 (iii) Treatment differences are highly significant.

(iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	703
2.	833
3.	1134
4.	993
5.	1257
6.	1194
7.	1314
S.E./mean	=89.1 lb./ac.

Crop :-Wheat and Gram (*Rabi*).

Ref :-U.P. 52(84).

Site :-Govt. Agri. Farm, Etawah.

Type :-'X'.

Object :-To study the effect of different seed rate proportions of Wheat and Gram grown mixed on yield and residual effect on the succeeding *kharif* crop.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Sanai*. (c) No. (ii) (a) Loam inclined to heavy loam. (b) N.A. (iii) 3.11.1952. (iv) (a) Turning of *sanai* with victory plough on 16.8.1952, 2 ploughings with Watt's plough on 6.9.1952, 2 ploughings with cultivator on 20.9.1952. 2 ploughings with *desi* plough on 1.11.1952. (b) N.A. (c) Wheat 50 srs./ac. and Gram 30 srs./ac. (d) and (e) N.A. (v) 1.3 cart loads (45 md.) of well decayed F.Y.M. applied 2-3 weeks before sowing all over the field. 1½ md. of Super placed at a depth of 3"-4" in furrows behind the plough over the field 2 days before sowing. (vi) Wheat—Pb. 591 and gram—T. 87. (vii) Irrigated. (viii) N.A. (ix) N.A. (x) 13.4.1953.

## 2. TREATMENTS :

	Seed rate proportion		Seed required in chk./plot	
	Wheat	Gram	Wheat	Gram
1.	0	100	0	13.2
2.	20	80	4.4	10.6
3.	40	60	8.8	7.9
4.	50	50	11.0	6.6
5.	60	40	13.2	5.3
6.	80	20	17.7	2.6
7.	100	0	22.1	0

## 3. DESIGN :

(i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 4. (iv) (a) 43'×28'. (b) 40'×25'. (v) Field border=3' around. Plot border=1½'. (vi) Yes.

## 4. GENERAL :

(i) Normal. (ii) Nil. (iii) Grain and straw yield. (iv) (a) 1951-1952. (b) and (c) No. (v) (a) Lucknow, Varanasi, Kanpur, Bahraich, Pratapgarh, Aligarh, Banda and Jhansi. (b) N.A. (vi) Nil. (vii) The expt. was conducted by C.P.

## 5. RESULTS :

- (i) 1092 lb./ac.  
 (ii) 160.5 lb./ac.  
 (iii) Treatment differences are highly significant.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	713
2.	1040
3.	1053
4.	1096
5.	1204
6.	1269
7.	1267
S.E./mean	=80.3 lb./ac.

Crop :- Wheat and Gram (*Rabi*).

Ref :- U.P. 53(111).

Site :- Govt. Agri. Farm, Etawah.

Type :- 'X'.

Object :- To study the effect of different seed-rate proportions of Wheat and Gram, grown mixed on yield and residual effect on the succeeding *kharif* crop.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) N.A. (c) Nil. (ii) (a) Loam. (b) N.A. (iii) 2.11.1953. (iv) (a) 7 ploughings and harrowings by Watt's plough cultivator and *desi* plough. (b) Wheat sown first (east—west in lines) and gram across (north—south) wheat lines behind the plough. (c) As per treatments. (d) and (e) N.A. (v) 45 md. of well decayed F.Y.M. or compost to be applied 2-3 weeks before sowing all over the field. 1.25 md. of Super to be placed at depth of 3"-4" in furrows behind the plough all over the field a couple of days before sowing (vi) Wheat Pb. 591 (late). Gram T. 87. (vii) Irrigated. (viii) Nil. (ix) N.A. (x) 22.4.1954.

## 2. TREATMENTS :

	Seed rate proportion		Seed rate in chk./plot	
	Wheat	Gram	Wheat	Gram
1.	0	100	0	13.2
2.	20	80	4.4	10.6
3.	40	60	8.8	7.9
4.	50	50	11.0	6.6
5.	60	40	13.2	5.3
6.	80	30	17.7	2.6
7.	100	0	22.1	0

## 3. DESIGN :

(i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 4. (iv) (a) 43'×28'. (b) 40'×25'. (v) Plot border 1.5' and field border 3' around, irrigation channel between blocks 3'. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Nil. (iii) Grain and straw yield of both crops separately. (iv) (a) 1951-1954. (b) and (c) No. (v) (a) Varanasi, Pratapgarh, Kanpur, Banda, Bahraich, Jhansi and Aligarh. (vi) Nil. (vii) The expt. was conducted by C.P.(R).

## 5. RESULTS :

- (i) 1439 lb./ac.  
(ii) 252.8 lb./ac.  
(iii) Treatment differences are highly significant.  
(iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	672
2.	1253
3.	1568
4.	1437
5.	1575
6.	1782
7.	1785
S.E./mean	=126.4 lb./ac.

Crop :- Barley and Pea.

Ref :- U.P. 53(64).

Site :- Govt. Agri. Farm, Faizabad.

Type :- 'X'.

Object :- To study the effect of different seed-rate proportions of Barley and Pea grown mixed, on yield and residual effect on succeeding *Kharif* crop.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Moong*. (c) Nil. (ii) (a) Sandy loam. (b) N.A. (iii) 16.11.1953. (iv) (a) Ploughing with *praja* and *desi* plough on 17.10.1953 and 13.11.1953. (b) Barley to be sown first east-west in lines behind the plough and subsequently pea to be sown north-south. (c) Barley at 60 srs./ac. and pea at 40srs./ac. (d) and (e) N.A. (v) (1) Compost at 45 md./a c. applied all over the field on 26.10.1953 and (2) Super to be placed 3"-4" deep in soil behind the plough furrows at 1.5 md./ac. (applied on 9.11.1953). (vi) Barley K-3 and pea T-163. (vii) Irrigated. (viii) Weeding and hoeing are common in practice at the proper time. (ix) N.A. (x) 24.3.1954.

## 2. TREATMENTS :

Seed rate proportion			Seed rate in lb./plot.		
	Barley	Pea	Barley	Pea	
1.	0	100	0		2.66
2.	20	80	0.80		2.13
3.	40	60	1.60		1.59
4.	50	50	1.99		1.32
5.	60	40	2.40		1.06
6.	80	20	3.20		0.53
7.	100	0	4.00		0

## 3. DESIGN :

(i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 4. (iv) (a) 47'×30'. (b) 44'×27'. (v) Plot border 1.5' and field border 3' around and block partition 3' to serve as irrigation channel. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) About 10% smut attack on barley crop. (iii) Yield of mixed grain. (iv) (a) 1952-1956. (b) and (c) No. (v) (a) Varanasi, Kanpur, Banda. Aligarh, Etawah and Hardoi. (vi) Nil. (vii) Experiment conducted by C.P.(R)

## 5. RESULTS :

- (i) 627.4 lb./ac.  
(ii) 86.39 lb./ac.  
(iii) Treatment differences are highly significant.  
(iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	95.5
2.	609.4
3.	713.1
4.	728.4
5.	648.3
6.	772.0
7.	825.1
S.E./mean	=43.20 lb./ac.

Crop :- Barley and Pea.

Ref :- U.P. 52(74).

Site :- Govt. Agri. Farm, Faizabad.

Type :- 'X'.

Object :- To study the effect of different seed-rate proportions of Barley and Pea grown mixed, on yield and residual effect on the succeeding *Kharif* crop.

## 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Loam. (b) N.A. (iii) 26.10.1952. (iv) (a) 5 ploughings by *praja* and *desi* ploughs. (b) N.A. (c) As per treatments. (d) and (e) N.A. (v) Compost applied all over the field on 23.10.1952, Super 1½ md. placed at a depth of 3"-4" in furrow behind the plough, all over the field on 26.10.1952. (vi) Pea T-163 and barley T-21. (vii) Irrigated. (viii) N.A. (ix) N.A. (x) 6 to 8.4.1953.

## 2. TREATMENTS :

Seed rate proportion			Seeds used in chk./gross plot		
	Barley	Pea	Barley	Pea	
1.	0	100	0.0		20.7
2.	20	80	6.2		16.6
3.	40	60	12.4		12.4
4.	50	50	15.5		10.3
5.	60	40	18.7		8.3
6.	80	20	24.9		4.1
7.	100	0	31.4		0.0

## 3. DESIGN :

(i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 4. (iv) (a) 47'×30'. (b) 44'×27'. (v) Field border=3' around and plot border=1½'. (vi) Yes.

## 4. GENERAL:

(i) Normal. (ii) Attack of smut on ears in barley and pest in pea. (iii) Grain and straw yield. (iv) (a) 1952—1956. (b) and (c) No. (v) (a) Lucknow, Etawah, Kanpur, Hardoi, Aligarh and Banda. (b) N.A. (vi) Nil. (vii) Experiment conducted by C.P. (R).

## 5. RESULTS :

- (i) 1486 lb./ac.  
 (ii) 121.0 lb./ac.  
 (iii) Treatment differences are highly significant.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	787
2.	1357
3.	1492
4.	1603
5.	1485
6.	1931
7.	1749
S.E./mean	=60.48 lb./ac.

Crop :- Wheat and Barley.

Ref :-U.P. 52(92).

Site :- Regional Res. Stn., Hardoi.

Type :- 'X'.

Object :-To study the effect of different seed rate proportions of Wheat and Barley grown mixed, on yield and residual effect on the succeeding *kharif* crop.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fallow. (c) N.A. (ii) (a) Loam. (b) N.A. (iii) 8.11.1952. (iv) (a) 12 ploughings (b) N.A. (c) As per treatments. (d) and (e) N.A. (v) F.Y.M. applied to entire field on 12.10.1952 and Super applied on 28.10.1952. (1) 3 C.L. (45 md.) of well decayed F.Y.M. (2) 1½ md. of Super placed at 3"—4" depth in furrows behind the plough all over the field. (vi) Barley C.251 (medium) and wheat C.13 (medium). (vii) Irrigated. (viii) and (ix) N.A. (x) 28 and 31.3.1953.

## 2. TREATMENTS :

	Seed rate proportion		Seed required in chk./plot.	
	Wheat	Barley	Wheat	Barley
1.	0	100	0.0	26.3
2.	20	80	4.3	21.0
3.	40	60	8.7	15.7
4.	50	50	10.9	13.1
5.	60	40	13.1	10.5
6.	80	20	17.5	5.2
7.	100	0	21.9	0.0

## 3. DESIGN :

(i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 4. (iv) 35'×34'. (b) 32'×31'. (v) Field border=3' around and plot border=1½' around. (vi) Yes.

## 4. GENERAL :

(i) Damage to barley upto 20%. (ii) Attack of orange rust in barley upto 80%, leaves especially attacked. (iii) Grain and straw yield. (iv) (a) 1952—1953. (b) and (c) No. (v) (a) Bahraich and Pratapgarh. (b) N.A. (vi) Nil. (vii) Experiment conducted by C.P. (R).

## 5. RESULTS :

- (i) 2311 lb./ac.  
 (ii) 197.2 lb./ac.  
 (iii) Treatment differences are highly significant.



(iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	2334
2.	2346
3.	2521
4.	2411
5.	2332
6.	2428
7.	1807
S.E./mean	= 98.6 lb./ac.

Crop :- Wheat and Barley (*Rabi*).

Ref :- U.P. 53(59).

Site :- Regional Res. Stn., Hardoi.

Type :- 'X'.

Object :- To study the effect of different seed rate proportions of Wheat and Barley grown mixed on yield and residual effect on succeeding *kharif* crop.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Moong* T.1. (c) Nil. (ii) (a) Loam. (b) N.A. (iii) 12.11.1953. (iv) (a) Ploughing on 21 and 30.10.1953 and 1, 2, 8 and 12.11.1953. (b) Wheat to be sown 1st in lines east-west behind *des* plough and similarly barley across wheat lines. (c) Wheat 50 srs./ac. and barley 60 srs./ac. (d) and (e) N.A. (v) (1) Compost on F.Y.M. at 45 md./ac. (2) Super to be placed 3"—4" deep in soil in furrows behind the plough. at 1.5 md./ac. on 5.11.1953. (vi) Wheat C.13 (early) and barley K.12. (vii) Irrigated. (viii) Weeding and hoeing at the proper time are common in practice. (ix) Not recorded. (x) 26.3.1954.

## 2. TREATMENTS :

	Seedrate proportion		Seed used in lb./plot.	
	Wheat	Barley	Wheat	Barley
1.	0	100	0	3.38
2.	20	80	0.55	2.70
3.	40	60	1.12	2.02
4.	50	50	1.40	1.68
5.	60	40	1.68	1.35
6.	80	20	2.25	0.67
7.	100	0	2.82	0

## 3. DESIGN :

(i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 4. (iv) (a) 35'×34'. (b) 32'×31'. (v) Plot border 1.5' and field border 3' around and block partition 4' to serve as irrigation channel. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Attack of yellow rust in barley. (iii) Grain and straw yield of each crop. (iv) (a) 1952—1953. (b) and (c) No. (v) (a) Bahraich. (b) N.A. (vi) Nil. (vii) Experiment conducted by C.P. (R).

## 5. RESULTS :

(i) 1452 lb./ac.  
(ii) 283.3 lb./ac.  
(iii) Treatment differences are highly significant.  
(iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	1818
2.	1411
3.	1547
4.	1603
5.	1735
6.	1479
7.	570
S.E./mean	= 141.6 lb./ac.

Crop :-Barley and Pea.

Ref :-U.P. 52(93).

Site :-Regional Res. Stn., Hardoi.

Type :-'X'.

Object :-To study the effect of different seed rate proportions of Barley and Pea, grown mixed, on yield and its residual effect on the succeeding *kharif* crop.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) Fallow. (c) Nil. (ii) (a) Loam. (b) N.A. (iii) 8.11.1952. (iv) (a) 11 ploughings (b) N.A. (c) As per treatments. (d) and (e) N.A. (v) (i) 45 md of well decayed F.Y.M. applied all over the field on 12.10.1952. (2) 1½ md. of Super placed at a depth of 3"-4" in furrows behind the plough on 28.10.1953 all over the field. (vi) Barley C251 (medium) pea improved (local). (vii) Irrigated. (viii) N.A. (ix) N.A. (x) 28.3.1953.

## 2. TREATMENTS :

	Seed proportion		Seed required in chk./gross plot	
	Barley	Pea	Barley	Pea
1.	0	100	0.0	19.0
2.	20	80	4.7	15.2
3.	40	60	9.5	11.4
4.	50	50	11.9	9.5
5.	60	40	14.2	7.6
6.	80	20	19.0	3.9
7.	100	0	23.8	0.0

## 3. DESIGN :

(i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 4. (iv) (a) 36'×36'. (b) 33'×33'. (v) Field border=3' around. Plot border=1½'. (vi) Yes.

## 4. GENERAL :

(i) Damage to barley 20%. (ii) There was an attack of orange rust on barley crop upto 80%. The leaves were especially attacked. (iii) Grain and straw yield. (iv) (a) 1952-1954. (b) and (c) No. (v) (a) Lucknow, Faizabad, Etawah, Kanpur, Aligarh and Banda. (vi) Nil. (vii) The experiment was conducted by C.P. (R).

## 5. RESULTS :

- (i) 2123 lb./ac.  
 (ii) 165.3 lb./ac.  
 (iii) Treatment differences are highly significant.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	1716
2.	2217
3.	2186
4.	2142
5.	2327
6.	2193
7.	2080
S.E./mean	= 82.64 lb./ac.

Crop :-Barley and Pea.

Ref :-U.P. 53(58).

Site :-Regional Res. Stn., Hardoi.

Type :-'X'.

Object :-To study the effect of different seed rate proportions of Barley and Pea, grown mixed, on yield and its residual effect on the succeeding *kharif* crop.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Moong*. (c) Nil. (ii) (a) Loam. (b) N.A. (iii) 11.11.1953. (iv) (a) Ploughing on 21, 30.10.1953, 1, 2, 8, 11.11.1953. (b) Barley sown 1st in lines in east-west direction and similarly pea to be sown across barley line. (c) Barley at 50 seer/ac. and pea at 40 seer/ac. (v) (1) Compost or F.Y.M. at 45 md./ac. (2) Super to be placed 3"-4" deep in soil in furrows behind the plough at 1.5 md./ac. on 4.11.1953. (vi) Barley K.12 and pea T.163. (vii) Irrigated. (viii) Weeding and hoeing. (ix) N.A. (x) 25, 26.3.1954.

## 2. TREATMENTS :

Seed rate proportion			Seed rate in lb./plot		
	Barley	Pea	Barley	Pea	
1.	0	100	0.0	2.47	
2.	20	80	0.61	1.95	
3.	40	60	1.22	1.46	
4.	50	50	1.53	1.22	
5.	60	40	1.83	0.98	
6.	80	20	2.44	0.50	
7.	100	0	3.06	0.0	

## 3. DESIGN :

(i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 4. (iv) 36'×36'. (b) 33'×33'. (v) Plot border 1.5' and field border 3' around. Block partition 3' serves as irrigation channel. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Yellow rust and smut in barley crop and powdery mildew in traces in pea. Damage 8—10 % in barley and 3—4% in pea. (iii) Grain and straw yield. (iv) (a) 1952-1954. (b) and (c) No. (v) (a) Varanasi, Faizabad, Kanpur, Banda, Aligarh and Etawah. (vi) Nil. (vii) The experiment was conducted by C.P. (R).

## 5. RESULTS :

- (i) 1910 lb./ac.  
(ii) 267.9 lb./ac.  
(iii) Treatment differences are highly significant.  
(iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	1337
2.	1749
3.	1831
4.	2067
5.	2175
6.	2242
7.	1970
S.E./mean	= 133.9 lb./ac.

Crop :-Wheat and Gram (*Rabi*).

Site :-Govt. Agri. Farm, Kalai.

Ref :-U.P. 52(89).

Type :-'X'.

Object :-To study the effect of different seed rate proportions of Wheat and Gram, grown mixed, on yield and its residual effect on succeeding *kharif* crop.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Guar* fodder. (c) Nil. (ii) (a) Loam. (b) N.A. (iii) 6.11.1952. (iv) (a) Ploughing with *gurjar* plough on 26.10.1952 ploughing with *desi* plough on 27.10.1952. Harrowing twice and ploughing with *desi* plough 3, 4.11.1952. (b) N.A. (c) As per treatments. (d) N.A. (e) N.A. (v) (1) 3 C.L. (45 md.) of well decayed F.Y.M. applied 2 weeks before sowing all over the field. (2) 1½ md. of Super placed at a depth of 3"-4" in furrows behind the plough all over the field 2 days before sowing. (vi) Wheat—Pb. 591 Gram—T.87. (vii) Irrigated. (viii) N.A. (ix) N.A. (x) 7.4.1953.

## 2. TREATMENTS :

Seed rate proportion			Seed used in chh./gross plot		
	Wheat	Gram	Wheat	Gram	
1.	0	100	0.0	15.2	
2.	20	80	5.0	12.2	
3.	40	60	10.1	9.1	
4.	50	50	12.7	7.6	
5.	60	40	15.2	6.1	
6.	80	20	20.3	3.0	
7.	100	0	25.4	0.0	

## 3. DESIGN :

(i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 4. (iv) (a) 42'×33'. (b) 39'×30'. (v) Field border 3' around. Plot border 1½'. (vi) Yes.

## 4. GENERAL :

(i) Poor. (ii) Nil. (iii) Grain and straw yield. (iv) (a) 1952—1954. (b) No. (c) N.A. (v) (a) Varanasi, Kanpur, Baharaich, Partapgarh, Banda, Etawah, Jhansi and Lucknow. (b) N.A. (vi) Nil. (vii) The experiment was conducted by C.P.(R).

## 5. RESULTS :

- (i) 541.1 lb./ac.  
 (ii) 95.19 lb./ac.  
 (iii) Treatment differences are highly significant.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	258.5
2.	679.7
3.	570.8
4.	600.7
5.	584.0
6.	610.3
7.	483.5
S.E./mean	=47.60 lb./ac.

Crop :-Wheat and Gram (*Rabi*).

Site :-Govt. Agri. Farm, Kalai.

Ref :-U.P. 53(100).

Type :-'X'.

Object :—To study the effect of different seed rate proportions of Wheat and Gram grown mixed, on yield and its residual effect on the succeeding *kharif* crop.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) (a) Loam. (b) N.A. (iii) 21.10.1953. (iv) (a) *Palewa* on 17.9.1953, 6 ploughings and harrowings. (b) Main crop wheat is sown first in lines east-west behind the plough and subsequently gram is sown across wheat lines *i.e.* north-south. (c) As per treatments. (d) N.A. (e) N.A. (v) (1) 45 md./ac. of compost to be applied 2—3 weeks before sowing all over the field (2) 1.25 md./ac. of Super to be placed 3"-4" deep in furrows behind the plough all over the field a couple of days before sowing (vi) Wheat—Pb. 591 ; Gram—T.87. (vii) Irrigated. (viii) Nil. (ix) N.A. (x) 9.4.1954.

## 2. TREATMENTS :

Seed rate proportion			Seed used in terms of chk./plot		
Wheat	:	Gram	Wheat	:	Gram
1. 0	:	100	0	:	15.2
2. 20	:	80	5.0	:	12.2
3. 40	:	60	10.1	:	9.1
4. 50	:	50	12.7	:	7.6
5. 60	:	40	15.2	:	6.1
6. 80	:	20	20.3	:	3.0
7. 100	:	0	25.4	:	0

## 3. DESIGN :

(i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 4. (iv) (a) 42'×33'. (b) 39'×30'. (v) 1½' ring round the net plot. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Nil. (iii) Grain and straw yield. (iv) (a) 1952—1955. (b) No. (c) N.A. (v) (a) Etawah, Kalyanpur, (Kanpur) Atarra, (Banda) Baharaich and Varanasi. (b) N.A. (vi) Nil. (vii) The experiment was conducted by C.P.(R).

## 5. RESULTS :

- (i) 576.6 lb./ac.  
 (ii) 79.70 lb./ac.  
 (iii) Treatment differences are highly significant.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	275
2.	697
3.	609
4.	585
5.	651
6.	603
7.	616
S.E./mean	=39.85 lb./ac.

Crop :-Barley and Pea (*Rabi*).

Ref :-U.P. 52(91).

Site :-Govt. Agri. Farm, Kalai.

Type :-'X'.

Object :-To study the effect of different seed rate proportions of Barley and Pea, grown mixed, on yield and its residual effect on the succeeding *kharif* crop.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Jowar* for fodder. (c) Nil. (ii) (a) Loam. (b) N.A. (iii) 7.11.1952. (iv) (a) Ploughing with *gorja* plough, ploughing with *desi* plough and harrowing with spring tin harrows (b) N.A. (c) As per treatments. (d) and (e) N.A. (v) Date of manuring 4.11.1952. (1) 3 C.L. (45 md.) of well decayed F.Y.M. applied all over the field 2-3 weeks before sowing and (2) 1½ md. of Super placed at a depth 3"-4" in furrows behind the plough all over the field. (vi) Barley—K 12. and Pea—NP. 163. (vii) Irrigated, (viii) and (ix) N.A. (x) 14.3.1953.

## TREATMENTS :

	Seed rate proportion		Seed used in chk./gross plot	
	Barley	Pea	Barley	Pea
1.	0	100	0.0	20.3
2.	20	80	5.0	16.3
3.	40	60	10.1	12.2
4.	50	50	12.7	10.1
5.	60	40	15.2	8.1
6.	80	20	20.3	4.0
7.	100	0	25.4	0.0

## 3. DESIGN :

(i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 4. (iv) (a) 42'×33'. (b) 39'×30'. (v) 1½' ring round the net plot. (vi) Yes.

## 4. GENERAL :

(i) Normal. (ii) Nil. (iii) Grain and straw yield. (iv) (a) 1952-1954. (b) No. (c) N.A. (v) (a) Lucknow, Faizabad, Etawah, Kanpur, Hardoi and Banda. (b) N.A. (vi) Nil. (vii) The experiment was conducted by C.P. (R).

## 5. RESULTS :

- (i) 916 lb./ac.  
 (ii) 200.8 lb./ac.  
 (iii) Treatment differences are highly significant.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	560
2.	1132
3.	1000
4.	1061
5.	888
6.	884
7.	890
S.E./mean	=100.4 lb./ac.

Crop :- Barley and Pea (*Rabi*).  
Site :- Govt. Agri. Farm, Kalai.

Ref :- U.P. 53(99).  
Type :- 'X'.

Object :- To study the effect of different seed rate proportions of Barley and Pea grown mixed on yield and its residual affect on succeeding *kharif* crop.

1. BASAL CONDITIONS:

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) (a) Loam. (b) N.A. (iii) 21.10.1953. (iv) (a) Ploughing and harrowing on 18, 23.9.1953, 16 and 20.10.1953. (b) Barley to be sown first in lines and in east-west behind the plough and subsequently pea to be sown in north-south lines. (c) Barley 50 seers/ac, and pea 40 seers/ac. (d) and (e) N.A. (v) (1) 45 md. of well decayed compost supplied all over the field on 15.10.1953 and (2) 1.25 md. of Super to be placed at a depth of 3"-4" in furrows behind the plough on 19.10.1953. (vi) Barley—K. 2 and pea—163. (vii) Irrigated. (viii) Nil. (ix) Not recorded. (x) 24.3.1954.

2. TREATMENTS :

Seed rate proportion		Seed used in chk./plot	
Barley	Pea	Barley	Pea
1. 0	: 100	0	: 20.3
2. 20	: 80	5.0	: 16.3
3. 40	: 60	10.1	: 12.2
5. 50	: 50	12.7	: 10.1
5. 60	: 40	15.2	: 8.1
6. 80	: 20	20.3	: 4.0
7. 100	: 0	25.4	: 0

3. DESIGN :

(i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 4. (iv) (a) 42'×23'. (b) 39'×30'. (v) 1½' ring round the net plot. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Grain and straw yield. (iv) (a) 1952—1954. (b) No. (c) N.A. (v) (a) Banaras, Faizabad, Etawah, Kalyanpur, Atarra and Lucknow. (b) N.A. (vi) Nil. (vii) The experiment was conducted by C.P.(R).

5. RESULTS :

- (i) 1235 lb./ac.  
(ii) 305.0 lb./ac.  
(iii) Treatment differences are not significant.  
(iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	1474
2.	1321
3.	895
4.	1484
5.	1431
6.	1168
7.	871
S.E./mean	=152.5 lb./ac.

Crop :- Barley and Pea (*Rabi*).  
Site :- Govt. Agri. Farm, Kalai.

Ref :- U.P. 53(104).  
Type :- 'X'.

Object :- To study the physiological response of mixed crops to fertilizers.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) (a) Loam. (b) N.A. (iii) 28.10.1953. (iv) (a) Ploughing and harrowing (b) Sown behind the plough and pea lines in between barley lines. (c) Barley at 30 srs./ac. and pea at 8 srs./ac. (d) and (e) N.A. (v) N.A. (vi) N.A. (vii) Irrigated. (viii) Nil. (ix) Not recorded  
24.3.1954

## 2. TREATMENTS :

All combinations of (1), (2), (3) and (4)-

- (1) 2 levels of N as A/S :  $N_0=0$  and  $N_1=40$  lb./ac. of N.
- (2) 2 levels of  $P_2O_5$  as Super :  $P_0=0$  and  $P_1=50$  lb./ac. of  $P_2O_5$ .
- (3) 2 levels of  $K_2O$  as Pot. Sul. :  $K_0=0$  and  $K_1=40$  lb./ac. of  $K_2O$ .
- (4) 2 levels of CaO as Gypsum :  $C_0=0$  and  $C_1=60$  lb./ac. of CaO.

Manuring on 26.10.1953.

## 3. DESIGN :

- (i) 2<sup>4</sup> Fact. in R.B.D. (ii) (a) 16 (2 flanks of 8 plots each). (b) N.A. (iii) 3. (iv) (a) 22'×37'. (b) 19'×34'. (v) 1½' ring round the net plot. (vi) Yes.

## 4. GENERAL :

- (i) Good. (ii) Nil. (iii) Grain and straw yield. (iv) (a) 1953-1954. (b) No. (c) N.A. (v) (a) Bahraich, Hardoi, Raya, Mathura and Lucknow. (b) N.A. (vi) Nil. (vii) The experiment was conducted by C.P. (R).

## 5. RESULTS :

- (i) 3678 lb./ac.
- (ii) 342.7 lb./ac.
- (iii) None of the effects is significant.
- (iv) Av. yield of grain in lb./ac.

	Av. Response	N		P		K		C	
		Absence	Presence	Absence	Presence	Absence	Presence	Absence	Presence
N	40.46	—	—	39.74	41.18	21.67	59.24	-7.95	88.87
P	96.09	95.37	96.81	—	—	140.16	52.02	98.98	93.20
K	-4.33	-23.12	14.45	39.74	-48.40	—	—	96.09	-104.75
C	-0.73	-49.13	47.69	2.16	-3.62	99.70	-101.14	—	—

S.E of average response = 98.9 lb./ac.

S.E of differential response = 139.9 lb./ac.

Crop :- Wheat and Gram.(Rabi)

Ref :- U.P. 49(106).

Site :- Govt. Agri. Res. Farm, Kalyanpur.

Type :- 'X'.

Object :- To study the effect of varying seed rate proportions of Wheat and Gram on the yield.

## 1. BASAL CONDITIONS :

- (i) (a) Nil. (b) *Udid*. (c) Nil. (ii) (a) Loam. (b) N.A. (iii) 14.11.1949. (iv) (a) One ploughing by Watt's plough, one harrowing by tractor and planking, fine ploughing by cultivator and *pata*. (b) Broadcast after mixing the seed in the given proportions, ploughing by *desi* plough and subsequently covered by planking. (c) Wheat at 50 seers./ac. and gram at 30 srs./ac. (d) and (e) N.A. (v) 40 lb./ac. of N, no other information is available (vi) Wheat-C-13 (early) and gram-local. (vii) N.A. (viii) Interculture by palent junior on 15.12.1949. (ix) N.A. (x) 26.4.1950.

## 2. TREATMENTS :

Seed rate proportion			Seed required in chk./plot		
Wheat	:	Gram	Wheat	:	Gram
1. 20	:	80	4	:	9.6
2. 40	:	60	8	:	7.2
3. 50	:	50	10	:	6.0
4. 60	:	40	12	:	4.8
5. 80	:	20	16	:	2.4

## 3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 5. (iv) (a) 32'×34'. (b) 28'×30'. (v) 2' ring round the net plot. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) N.A. (iii) Yield of mixture of grain and *bhusa*. (iv) (a), (b) and (c) No. (v) (a) Lucknow. (b) N.A. (vi) Nil. (vii) The experiment was conducted by C.P.

## RESULTS :

- (i) 1490 lb./ac.  
 (ii) 106.1 lb./ac.  
 (iii) Treatment differences are highly significant.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	1131
2.	1459
3.	1515
4.	1590
5.	1755
S.E./mean	=47.45 lb./ac.

Crop :-Wheat and Gram.

Ref :-U.P. 51(55).

Site :-Govt. Agri. Res. Farm, Kalyanpur.

Type :-'X'.

Object :-To study the effect of different seed rate proportions of Wheat and Gram, grown mixed, on yield and its residual effect on the succeeding *kharif* crop.

## 1. BASAL CONDITIONS :

- (i) (a) Nil. (b) *kakun*. (c) N.A. (ii) (a) Loam. (b) N.A. (iii) 28.10.1951. (iv) (d) 8—10 ploughings  
 (b) Wheat to be sown first in lines east-west behind the plough, Subsequently gram to be sown similarly north-south across the wheat lines. (c) 40—50 seer/ac. for wheat 30 seer/ac. for gram. (d) and (e) N.A.  
 (v) (1) 3 C.L. (45 md.) of well decayed F.Y.M. or compost to be placed 2—3 weeks before sowing.  
 (2) 1½ md. of Super to be placed at a depth of 3"—4" in furrows behind the plough all over the field, a couple of days before sowing. (vi) Wheat—C. 13 (early) gram—local (late). (vii) Irrigated. (viii) N.A.  
 (ix) 1.07". (x) N.A.

## 2. TREATMENTS :

	Seed rate proportion		Seed in chk./gross plot	
	Wheat	Gram	Wheat	Gram
1.	0	100	0.0	10.0
2.	20	80	3.2	8.0
3.	40	60	6.4	6.0
4.	50	50	8.0	5.0
5.	60	40	9.6	4.0
6.	80	20	12.8	2.0
7.	100	0	16.0	0.0

## 3. DESIGN :

(i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 4. (iv) (a) 25'×35'. (b) 22'×32'. (v) 1½' ring round the net plot. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Nil. (iii) Grain yield. (iv) (a) 1951-1953. (b) No. (c) N.A. (v) (a) Pratapgarh, Etawah and Bahraich. (b) N.A. (vi) Nil. (vii) The experiment was conducted by C.P. (R).

## 5. RESULTS :

- (i) 1424 lb./ac.  
 (ii) 222.9 lb./ac.  
 (iii) Treatment differences are highly significant.



(iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	1576
2.	1628
3.	1374
4.	1691
5.	1551
6.	1112
7.	1030
S.E./mean	= 111.4 lb./ac.

Crop :-Wheat and Gram (*Rabi*).

Ref :-U.P. 52(75).

Site :-Govt. Agri. Res. Farm, Kalyanpur.

Type :-'X'.

Object :-To study the effect of different seed rate proportions of Wheat and Gram, grown mixed, on yield and its residual effect on the succeeding *kharif* crop.

## 1. BASAL CONDITIONS :

(i) (a) *Moong* T<sub>1</sub>—wheat and gram mixture. (b) *Moong* T<sub>1</sub>. (c) N.A. (ii) (a) Loam. (b) N.A.. (iii) 28.10.1952. (iv) (a) Ploughing with Watt's plough on 21.9.1952. Spiral harrow and *pata* on 22.9.1952. Ploughing with cultivator and *pata* on 6, 16.10.1952. *Palewa* on 8, 9.10.1952. *Pata* on 15.10.1952. Ploughing with *desi* plough and *pata* on 24, 25 and 27.10.1952. (b) N.A. (c) As per treatments. (d) and (e) N.A. (v) (1) Castor cake applied all over the field on 20.10.1952. (2) 1½ md. of Super applied in furrows at a depth of 3"–4" behind the plough all over the field on 25.10.1952. (vi) Wheat—C. 13. Gram—T 87. (vii) Irrigated. (viii) N.A. (ix) N.A. (ix) 18.4.1953.

## 2. TREATMENTS :

	Seed rate proportion		Seed in chk./gross plot	
	Wheat	Gram	Wheat	Gram
1.	0	100	0.0	8.0
2.	20	80	2.5	6.4
3.	40	60	5.1	4.8
4.	50	50	6.4	4.0
5.	60	40	7.6	3.2
6.	80	20	10.2	1.6
7.	100	0	12.8	0.0

## 3. DESIGN :

(i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 4. (iv) (a) 25'×35'. (b) 22'×32'. (v) 1½' ring round the net plot. (vi) Yes.

## 4. GENERAL :

(i) Normal. (ii) Nil. (iii) Grain and straw yield. (iv) (a) 1951–1953. (b) No. (c) N.A. (v) (a) Lucknow Varanasi, Baharaich, Pratapgarh, Aligarh, Banda, Etawah and Jhansi. (b) N.A. (vi) Nil. (vi) The experiment was conducted by C.P. (R).

## 5. RESULTS :

(i) 1352 lb./ac.  
(ii) 166.6 lb./ac.  
(iii) Treatment differences are highly significant.  
(iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	979
2.	1372
3.	1484
4.	1321
5.	1341
6.	1380
7.	1587
S.E./mean	= 83.3 lb./ac.

Crop :-Wheat and Gram (*Rabi*).

Ref :-U P. 53(161).

Site :-Govt. Agri. Res. Farm, Kalyanpur.

Type :-'X'.

Object :-To study the effect of different seed rate proportions of Wheat and Gram grown mixed, on yield and its residual effect on succeeding *kharif* crop.

## 1. BASAL CONDITIONS :

(i) (a) Legume-cereal. (b) *Lobia* and *Moong* T<sub>1</sub>. (c) Nil. (ii) (a) Loam. (b) N.A. (iii) 17.12.1953. (iv) (a) 8 ploughings and *pata*. (b) Wheat to be sown first in east-west lines behind *desi* plough and subsequently gram across wheat lines. (c) As per treatments. (d) N.A. (e) N.A. (v) *Moong* and *Lobia* turned in. Application of F Y.M. at 45 md./ac. on 14.10.1953 and Super to be placed at a depth of 3"-4" in furrows behind the plough on 25.10.1953. (vi) Wheat C-13 ; Gram T-87. (vii) Irrigated. (viii) Weeding and hoeing are common in practice after irrigation. (ix) N.A. (x) 19.4.1954.

## 2. TREATMENTS :

	Seed rate proportion		Seed used in chk./plot	
	Wheat	Gram	Wheat	Gram
1.	0	100	0	8.0
2.	20	80	2.5	6.4
3.	40	60	5.1	4.8
4.	50	50	6.4	4.0
5.	60	40	7.6	3.2
6.	80	20	10.2	1.6
7.	100	0	12.8	0

## 3. DESIGN :

(i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 4. (iv) (a) 25'×35'. (b) 22'×32' (v) 1½' ring round the net plot. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Nil. (iii) Germination per square yard, grain and straw yield. (iv) (a) 1951--1953. (b) No. (c) N.A. (v) (a) Etawah, Atarra, Banda, Baharaich, Kalai, Aligarh and Varanasi. (b) N.A. (vi) Nil. (vii) The experiment was conducted by C.P.(R).

## 5. RESULTS :

(i) 1043 lb./ac.  
 (ii) 277.6 lb./ac.  
 (iii) Treatment differences are highly significant.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	810
2.	698
3.	911
4.	857
5.	1084
6.	1353
7.	1591
S.E /mean	=138.8 lb./ac.

Crop :- Barley and Pea (*Rabi*).

Ref :- U.P 52(86).

Site :- Govt. Agri. Res. Farm, Kalyanpur.

Type :- 'X'.

Object :-To study the effect of different seed rate proportions of Barley and Pea, grown mixed, on yield and its residual effect on the succeeding *kharif* crop.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Moong* T<sub>1</sub>. (c) N.A. (ii) (a) Loam. (b) N.A. (iii) 4.11.1952. (iv) (a) *Moong* T<sub>1</sub> ploughed in on 23.8.1952. ploughing with Watt's plough and *pata* 19, 20.9.1952, ploughing with cultivator+*pata* on 9,10.10.1952, 3.11.1952 *palewa* on 20.10.1952 ploughing with *desi* plough and *pata* on 30, 31.10.1952, 4.11.1952. (b) N.A. (c) As per treatments. (d) N.A. (e) N.A. (v) (1) Castor cake applied on 25.10.1952 all over field. (2) 1½ md. of Super placed at a depth of 3"-4" in furrows behind the plough all over the field on 1.11.1952 (vi) Barley C-251 (medium) Pea T-163 (early). (vii) Irrigated. (viii) N.A. (ix) N.A. (x) 26.3.1953.

## 2. TREATMENTS:

	Seed rate proportion		Seed used in chk./gross plot	
	Barley	Pea	Barley	Pea
1.	0	100	0.0	9.5
2.	20	80	2.6	7.6
3.	40	60	5.3	5.7
4.	50	50	6.7	4.7
5.	60	40	8.0	3.8
6.	80	20	10.7	1.9
7.	100	0	13.4	0.0

## 3. DESIGN :

(i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 4. (iv) (a) 36' x 29'. (b) 33' x 26'. (v) 1½' ring round the net plot. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Nil. (iii) Grain and straw yield. (iv) (a) 1952—1953. (b) No. (c) N.A. (v) (a) Lucknow Faizabad, Etawah, Hardoi, Aligarh and Banda. (b) N.A. (vi) Nil. (vii) The experiment was conducted by C.P.(R).

## 5. RESULTS :

- (i) 2338 lb./ac.  
(ii) 299.9 lb./ac.  
(iii) Treatment differences are highly significant.  
(iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	1818
2.	2229
3.	2126
4.	2418
5.	2503
6.	2609
7.	2665
S.E./mean	=149.9 lb./ac.

Crop :- Barley and Pea (*Rabi*).

Ref :- U.P. 53(147).

Site :- Govt. Agri. Res. Farm, Kalyanpur.

Type :- 'X'.

Object :- To study the effect of different seed rate proportions of Barley and Pea grown mixed on yield and its residual effect on the succeeding *kharif* crop.

## 1. BASAL CONDITIONS :

(i) (a) Legume—Cereal. (b) *Moong* and *lobia*. (c) Nil. (ii) (a) Loam. (b) N.A. (iii) 31.10.1953. (iv) (a) 7 ploughings and *pata*. (b) Barley to be sown first in lines east-west behind the plough and pea across barley lines north-south. *Moong* and *lobia* turned in. (c) As per treatments. (d) and (e) N.A. (v) (1) 45 md./ac. of well decayed F.Y.M. be supplied all over the field 2—3 weeks before sowing. (2) 1½ md. of Super to be placed at a depth of 3"—4" in furrows behind the plough all over the field a couple of days before sowing. (vi) Barley T.251 (medium) and pea T.163 (early). (vii) Irrigated. (viii) N.A. (ix) N.A. (x) 4.4.1954.

## 2. TREATMENTS :

	Seed rate proportions		Seed used in chk./plot.	
	Barley	Pea	Barley	Pea
1.	0	100	0	9.5
2.	20	80	2.6	7.6
3.	40	60	5.3	5.7
4.	50	50	6.7	4.7
5.	60	40	8.0	3.8
6.	80	20	10.7	1.9
7.	100	0	13.4	0

## 3. DESIGN :

(i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 4. (iv) (a) 36' x 29'. (b) 33' x 26'. (v) 1½' ring round the net plot (vi) Yes.

## 4. GENERAL :

- (i) Nil. (ii) Nil. (iii) Germination per square yard. and grain and straw yield. (iv) (a) 1952—1953. (b) No. (c) N.A. (v) (a) Varanasi, Faizabad, Etawah, Kalai (Aligarh), Atarra (Banda) and Lucknow. (b) N.A. (vi) Nil. (vii) The experiment was conducted by C.P. (R).

## 5. RESULTS :

- (i) 1713 lb./ac.  
 (ii) 158.3 lb./ac.  
 (iii) Treatment differences are not significant.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	1531
2.	1738
3.	1708
4.	1859
5.	1697
6.	1713
7.	1743
S.E./mean	= 79.16 lb./ac.

Crop :- Wheat and Gram (*Rabi*).

Ref :- U.P. 52(191).

Site :- Student's Instructional Farm, Kanpur.

Type :- 'X'.

Object :- To study the effect of mixed cropping of Wheat and Gram on yield under irrigated and unirrigated conditions.

## 1. BASAL CONDITIONS :

- (i) (a) No. (b) and (c) N.A. (ii) (a) Sandy loam. (b) N.A. (iii) 27.10.1952. (iv) (a) N.A. (b) and (c) As per treatments. (d) and (e) N.A. (v) N.A. (vi) Wheat C.13 (early) and Gram T.87 (late). (vii) Partly irrigated. (viii) and (ix) N.A. (x) 25 and 26.3.1953.

## 3. TREATMENTS :

- Sown cross-wise—seed rate wheat at 40 srs./ac.+gram at 40 sr./ac.
- Along same line—seed rate wheat at 40 srs./ac.+gram at 40 sr./ac.
- Sown crosswise—seed rate wheat at 20 srs./ac.+gram at 20 srs./ac.
- Along same line—seed rate wheat at 20 srs./ac.+gram at 20 srs./ac.
- Wheat pure—40 srs./ac.
- Gram pure—40 srs./ac.

## 3. DESIGN :

- (i) R.B.D. (ii) (a) 6. In each irrigated and unirrigated portion of expt. (b) N.A. (iii) 4. (iv) (a) and (b) N.A. (v) N.A. (vi) Yes.

## 4. GENERAL :

- (i) and (ii) N.A. (iii) Wheat and gram yield. (iv) (a) and (b) N.A. (v) (a) and (b) No. (vi) Nil. (vii) The expt. was conducted by P.A. C. Plotwise data not available at the station.

## 5. RESULTS :

- Irrigated conditions**  
 (i) 1747 lb./ac.  
 (ii) 133.8 lb./ac.  
 (iii) Treatment differences are significant.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	1895
2.	1883
3.	1772
4.	1721
5.	1566
6.	1646
S.E./mean	= 66.9 lb./ac.

- Unirrigated conditions**  
 (i) 1418 lb./ac.  
 (ii) 251.2 lb./ac.  
 (iii) Treatment differences are highly significant.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	1874
2.	1741
3.	1439
4.	1283
5.	198
6.	1970
S.E./mean	= 125.6 lb./ac.

Crop :- Jowar and Guar.

Ref :- U.P. 52(247).

Site :- Students' Instructional Farm, Kanpur.

Type :- 'X'.

Object :- A study of *Jowar* and *Kharif* mixture for fodder at different levels of N and their residual effect on Barley.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Sanai* G.M. followed by Wheat. (c) N.A. (ii) (a) Sandy loam. (b) N.A. (iii) 6.7.1952. (iv) (a) Hot weather cultivation was done in the field after the harvest. Preceding wheat crop, after monsoon field was planked twice on July 5, after that a cultivator was used to incorporate the cake and seed into soil, the field was then lightly planked and suitable ridges thrown up to demarcate plots. (b) to (e) N.A. (v) N.A. (vi) Local variety of *jowar* and *guar*. (vii) Unirrigated. (viii) No interculture. (ix) N.A. (x) N.A.

## 2. TREATMENTS :

Main-plot treatments :

4 levels of N :  $N_0$ =control,  $N_1$ =30 lb./ac.,  $N_2$ =60 lb./ac. and  $N_3$ =90 lb./ac.

Sub-plot treatments :

Seed rate of *Jowar+guar* in lb./ac. :  $R_1$ =40+0,  $R_2$ =30+10,  $R_3$ =20+20,  $R_4$ =10+30 and  $R_5$ =0+40. N applied as A/S+castor cake in equal proportion. Manures broadcast separately.

## 3. DESIGN :

(i) Split-plot. (ii) (a) 4 main-plots/replication and 5 sub-plots/main-plot. (iii) 4. (iv) (a) N.A. (b) 54.5' x 16'. (v) N.A. (vi) Yes.

## 4. GENERAL .

(i) Germination of *jowar* 82.00% and *guar* 90.00%. (ii) Light attack of *jowar* stem borer at the beginning of August and a very moderate incidence of zonate leaf-spot disease during the 2nd and 3rd weeks of September, no measures being taken for control. (iii) Yield of *jowar+guar* (green fodder) in lb./ac. (iv) (a) and (b) No. (c) Nil. (v) (a) and (b) No. (vi) Nil. (vii) The experiment was conducted by P.A.C. (K). Original data was not available.

## 5. RESULTS :

(i) 31457 lb./ac.

(ii) (a) 1623.6 lb./ac.

(b) 919.1 lb./ac.

(iii) Main effects of N, R and interaction  $N \times R$  are highly significant.

(iv) Av. yield of fodder in lb./ac.

	$N_0$	$N_1$	$N_2$	$N_3$	Mean
$R_1$	20743	29973	40759	45945	34355
$R_2$	25306	31529	35856	43456	34037
$R_3$	25634	32774	41043	42004	35364
$R_4$	25980	32359	38374	42834	34887
$R_5$	17113	19498	19395	18564	18642
Mean	22955	29227	35085	38561	31457

S.E. of difference of two

1. marginal means of N = 513.4 lb./ac.
2. marginal means of R = 324.9 lb./ac.
3. R means at the same level of N = 649.9 lb./ac.
4. N means at the same level of R = 775.6 lb./ac.

Crop :- Wheat and Mustard (*Rabi*).

Ref :- U.P. 53(128).

Site :- Students' Instructional Farm, Kanpur.

Type 'X'.

Object :- To study the mixed cropping of Wheat and Mustard.

## 1. BASAL CONDITIONS :

(i) (a) *Sanai* (G.M.)—wheat. (b) *Sanai* for G.M. (c) No manuring. (ii) (a) Sandy loam. (b) N.A. (iii) 5.11.1953. (iv) (a) to (c) N.A. (d) As per treatments. (e) N.A. (v) The field was green manured with *Sanai, sanai* was sown on 8.7.1953 at one md./ac. and was ploughed in on 18.8.1953. (vi) Wheat C-13 and Laha T-01. (vii) Unirrigated. (viii) Nil. (ix) N.A. (x) N.A.

## 2. TREATMENTS :

1. Wheat with mustard at 6' distance.
2. Wheat with mustard at 9' distance.
3. Wheat with mustard at 12' distance.
4. Wheat alone.
5. Mustard alone at 2' distance.

## 3. DESIGN :

- (i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 6. (iv) (a) 40'×27'. (b) 38'×15'. (v) 1' ring round the net plot. (vi) Yes.

## 4. GENERAL :

- (i) Normal. (ii) Nil. (iii) Yield of mixed grain and *bhusa* of wheat. (iv) (a) and (b) No. (c) N.A. (v) (a) No. (b) N.A. (vi) Nil. (vii) The experiment was conducted by P.A.C.

## 5. RESULTS :

- (i) 1313 lb./ac.  
 (ii) 256.1 lb./ac.  
 (iii) Treatment differences are highly significant.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	1634
2.	1595
3.	1500
4.	1471
5.	364

S.E./mean: = 104.6 lb/ac.

Crop :-Paddy, Kodon, Arhar and Maize.

Site :-Rice Res. Sub-Stn., Kunraghat.

Ref :-U.P. 52(310).

Type :-'X'.

Object :-To study the mixed cropping pattern for early Paddy.

## 1. BASAL CONDITIONS :

- (i) (a) Nil. (b) *Arhar*. (c) Nil. (ii) (a) Light loam. (b) N.A. (iii) 26.6.1952. (iv) (a) One ploughing by Punjab plough and 3 ploughings by *desi* plough. (b) Broadcast (paddy) and no information about other crops. (c) Paddy at 37 seers/ac., kodon at 2 seers/ac., *arhar* at 3 seers/ac. and maize at 4 seers/ac. (d) *Arhar* at a distance of 3'. (e) N.A. (v) A/S at 61.72 lb./ac. on 9.8.1952 as top dressing by broadcast. (vi) Paddy N. 22 (early). Other crops are all sown with local varieties. (vii) Unirrigated. (viii) Weeding on 3.8.1952. (ix) 31.42°. (x) 22.9.1952 and 2.10.1952, *arhar* on 27.3.1953.

## 2. TREATMENTS :

1. Paddy.
2. Paddy+*arhar*.
3. Paddy+maize.
4. Paddy+kodon.
5. Paddy+*arhar*+maize+kodon.

## 3. DESIGN :

- (i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 5. (iv) (a) 29'×26'-4". (b) 27'×24'-4". (v) 1' around the net plot left as non experimental area. (vi) Yes.

## 4. GENERAL :

- (i) Good and uniform growth. Lodging on 18.9.1952. *Arhar* crop was severely damaged by the hailstorm on 16.1.1953, when the crop was totally flowered. (ii) Grass hoppers were very common during the first fortnight of August. *Arhar* catter-pillar and gundhi bug were two other pests which were observed in *arhar* and paddy crop. Efforts made to control by dusting gammexane. (iii) Height, tillering and yield of components of the mixture. (iv) (a) 1952 to 1954. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) Nil. (vii) The experiment was conducted by Assistant Economic Botanist, (Paddy) to Govt., U.P., Nagina. Rates of the different crops for the year 1952 as supplied by the station have been used.

## 5. RESULTS :

(i) to (iv)

Treatment	Mean value of $\sqrt{x+\frac{1}{2}}$ /plot	Rs./ac. (transformed back values)	Rs./ac. (by direct calculations)
1.	1.3861	94.23	98.26
2.	2.0319	240.58	242.13
3.	1.7326	165.88	167.48
4.	1.8761	200.22	200.50
5.	2.1300	267.65	269.18
G.M.	1.8313	193.71	195.51
S.E./mean	0.0693		

 $x$  = value of the produce in Rs./plot.

Treatment differences are highly significant.

Crop :- Paddy, Arhar, Kodon and Maize (*Kharif*).

Ref :- U.P. 53(314).

Site :- Rice Res. Sub-Stn., Kunraghat.

Type :- 'X'.

Object :- To find out the economics of mixed cropping for early Paddy.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) As per treatments. (c) A/S at 61.72 lb./ac. on 9.8.1952 as top dressing to previous crop.  
(ii) (a) Light loam. (b) N.A. (iii) 25.6.1953. (iv) (a) 3 ploughings. (b) Paddy broadcast. No information about other crops. (c) Paddy at 37 seers/ac., arhar at 3 seers/ac., maize at 4 seers/ac. and kodon at 2 seers/ac.  
(d) and (e) N.A. (v) Village compost at 10 C.L./ac. giving about 40 lb./ac. of N. A/S at 20 seers/ac. as top dressing. (vi) Paddy-N. 22 (early). All other crops sown were of local varieties. (vii) Unirrigated.  
(viii) Weeding on 7.7.1953. (ix) 47.09%. (x) 25 and 26.9.1953, and arhar on 27.3.1954.

## 2. TREATMENTS :

1. Paddy.
2. Paddy+arhar.
3. Paddy+maize.
4. Paddy+kodon.
5. Paddy+arhar+maize+kodon.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 5. (iv) (a) 29'x26'-4". (b) 27'x24'-4". (v) 1' left around the net plot as non experimental area. (vi) Yes.

## 4. GENERAL :

(i) Growth not good due to excessive weeds and low fertility of soil. The growth of arhar and maize is affected due to the continuous and heavy rains during July. Maize crop totally failed. No yield in any plot at all. No lodging. (ii) Only slight attack of leafspot disease at a later stage of the crop. *Gundhi* bug which was observed in early stages of the crop was controlled by dusting gammexane. (iii) Height, tillering and yield of the components of the mixture. (iv) (a) 1952-1954. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) Nil. (vii) Experiment conducted by Assistant Economic Botanist (Paddy) to Govt., U.P., Nagina. Rates of different crops for the year 1953, as supplied by the station have been used.

## 5. RESULTS :

(i) to (iv)

Treatment	Mean value of $\sqrt{x+\frac{1}{2}}$ /plot	Rs./ac. (transformed back values)	Rs./ac. (by direct calculation)
1.	1.3091	80.47	81.42
2.	1.7181	162.56	166.15
3.	1.3114	80.87	81.02
4.	1.2798	75.44	76.11
5.	1.6577	149.05	149.97
G.M.	1.4552	109.68	110.93
S.E./mean	0.1317		

 $x$  is the value of produce in Rs./plot.

Treatment differences are highly significant.

Crop :- Paddy, Til, Kodon and Arhar (*Kharif*).  
Site :- Rice Res. Sub-Stn., Kunraghat.

Ref :- U.P. 49(232).  
Type :- 'X'.

Object :- To find out the economics of mixed cropping for early Paddy.

### 1. BASAL CONDITIONS :

(i) (a) Paddy—gram. (b) Gram. (c) Nil. (ii) (a) Light loam. (b) N.A. (iii) 30.6.1949. (iv) (a) 1 ploughing by victory plough and 3 ploughings by *desi* plough. (b) *Kodon*, paddy and *til* broadcast. *Arhar*—dibbling. (c) Paddy at 36 srs./ac., *kodon* at 2 srs./ac., *til* at 2 chk./ac. and *arhar* at 3 srs./ac. (d) *Arhar* 3' apart. (e) *Arhar*—1 seedling/hole. (v) Village compost at 10 C.L./ac. giving about 40 lb./ac. of N. (vi) Paddy N.22 (early). All the other crops were sown with local varieties. (vii) Unirrigated. (viii) Weeding on 7.8.1949 and 4.9.1949. (ix) 49.16". (x) 7.10.1949 and *arhar* 13.4.1950.

### 2. TREATMENTS :

1. Paddy.
2. Paddy+*arhar*.
3. Paddy+*til*.
4. Paddy+*kodon*.
5. Paddy+*arhar*+*til*+*kodon*.

### 3. DESIGN :

(i) L. Sq. (ii) (a) 5. (b) N.A. (iii) 5. (iv) (a) 29'×26'-4". (b) 27'×24'-4". (v) 1' left around the net plot as non experimental area. (vi) Yes.

### 4. GENERAL :

(i) With the exception of two treatments in which *til* and *arhar* are sown as mixed crop, the rest of the crop is very good. (ii) There is no incidence of disease. In certain plots where the growth is very vigorous *kharif* grass hoppers are found in very minute number. (iii) Height, tillering and yield of crop for different components. (iv) (a) 1949—1951. (b) and (c) No. (v) (a) and (b) N.A. (vi) Nil. (vii) Experiment conducted by Assistant Economic Botanist (Paddy) to Govt. U.P., Nagina. The rates of the various crops for the year 1949, as supplied by the station have been used.

### 5. RESULTS :

(i) to (iv)

Treatment	Mean value of $\sqrt{x+\frac{1}{2}}$ /plot	Rs./ac. (Transformed back value)	Rs./ac. (By direct calculations)
1.	1.1993	62.21	64.31
2.	1.4285	102.14	103.56
3.	1.3821	93.50	94.94
4.	1.6436	145.96	146.66
5.	1.9431	217.18	218.00
G.M.	1.5193	124.20	125.49

S.E./mean = 0.0799

where x = money value of the produce in Rs./plot.

Treatment differences are highly significant.

Crop :- Paddy, Til, Kodon and Arhar (*Kharif*).  
Site :- Rice Res. Sub-Stn., Kunraghat.

Ref :- U.P. 50(280).  
Type :- 'X'.

Object :- To study the economics of mixed cropping of early Paddy.

### 1. BASAL CONDITIONS :

(i) (a) Paddy—gram. (b) Gram. (c) Nil. (ii) (a) Light loam. (b) N.A. (iii) 15.6.1950. (iv) (a) 1 ploughing by victory plough and 3 by *desi* plough. (b) Paddy, *til*, *kodon* by broadcast and *arhar* by dibbling. (c) Paddy—37 srs./ac., *kodon*—2 srs./ac., *til*—2 chk./ac. and *arhar*—3 srs./ac. (d) *Arhar* 3' apart. (e) *Arhar*—1 seedling hole. (v) Tank silt (manure). Dose and method of application—N.A. (vi) Paddy N.22 (early). All the other varieties are local varieties. (vii) Unirrigated. (viii) Weedings on 28.6.1950 and 12.7.1950. (ix) 41.66". (x) 24 to 26.9.1950 and *arhar* on 3.4.1951.



## 2. TREATMENTS :

1. Paddy.
2. Paddy+*arhar*.
3. Paddy+*til*.
4. Paddy+*kodon*.
5. Paddy+*arhar*+*til*+*kodon*.

## 3. DESIGN :

(i) L. Sq. (ii) (a) 5. (b) N.A. (iii) 5. (iv) (a) 29'×26'4". (b) 27'×24'4". (v) 1' around the net plot left as non experimental area. (vi) Yes.

## 4. GENERAL :

(i) Good and uniform growth. (ii) Grass hopper was very common during July. *Til* bug and *arhar* cater-piller were two other pests which totally ruined the *til* crop. A very early action was taken to kill the *til* bug but the crop could not survive. (iii) Height, tillering and yield of components of the mixture (iv) (a) 1949 to 1951. (b) and (c) No. (v) (a) and (b) N.A. (vi) Nil. (vii) Experiment was conducted by Assistant Economic Botanist (Paddy) to Govt., U.P., Nagina. Rates of the various crops for the year 1950 as supplied by the station have been used.

## 5. RESULTS :

(i) to (iv) Treatment	Mean value of $\sqrt{x+\frac{1}{2}}$ /plot	Rs./ac. (Transformed back value)	Rs./ac. (By direct calculation)
1.	1.9754	225.57	225.96
2.	1.8784	200.79	201.56
3.	1.5965	135.84	140.03
4.	1.5939	135.29	137.11
5.	1.5510	126.34	127.56
G.M.	1.7190	164.77	166.44

S.E./mean = 0.0629

x=value of the produce in Rs./plot

Treatment differences are highly significant.

Crop :- Paddy, Til, Kodon and Arhar (*Kharif*).  
Site :- Rice Res. Sub-Stn., Kunraghat.

Ref :-U.P. 51(267).  
Type :-'X'.

Object :-To study the economics of mixed cropping for early Paddy.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Gram. (c) No. (ii) (a) Light loam. (b) N.A. (iii) 17.6.1951. (iv) (a) One ploughing by Punjab plough and two ploughings by *desi* plough. (b) Paddy, *Kodon*, *til* as broadcast, *arhar* by dibbling. (c) Paddy 37 seers/ac., *kodon* 2 seers/ac., *til* 2 chk./ac. and *arhar* 3 seers/ac. (d) *Arhar* 3' apart. (e) 1 seedling per hole. (v) Nil. (vi) Paddy N-22 (early) Rest of the varieties are all local. (vii) Unirrigated. (viii) Weeding on 12.7.1951, 23.7.1951 and 19.8.1951. (ix) -29.01". (x) 30.9.1951 and 1.10.1951 For *arhar*-N.A.

## 2. TREATMENTS :

1. Paddy.
2. Paddy+*arhar*.
3. Paddy+*til*.
4. Paddy+*kodon*.
5. Paddy+*arhar*+*til*+*kodon*.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 5. (iv) (a) 29'×26'—4". (b) 27'×24'—4". (v) 1' around the net plot left as non experimental area. (vi) Yes.

## 4. GENERAL :

(i) Satisfactory growth. (ii) Grass hoppers were observed in the 1st week of August. *Til* bugs and *Arhar*-cater-pillers were two other pests which were observed in *Til* and *Arhar* crops. A very early action was taken to remove them. (iii) Height, tillering and yield of different components of the mixture. (iv) (a) 1949 - 1951. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) Lower yields were obtained due to the shortage of water and less rains during the crop season. *Til* crop completely failed. (vii) Rates of the various crops for the year 1951, as supplied by the station have been used. Experiment conducted by Assistant Economic Botanist (Paddy) to Govt., U.P., Nagina.

## 5. RESULTS :

(i) to (iv)

Treatment	Mean value of $\sqrt{x+\frac{1}{2}}$ /plot	Transformed back value	By direct calculation
1.	1.4257	101.61	103.43
2.	1.9874	228.73	233.91
3.	1.4739	110.88	111.12
4.	1.8869	202.91	203.94
5.	2.0373	242.04	243.99
G.M.	1.7622	177.23	179.28

S.E./mean = 0.0880 lb./ac.

x = value of produce in Re/plot.

Treatment differences are highly significant.

Crop :- Gram and Linseed.

Ref :- U.P. 52(149).

Site :- Crop Physiological Res. Stn., Lucknow.

Type :- 'X'.

Object :- To study the effect of different seed rate proportions of Gram and Linseed grown mixed, on the yield and its residual effect on the succeeding *kharif* crop.

## 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Sandy loam. (b) N.A. (iii) 12.10.1952. (iv) (a) and (b) N.A. (c) Gram 40 seers/ac. Linseed 12 seers/ac. (d) and (e) N.A. (v) Date of application of fertilizers 11.10.1952., T.C. 8 C.L./ac. Super at 20 lb./ac. of  $P_2O_5$  and Gypsum at 10 lb./ac. of Cao. (vi) Gram T-87 (late), Linseed T-1193 (medium). (vii) Irrigated. (viii) N.A. (ix) N.A. (x) N.A.

## 2. TREATMENTS :

	Seed rate proportion	
	Gram	Linseed
1.	100 :	0
2.	80 :	20
3.	60 :	40
4.	50 :	50
5.	40 :	60
6.	20 :	80
7.	0 :	100
8.	Fallow.	

## 3. DESIGN :

(i) R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a) 19'x29'. (b) 14'x24'. (v) Plot border 2½' around. (vi) Yes.

## 4. GENERAL :

(i) Satisfactory. (ii) Nil. (iii) Grain yield. (iv) (a) 1952—1953. (b) and (c) No. (v) (a) Varanasi, Bahraich, Hamirpur and Banda. (b) N.A. (vi) Nil. (vii) Experiment conducted by C.P.

## 5. RESULTS :

(i) 548.8 lb./ac.

(ii) 42.56 lb./ac.

(iii) Treatment differences are highly significant.

(iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	658.6
2.	683.2
3.	574.6
4.	499.5
5.	491.7
6.	483.8
7.	450.2
S.E./mean	= 21.28 lb./ac.

Crop :- Gram and Linseed.  
Site :- Crop Physiological Res. Stn. Lucknow.

Ref :- U.P. 53(137).  
Type :- 'X'.

Object :- To study the effect of different seed rate proportions of Gram and Linseed, grown mixed, on growth and yield and the residual effects on the succeeding *kharif* crop.

1. BASAL CONDITIONS :

(i) (a) *Jowar+guar*—gram+linseed. (b) *Jowar* and *guar*. (c) Nil. (ii) (a) Sandy loam. (b) N.A. (iii) 18.10.1953. (iv) (a) 2 ploughings by mould board plough on 1.10.1953. Cultivator and planking twice on 6.10.1953. (b) Linseed sown by broadcast and gram behind the plough in lines. (c) to (e) N.A. (v) Application of town compost on 14.10.1953 at 84 md./ac., Super at 50 srs./ac. on 17.10.1953 applied at 3"—4" deep in soil through drill. (vi) Gram T.87 (medium) and linseed T.1193 (medium). (vii) Unirrigated. (viii) Nil. (ix) 5.78". (x) 27.3.1954.

2. TREATMENTS :

	Seed rate proportions		Seed used in gms./plot.	
	Gram	Linseed	Gram	Linseed
1.	0	: 100	0	: 106.0
2.	20	: 80	84.4	: 84.8
3.	40	: 60	168.8	: 63.6
4.	50	: 50	211.0	: 53.0
5.	60	: 40	253.2	: 42.4
6.	80	: 20	337.6	: 21.2
7.	100	: 0	422.0	: 0

3. DESIGN :

(i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 2. (iv) (a) 13'×39'. (b) 9'×35'. (v) Plot border 2' and field border 1' around and block partition 5' to serve as irrigation channel. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Grain and straw yield. (iv) (a) 1952-1953. (b) and (c) No. (v) (a) Varanasi, Atarra (Banda), Bahraich and Belatal. (b) N.A. (vi) Nil. (vii) Conducted by C.P. (R).

5. RESULTS :

(i) 881.1 lb./ac.  
(ii) 67.56 lb./ac.  
(iii) Treatment differences are highly significant.  
(iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	648.5
2.	781.8
3.	941.9
4.	889.3
5.	950.9
6.	995.7
7.	959.8

S.E./mean = 47.77 lb./ac.

Crop :- Wheat and Gram.  
Site :- Crop Physiological Res. Stn., Lucknow.

Ref :- U.P. 49(105).  
Type :- 'X'.

Object :- To study the effect of varying seed rate proportions of Wheat and Gram grown mixed on yield.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) (a) Sandy loam. (b) N.A. (iii) 8.11.1949. (iv) (a) Ploughing and harrowings etc. on 6, 7 and 10 10.1949. (b) to (e) N.A. (v) T.C. on 21.10.1949. (vi) NP.125 wheat (medium) and Banda gram. (N.A.). (vii) Irrigated. (viii) Weeding and hoeing on 16.11.1949. (ix) N.A. (x) 3.4.1950.

## 2. TREATMENTS :

## Seed rate proportions

	Wheat	:	Gram
1.	20	:	80
2.	40	:	60
3.	50	:	50
4.	60	:	40
5.	80	:	20

## 3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 40'×20'. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) N.A. (iii) Weight of grain per ear, length of shoots, length and breadth of leaf, no. of tillers and grain yield. (iv) (a) 1949—1950. (b) and (c) No. (v) (a) Kanpur. (b) N.A. (vi) N.A. (vii) Experiment conducted by C.P. (R).

## 5. RESULTS :

(i) 505 lb./ac.

(ii) 269.0 lb./ac.

(iii) Treatment differences are not significant.

(iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	525
2.	679
3.	560
4.	497
5.	266
S.E./mean	= 134.5 lb./ac.

Crop :- Wheat and Gram (*Rabi*).

Ref :- U.P. 50(210).

Site :- Crop Physiological Res. Stn., Lucknow.

Type :- 'X'.

Object :- To study the effect of varying seed rate proportions of Wheat and Gram grown mixed on yield.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) (a) Sandy loam. (b) N.A. (iii) 17.10.1950. (iv) (a) Two ploughings by mould board plough, four ploughings by *desi* plough. (b) Broadcasting. (c) Wheat-50 seers./ac. and gram-30 srs./ac. (d) and (e) N.A. (v) 75 mds/ac. stable manure on 2.10.1950. (vi) N.A. (vii) No. (viii) Interculture on 5.1.1951 and 25.1.1951, weeding and hoeing. (ix) N.A. (x) Wheat 7.4.1951 and gram 22.3.1951.

## 2. TREATMENTS .

Seed rate proportion			Seed required in chk./gross plot.			
	Wheat	Gram		Wheat	Gram	
1.	0	:	100	0	:	9.0
2.	20	:	80	3	:	7.2
3.	40	:	60	6	:	5.4
4.	50	:	50	7½	:	4.5
5.	60	:	40	9	:	3.6
6.	80	:	20	12	:	1.8
7.	100	:	0	15	:	0.0

## 3. DESIGN :

(i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 4. (iv) (a) 17'×43'. (b) 13'×39'. (v) Field border=2'. (vi) Yes.

## 4. GENERAL :

(i) Rain did not come in time and hence germination was poor. Land was sloping. (ii) N.A. (iii) Length of root, height of shoot, length and breadth of leaf and yield of crop. (iv) (a) 1950—1952. (b) No. (c) Nil. (v) (a) and (b) Lucknow, Atarra, Bahraich and Pratapgarh. (vi) Nil. (vii) Experiment was conducted by CP.

## 5. RESULTS :

- (i) 157.4 lb./ac.  
 (ii) 81.54 lb./ac.  
 (iii) Treatment differences are significant.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	44
2.	113
3.	155
4.	122
5.	229
6.	180
7.	260
S.E./mean	= 40.77 lb./ac.

Crop :- Wheat and Gram.

Ref :- U.P. 52(151).

Site :- Crop Physiological Res. Stn., Lucknow.

Type :- 'X'.

Object :- To study the effect of different seed rate proportions of Wheat and Gram grown mixed, on yield and its residual effect on the succeeding *Kharif* crop.

## 1. BASAL CONDITIONS :

- (i) (a) No. (b) and (c) N.A. (ii) (a) Sandy loam. (b) N.A. (iii) 29.10.1952. (iv) (a) and (b) N.A. (c) Wheat at 50 srs./ac. and gram at 40 srs./ac. (d) and (e) N.A. (v) Date of manuring on 22.10.1952 and manures used 1. T.C., 2. Super at 20 lb./ac. of  $P_2O_5$  and gypsum at 10 lb./ac. of CaO. (vi) Wheat Pb-591 (medium-late) and gram T-87 (late). (vii) N.A. (viii) N.A. (ix) N.A. (x) N.A.

## 2. TREATMENTS :

Seed rate proportions	
Wheat	Gram
1. 100	: 0
2. 80	: 20
3. 60	: 40
4. 50	: 50
5. 40	: 60
6. 20	: 80
7. 0	: 100

## 3. DESIGN :

- (i) R.B.D. (ii) (a) 8. (b) N.A. (iii) 3. (iv) (a) 20' x 21'. (b) 16' x 15'. (v) Plot border=2½' around and field border=3' around. (vi) Yes.

## 4. GENERAL :

- (i) Good. (ii) Nil. (iii) Grain yield. (iv) (a) 1950—1952. (b) and (c) No. (v) (a) Varanasi, Kanpur, Bahraich, Pratapgarh, Aligarh, Banda, Etawah and Jhansi. (vi) Nil. (vii) Experiment conducted by C.P.

## 5. RESULTS :

- (i) 742.3 lb./ac.  
 (ii) 92.96 lb./ac.  
 (iii) Treatment differences are not significant.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	762.7
2.	840.0
3.	855.7
4.	731.4
5.	700.0
6.	653.0
7.	653.0
S.E./mean	= 53.67 lb./ac.

Crop :-Wheat and Gram (*Rabi*).

Ref :-U.P. 53(194).

Site :-Crop Physiological Res. Stn., Lucknow.

Type :-'X'.

Object :-To study the manurial requirement of mixed crop Wheat and Gram.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) N.A. (ii) (a) Clayey loam. (b) N.A. (iii) 28.10.1953. (iv) (a) 7 ploughings. (b) Sown behind the plough in alternate lines. (c), (d) and (e) N.A. (v) T.C. at 84 md/ac. (vi) Wheat C. 13 (early). Gram T87 (late). (vii) Irrigated. (viii) Weeding on 27 and 28.11.1953. (ix) 5.78". (x) 13.4.1954.

## 2. TREATMENTS :

All combinations of (1), (2), (3) and (4)

- 2 levels of N as A/S :  $N_0=0$  and  $N_1=40$  lb./ac.
- 2 levels of  $P_2O_5$  as Super :  $P_0=0$  and  $P_1=50$  lb./ac.
- 2 levels of  $K_2O$  as Pot. Sul. :  $K_0=0$  and  $K_1=40$  lb./ac.
- 2 levels of CaO as Gypsum :  $G_0=0$  and  $G_1=60$  lb./ac.

## 3. DESIGN :

(i) 2<sup>4</sup> Fact. in R.B.D. (ii) (a) 16. (b) N.A. (iii) 4. (iv) (a) 14'×26'. (b) 10'×22'. (v) Plot border 2' and field border 3' around. Block partition 5' and irrigation channel 3'. (vi) Yes.

## 4. GENERAL :

(i) Gram damaged by shade of wheat. (ii) Nil. (iii) Grain and straw yield. (iv) (a) to (c) N.A. (v) (a) Raya Hardoi, Kalai and Baharaich. (b) N.A. (vi) Nil. (vii) The expt. conducted by C.P.

## 5. RESULTS :

- 1252 lb./ac.
- 170.4 lb./ac.
- Main effects of N and K are highly significant. Other effects and interactions are not significant.
- Av. yield of grain in lb./ac.

	$K_0$	$K_1$	Mean	$P_0$	$P_1$	$C_0$	$C_1$
$N_0$	1088	1281	1185	1154	1216	1198	1171
$N_1$	1255	1384	1320	1271	1368	1290	1349
Mean	1172	1333	1252	1212	1292	1244	1260
$P_0$	1131	1294					
$P_1$	1212	1372					
$C_0$	1147	1341					
$C_1$	1196	1324					

S.E. of any marginal mean =30.12 lb./ac.

S.E. of body of table =42.59 lb./ac.

Crop:-Gram and Mustard.

Ref :-U.P. 52(150).

Site :-Crop Physiological Res. Stn., Lucknow.

Type :-'X'.

Object :-To study the effect of different seed rate proportions of Gram and Mustard grown mixed, on the yield and its residual effect on the succeeding *khari* crop.

## 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Sandy loam. (b) N.A. (iii) 13.10.1952. (iv) (a) to (e) N.A. (v) Date of application of fertilizers 11.10.1952. T.C. at 8 cwt./ac. Super at 20 lb./ac. of  $P_2O_5$  and Gypsum at 10 lb./ac. of CaO. (vi) Gram T87 (late) and Mustard RT. 11 (vii) Irrigated. (viii) N.A. (ix) N.A. (x) N.A.

## 2. TREATMENTS :

Seed rate proportions			
	Gram	:	Mustard
1.	100	:	0
2.	80	:	20
3.	60	:	40
4.	50	:	50
5.	40	:	60
6.	20	:	80
7.	0	:	100

## 3. DESIGN :

(i) R.B.D. (ii) (a) 8. but the effective number of treatments is 7 only, as the 8th treatment is fallow. (b) N.A. (iii) 4. (iv) (a) 19'×29'. (b) 14'×24'. (v) Plot border 2½' around. Block space 4'. (vi) Yes.

## 4. GENERAL :

(i) Satisfactory. (ii) Nil. (iii) Grain yield. (iv) (a) to (c) No. (v) (a) and (b) No. (vi) Nil. (vii) The expt. was conducted by C.P.

## 5. RESULTS :

- (i) 588.0 lb./ac.  
(ii) 45.92 lb./ac.  
(iii) Treatment differences are highly significant.  
(iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	700.0
2.	724.6
3.	666.4
4.	591.4
5.	542.1
6.	508.5
7.	383.0
S.E./mean	=22.96 lb./ac.

Crop :- Barley and Pea.

Ref :- U.P. 52(152).

Site :- Crop Physiological Res. Stn., Lucknow.

Type :- 'X'.

Object :- To study the effect of different seed rate proportions of Barley and Pea grown mixed, on yield and its residual effect on the succeeding *kharif* crop.

## 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Sandy loam. (b) N.A. (iii) 1, 2.11.1952. (iv) (a) to (e) N.A. (v) (1) T.C at 160 md./ac. (2) Super at 20 lb./ac. of P<sub>2</sub>O<sub>5</sub> and (3) Gypsum at 10 lb./ac. of CaO. (vi) Barley G-251 (medium) Pea-163 (early). (vii) Irrigated. (viii) N.A. (ix) N.A. (x) N.A.

## 2. TREATMENTS :

Seed rate proportions			
	Barly	:	Pea
1.	100	:	0
2.	80	:	20
3.	60	:	40
4.	50	:	50
5.	40	:	60
6.	20	:	80
7.	0	:	100

## 3. DESIGN :

(i) R.B.D. (ii) (a) 8. (b) N.A. (iii) 3. (iv) (a) 16½'×21'. (b) 11½'×16'. (v) Plot border 2½' around, field border 3'. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) No. (iii) Grain yield. (iv) (a) No. (b) and (c) No. (v) (a) Faizabad, Etawah, Kanpur, Hardoi, Aligarh and Banda. (b) N.A. (vi) Nil. (vii) Experiment conducted by C.P.

## 5. RESULTS :

- (i) 957 lb./ac.  
 (ii) 78.40 lb./ac.  
 (iii) Treatment differences are highly significant.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	1015
2.	1137
3.	1055
4.	995
5.	872
6.	852
7.	771
S.E./mean	=45.26 lb./ac.

Crop :- Wheat and Pea (*Rabi*).

Ref :- U.P. 50(211).

Site :- Crop Physiological Res. Stn., Lucknow.

Type :- 'X'.

Object :- To study the effect of different seed rate proportions of Barley and Pea grown mixed, on yield and its residual effect on the succeeding *kharif* crop.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fallow. (c) No. (ii) (a) Sandy loam. (b) N.A. (iii) 19.10.1950. (iv) (a) Five ploughings by *desi* plough. Two ploughings by mould board plough. One ploughing by *desi* plough to mix stable manure. (b) Broadcasting. (c) Wheat 50 seers/ac. Pea 25 seers/ac. (d) N.A. (e) N.A. (v) 50 md. of stable manure in the field. (vi) Wheat C-46 (medium) Pea K.W. (medium). (vii) Irrigated. (viii) Interculture and weeding (ix) N.A. (x) Wheat 10.4.1951, Pea 17.3.1951.

## 2. TREATMENTS :

Seed rate proportions			Seed rate in chk./gross plot		
Wheat	:	Pea	Wheat	:	Pea
1.	0	: 100	0	:	4.70
2.	20	: 80	1.86	:	3.76
3.	40	: 60	3.72	:	2.82
4.	50	: 50	4.65	:	2.35
5.	60	: 40	5.58	:	1.88
6.	80	: 20	7.44	:	0.94
7.	100	: 0	9.30	:	0.0

## 3. DESIGN :

(i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 4. (iv) (a) 42'×12'. (b) 40'×10'. (v) Field border 2' around. Plot border 1' around. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) N.A. (iii) Height of shoot, length of leaf, breadth of leaf, length of root and shoot, and grain yield. (iv) (a) No. (b) and (c) Nil. (v) (a) and (b) No. (vi) Nil. (vii) Experiment conducted by C.P.

## 5. RESULTS :

- (i) 226.0 lb./ac.  
 (ii) 99.79 lb./ac.  
 (iii) Treatment differences are not significant.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	157.5
2.	253.8
3.	262.5
4.	245.0
5.	197.8
6.	171.5
7.	294.0
S.E./mean	= 49.89 lb./ac.



Crop :-Wheat and Linseed (*Rabi*).

Ref :-U.P. 50(209).

Site :-Crop Physiological Res. Stn., Lucknow.

Type :-'X'.

Object :-To study the effect of different seedrate proportions of Barley and Pea grown mixed, on yield and its residual effect on the succeeding *kharif* crop.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) *Sanai*. (c) Nil. (ii) (a) Sandy loam. (b) N.A. (iii) N.A. (iv) (a) 4 ploughings. (b) N.A. (c) As per treatments. (d) and (e) N.A. (v) Nil. (vi) N.A. (vii) No. (viii) Weeding. (ix) and (x) N.A.

## 2. TREATMENTS :

Seedrate proportions			Seed rate in chk./gross plot		
Wheat : Linseed			Wheat : Linseed		
1.	0	: 100	0	:	2.6
2.	20	: 80	2.8	:	2.0
3.	40	: 60	5.6	:	1.5
4.	50	: 50	7.0	:	1.3
5.	60	: 40	8.4	:	1.0
6.	80	: 20	11.2	:	0.5
7.	100	: 0	14.0	:	0.0

## 3. DESIGN :

(i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 4. (iv) (a) and (b) 17'×43'. (v) Field border=2' around. (vi) Yes.

## 4. GENERAL :

(i) and (ii) N.A. (iii) Grain yield. (iv) (a) No. (b) and (c) Nil. (v) (a) and (b) No. (vi) Nil. (vii) Experiment conducted by C.P.

## 5. RESULTS :

(i) 313.6 lb./ac.  
 (ii) 146.1 lb./ac.  
 (iii) Treatment differences are not significant.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	241.3
2.	325.6
3.	279.6
4.	425.2
5.	306.5
6.	289.2
7.	327.5
S.E./mean	=73.04 lb./ac.

Crop :-Jowar and Guar .

Ref :-U.P. 53(215).

Site :-Crop Physiological Res. Stn., Lucknow.

Type :-'X'.

Object :-To study the effect of different doses of Nitrogen in the form of A/S and A.S.N. on growth and fodder yield of *Jowar* and *Guar*.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Wheat+Gram. (c) N.A. (ii) (a) Sandy loam. (b) N.A. (iii) 27.6.1953. (iv) (a) Ploughing on 18.6.1953. (b) to (e) N.A. (v) One truck load of T.C. i.e. 150 cu. ft. or 84 md., on 22 and 23.6 1953. (vi) and (vii) N.A. (viii) Weeding and hoeing on 31.7.1953. (ix) N.A. (x) 11.9.1953.

## 2. TREATMENTS :

All combinations of (1) and (2) + a control

(1) 2 sources of N :  $S_1=A/S$  and  $S_2=A.S.N.$

(2) 3 levels of N :  $N_1=30$ ,  $N_2=50$  and  $N_3=90$  lb./ac.

Manures applied on 27.6.1953.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 3. (iv) (a) and (b) 25'x20'. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) and (ii) N.A. (iii) Fodder yield. (iv) (a) to (c) No. (v) (a) and (b) N.A. (vi) Nil. (vii) Experiment conducted by C.P.

## 5. RESULTS :

(i) 42499 lb./ac.

(ii) 2326 lb./ac.

(iii) Control vs others and main effect of N are highly significant. Main effect of S and interaction SxN are not significant.

(iv) Av. yield of fodder in lb./ac.

Control=27778 lb./ac.

	N <sub>1</sub>	N <sub>2</sub>	N <sub>3</sub>	Mean
S <sub>1</sub>	40622	46894	48388	45301
S <sub>2</sub>	38830	45700	49284	44605
Mean	39726	46297	48836	44953

S.E. of marginal mean of N =950 lb./ac.

S.E. of marginal mean of S = 776 lb./ac.

S.E. of body of table =1343 lb./ac.

Crop :-Maize and Moong.

Ref :-U.P. 50(97).

Site :-Crop Physiological Res. Stn., Lucknow.

Type :-'X'.

Object :-To study the effect of P<sub>2</sub>O<sub>5</sub> and Gypsum on the mixed crop of Maize and Moong.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Wheat. (c) N.A. (ii) (a) Sandy loam. (b) N.A. (iii) 4.7.1950. (iv) (a) Hot weather cultivation ; 1 ploughing by mould board plough ; 1 by patent junior horse cultivator ; cross wise ploughing by *dest* plough. (b) Dibbling. (c) Maize—7 srs./ac. moong—3½ srs./ac. (d) Distance for maize line to line 2' apart ; seed to seed 1' apart. Distance for Moong—line to line 2' apart, seed to seed 9' apart. Moong seeds were sown between two rows of Maize. (v) 80 md. stable manures mixed for the crop on 4.7.1950. (vi) Maize - Jaunpuri (medium). Moong T<sub>1</sub> (medium). (vii) N.A. (viii) Hoeing 14.7.1950, weeding 4.8.1950 and earthing up on 7.8.1950 (Maize plants). (ix) N.A. (x) Picking of Moong on 24 and 31.8.1950. Harvest of Maize on 16.9.1950.

## 2. TREATMENTS :

All combinations of (1) and (2)

1. 2 levels of CaO as Gypsum : C<sub>0</sub>=0 and C<sub>1</sub>=50 lb./ac.

2. 3 applications of P<sub>2</sub>O<sub>5</sub> : P<sub>0</sub>=0, P<sub>1</sub>=50 lb./ac. double Super and P<sub>1</sub>'=50 lb./ac. as Ammo. Phos. Manuring on 4.7.1950.

## 3. DESIGN :

(i) 3x2 Fact. in R.B.D. (ii) (a) 6. (b) N.A. (iii) 3. (iv) (a) and (b) 30'x20'. (v) Nil. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Nil. (iii) Grain yield. (iv) (a) to (c) No. (v) (a) and (b) No. (vi) Nil. (vii) The expt. was conducted by C.P.

## 5. RESULTS :

(i) 1352 lb./ac.

(ii) 68.32 lb./ac.

(iii) Main effects of C and P and interaction CxP are significant.

(iv) Av. yi ld of grain in lb./ac.

	P <sub>0</sub>	P <sub>1</sub>	P' <sub>1</sub>	Mean
C <sub>0</sub>	1114	1223	1456	1264
C <sub>1</sub>	1257	1468	1596	1440
Mean	1185	1346	1526	1352

S.E. of marginal mean of C = 22.77 lb./ac.  
 S.E. of marginal mean of P = 27.90 lb./ac.  
 S.E. of body of table = 39.44 lb./ac.

Crop :-Wheat and Barley (*Rabi*).

Ref :-U.P. 53(140).

Site :-Crop Physiological Res. Stn., Lucknow.

Type :-'X'.

Object :-To study the effect of different seed rate proportions of Wheat and Barley grown mixed, on yield and its residul effect on the succeeding *kharif* crop.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Dhaincha* (G.M.) (c) Nil. (ii) (a) Loam. (b) N.A. (iii) 26.10.1953. (iv) (a) 6 ploughings (b) Wheat and Barley sown mixed in lines behind plough through funnel. (c) As per treatments. (d) and (e) N.A. (v) Nil. (vi) Barley C 251. Wheat Pb. 591. (vii) Irrigated. (viii) Nil. (ix) 5.48". (x) 11.4.1954.

## 2. TREATMENTS:

	Seed rate proportion		Seed rate in gm./plot	
	Wheat	Barley	Wheat	Barley
1.	0	100	0	542.0
2.	20	80	108.4	433.6
3.	40	60	216.8	325.2
4.	50	50	271.0	271.0
5.	60	40	325.2	216.4
6.	80	20	433.6	108.4
7.	100	0	542.0	0

## 3. DESIGN :

(i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 4. (iv) (a) 20'×26'. (b) 16'×22'. (v) Plot border 2' and field border 4' around ; Block partition 5' ; Irrigation channel 2'. (vi) Yes.

## 4. GENERAL :

(i) Fair. Slight lodging of barley. (ii) Smut incidence on barley 1% approximatly. (iii) Grain and straw yield. (iv) (a) to (c) No. (v) (a) and (b) Nil. (vi) Nil. (vii) The expt. was conducted by C.P.(R).

## 5. RESULTS :

(i) 1288 lb./ac.  
 (ii) 163.4 lb./ac.  
 (iii) Treatment differences are not significant.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	1464
2.	1347
3.	1369
4.	1336
5.	1193
6.	1167
7.	1142
S.E./mean	=81.7 lb./ac.

Crop :- Jowar, Guar, Lobia, Til and Urd.  
Site :- Crop Physiological Res. Stn., Lucknow.

Ref :- U.P. 50(129).  
Type :- 'X'.

Object :- To study the effect of .. and P on *Jowar* and legume mixture.

### 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Gram+mustard. (c) Nil. (ii) (a) Sandy loam. (b) N.A. (iii) 8.7.1950. (iv) (a) 2 ploughings by mould board plough, 2 by *desi*, 1 by cultivator and 4 planking etc. (b) N.A. (c) *jowar*—12 srs./ac., *guar*—12 srs./ac., *lobia*—10 srs./ac., *til*—6 srs./ac. and *urd*—12 srs./ac. (d) and (e) N.A. (v) Nil. (vi) *Jowar*—T.86, *lobia*—Jhansli and *ti*—T.10. (vii) to (ix) N.A. (x) 11 to 15.10.1950.

### 2. TREATMENTS :

#### Main-plot treatments :

3 levels of manure :  $M_0$ =no manure,  $M_1$ =80 lb./ac. of N as A/N (33.5%N) and  $M_2$ =60 lb./ac. of  $P_2O_5$  as double Super (40% $P_2O_5$ ).

#### Sub-plot treatments :

6 ratios of crop mixture :  $C_1$ =*jowar* alone,  $C_2$ =*jowar*+*guar* in the ratio of 66 : 33,  $C_3$ =*jowar*+*lobia* in the ratio of 66 : 33,  $C_4$ =*jowar*+*til* in the ratio of 66 : 33,  $C_5$ =*jowar*+*urd* in the ratio of 66 : 33 and  $C_6$ =*jowar*+*guar*+*lobia*+*til*+*urd* in the ratio of 40 : 15 : 15 : 15 : 15.

### 3. DESIGN :

(i) Split-plot. (ii) (a) 3 main-plots/block and 6 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) and (b) 21' x 46', main-plot—126' x 46'. (v) No (vi) Yes.

### 4. GENERAL :

(i) and (ii) N.A. (iii) Dry fodder yield. (iv) (a) to (c) No. (v) (a) and (b) No. (vi) N.A. (vii) Experiment conducted by C.P.

### 5. RESULTS :

(i) 2922 lb./ac.

(ii) (a) 882.6 lb./ac.

(b) 428.2 lb./ac.

(iii) Main effects of M and C and interaction  $M \times C$  are highly significant.

(iv) Av. yield of fodder in lb./ac.

	$C_1$	$C_2$	$C_3$	$C_4$	$C_5$	$C_6$	Mean
$M_0$	3833	1338	1804	1428	1879	1518	1967
$M_1$	8267	2901	3983	3382	3818	3457	4301
$M_2$	4945	1834	2300	1864	2270	1774	2498
Mean	5682	2024	2696	2225	2656	2250	2922

#### S.E. of difference of two

- marginal means of M = 294.1 lb./ac.
- marginal means of C = 201.8 lb./ac.
- C means at a level of M = 347.9 lb./ac.
- M means at a level of C = 434.1 lb./ac.

Crop :- Wheat, Gram and Mustard (*Rabi*).

Ref :- U.P. 48(80).

Site :- National Botanical Gardens, Lucknow.

Type :- 'X'.

Object :- To study the effect of mixed cropping on growth and yield of Wheat, Gram and Mustard with and without applications of N.

### 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Three years old *guava*. (c) N.A. (ii) (a) Sandy loam. (b) N.A. (iii) 17 and 18.11.1948. (iv) (a) 2 disc ploughings by tractor on 23.10.1948, ploughing by *desi* plough on 10 and 11.11.1948 and 1 disc ploughing by tractor on 13.10.1948. (b) N.A. (c) Wheat—50 srs./ac., gram—30 srs./ac. and mustard—3 srs./ac. (d) and (e) N.A. (v) 2 trucks of M.C. on 16.11.1948 in field of 1.3. ac. (vi) Mustard—rape local, wheat—C.13 (early) and gram—local. (vii) Irrigated. (viii) and (ix) N.A. (x) 12.4.1950.

## 2. TREATMENTS:

All combinations of (1) and (2)

(1) 2 levels of N :  $N_0=0$  and  $N_1=50$  lb./ac.(2) 7 crop mixtures :  $C_1$ =wheat alone,  $C_2$ =gram alone,  $C_3$ =mustard alone,  $C_4$ =wheat+gram as 50 : 50,  $C_5$ =wheat+mustard as 50 : 50,  $C_6$ =wheat+gram+mustard as 33 : 33 : 33 and  $C_7$ =fallow.

Seed sown/plot :

Wheat alone—16 srs., Wheat 50%—8 srs. and wheat 33%—5½ srs.

Gram alone—12 srs., Gram 50%—6 srs. and gram 33%—4 srs.

Mustard alone—1 chk., mustard 50%—½ chk. and mustard 33%—¼ chk.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 14. (b) N.A. (iii) 4. (iv) (a) 20'×45'. (b) 15'×40'. (v) 2½' around. (vi) Yes.

## 4. GENERAL :

(i) Rain and slight hail storm on 3,4,5 Jan. 1949. (ii) N.A. (iii) Grain yield. (iv) (a) to (c) No. (v) (a) and (b) N.A. (vi) Data for wheat and gram was available but for mustard data was not available. Hence analysis could not be done in the absence of any information about the mustard yield. (vii) Experiment conducted by C.P.

## 5. RESULTS :

(i) to (iv)

Av. yield of wheat in lb./ac.		Av. yield of gram in lb./ac.	
Treatment	Av. yield	Treatment	Av. yield
$N_0C_1$	531.6	$N_0C_2$	1686.8
$N_0C_4$	456.7	$N_0C_4$	436.1
$N_0C_6$	555.4	$N_0C_6$	566.9
$N_1C_1$	690.4	$N_1C_2$	1143.8
$N_1C_4$	562.8	$N_1C_4$	592.5
$N_1C_6$	560.4	$N_1C_6$	422.9
G.M.	559.6	G.M.	808.2
S.E./mean	N.A.	S.E./mean	N.A.

Crop :- Wheat and Gram.

Ref :- U.P. 51(70).

Site :- Govt. Agri. Farm, Partapgarh.

Type :- 'X'.

Object :- To study the effect of different seed rate proportions of Wheat and Gram, grown mixed, on yield and its residual effect on the succeeding *kharif* crop.

## 1. BASAL CONDITIONS :

(i) (a) *Sanal*—Wheat. (b) *Sanal* for fibre. (c) No. (ii) (a) Sandy loam. (b) N.A. (iii) N.A. (iv) (a) N.A. (b) Seeds broadcast after mixing them in the given proportions, ploughing by *desi* plough and subsequently covered by planking. (c) Wheat at 40-50 seers./ac. and gram at 30 seers./ac. (d) and (e) N.A. (v) G.M. at 40 lb./ac. of N. (vi) Wheat—NP-52 (medium early) and gram—local (late). (vii) N.A. (viii) N.A. (ix) N.A. (x) N.A.

## 2. TREATMENTS :

Seed rate proportions			Seed rate in chk./gross plot.		
Wheat : Gram			Wheat : Gram		
1.	0	: 100	0.0	:	10.0
2.	20	: 80	3.2	:	8.0
3.	40	: 60	6.4	:	6.0
4.	50	: 50	8.0	:	5.0
5.	60	: 40	9.6	:	4.0
6.	80	: 20	12.8	:	2.0
7.	100	: 0	16.0	:	0.0

## 3. DESIGN :

(i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 4. (iv) (a) 28'×31. (b) 25'×28'. (v) 1½' around the plot. (vi) Yes.

## 4. GENERAL :

(i) Poor stand, no lodging. (iii) Yield of wheat and gram grain. (iv) (a) 1950—1953. The experiment was cancelled in 1950. (b) and (c) No. (v) (a) Kanpur, Etawah and Baharaich. (b) N.A. (vi) Nil. (vii) Experiment conducted by A.C.

## 5. RESULTS :

- (i) 154.2 lb./ac.  
 (ii) 63.84 lb./ac.  
 (iii) Treatment differences are not significant.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	114.2
2.	147.8
3.	137.8
4.	144.5
5.	163.5
6.	165.8
7.	206.1
S.E./mean	= 31.92 lb./ac.

Crop :- Wheat and Gram.

Ref :- U.P. 52(78).

Site :- Govt. Agri. Farm, Partapgarh.

Type :- 'X'.

Object :- To study the effect of different seed rate proportions of Wheat and Gram, grown mixed, on yield and its residual effect on the succeeding *kharif* crop.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Maize. (c) N.A. (ii) (a) Loam. (b) N.A. (iii) 31.10.1952. (iv) (a) 5 ploughings from 1 to 24.10.1952 and *Palewa* on 22.11.1952. (b) N.A. (c) As per treatments. (d) and (e) N.A. (v) 3 cart loads (45 mds.) of well decayed F.Y.M. applied all over the field and 1½ mds. of Super placed at a depth of 3"–4" in furrows behind the plough all over the field on 30. 10.1951. (vi) Wheat C-13 (medium) and gram T-87 (late). (vii) Irrigated. (viii) N.A. (ix) N.A. (x) 3.4.1953.

## 2. TREATMENTS :

Seed rate proportions		Seed rate in chk./gross plot.	
Wheat	Gram	Wheat	Gram
1. 0	: 100	0	: 9.6
2. 20	: 80	3.2	: 7.6
3. 40	: 60	6.4	: 5.7
4. 50	: 50	8.0	: 4.8
5. 60	: 40	9.6	: 3.8
6. 80	: 20	12.8	: 1.9
7. 100	: 0	16.0	: 0

## 3. DESIGN :

(i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 4. (iv) (a) 28'×31'. (b) 25'×28'. (v) 1½'. all round the plot. (vi) Yes.

## 4. GENERAL :

(i) Damage about 10%. (ii) Rust on wheat. (iii) Grain and straw yield. (iv) (a) 1950 to 1954. (b) and (c) No. (v) (a) Varanasi, Kanpur, Baharaich, Aligarh, Banda, Etawah, Jhansi and Lucknow. (b) N.A. (vi) Nil. (vii) Experiment conducted by C.P. (R).

## 5. RESULTS:

- (i) 2271 lb./ac.  
 (ii) 160.2 lb./ac.  
 (iii) Treatment differences are significant.

## (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	2196
2.	2174
3.	2135
4.	2369
5.	2104
6.	2502
7.	2420
S.E./mean	=80.1 lb./ac.

Crop :- Wheat and Gram (*Rabi*).

Ref :- U.P. 53(55).

Site :- Govt. Agri. Farm, Partapgarh.

Type :- 'X'.

Object :- To study the effect of different seed rate proportions of Wheat and Gram grown mixed, on yield and its residual effect on succeeding *kharif* crop.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) N.A. (c) N.A. (ii) (a) Loam. (b) N.A. (iii) 1.11.1953. (iv) (a) 6 ploughings and harrowings. (b) N.A. (c) As per treatments. (d) N.A. (e) N.A. (v) 3 C.L. (45 mds./ac.) of well decayed F.Y.M. to be applied 2-3 weeks before sowing all over the field. 1.25 mds./ac. of Super to be placed at a depth of 3"-4" in furrows behind the plough on 22.10.1953. (vi) Wheat C-13 (early) Gram T-87 (medium). (vii) Irrigated. (viii) One weeding. (ix) N.A. (x) 27.3.1954.

## 2. TREATMENTS :

	Seed rate proportions		Seed rate in chk./plot	
	Wheat	Gram	Wheat	Gram
1.	0	100	0.0	9.0
2.	20	80	3.0	7.2
3.	40	60	6.0	5.4
4.	50	50	7.5	4.5
5.	60	40	9.0	3.6
6.	80	20	12.0	1.8
7.	100	0	15.1	0.0

## 3. DESIGN :

(i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 4. (iv) (a) 33'×25'. (b) 30'×22'. (v) Plot border 1.5' all round the plot. (vi) Yes.

## 4. GENERAL :

(i) Normal. (ii) Nil. (iii) Grain and straw yield. (iv) (a) 1950-1953. (b) and (c) No. (v) (a) Kanpur, Atarra, Baharaich, Bharari, Kalai, Etawah and Varanasi. (b) N.A. (vi) The grain yield of gram in the proportion W : G :: 20 : 80 was totally destroyed. (vii) Experiment conducted by C.P.(R).

## 5. RESULTS :

(i) 1415 lb./ac.

(ii) 97.02 lb./ac.

(iii) Treatment differences are highly significant.

(iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	1274
2.	1086
3.	1827
4.	1656
5.	1627
6.	1434
7.	1001
S.E./mean	=48.51 lb./ac.

Crop :-Wheat and Barley.

Ref :-U.P. 52(77).

Site :- Govt. Agri. Farm, Partapgarh.

Type :-'X'.

Object :-To study the effect of different seed rate proportions of Wheat and Barley grown mixed, on yield and its residual effect on the succeeding *kharif* crop.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Sanal* for green manure. (c) Nil. (ii) (a) Light loam. (b) N.A. (iii) 30.10.1952. (iv) (a) 5 ploughings. (b) N.A. (c) As per treatments. (d) N.A. (e) N.A. (v) (1) 3 C.L. (45 mds.) of well decayed F.Y.M. applied equally all over the field 2 to 3 weeks before sowing. (2) 1½ mds. of Super placed at a depth of 3"-4" in furrows behind the plough all over the field on 29.10.1952. (vi) Wheat C-13, Barley C-251. (vii) Irrigated. (viii) N.A. (ix) N.A. (x) 30.3.1953.

## 2. TREATMENTS :

Seed rate proportions		Seed rate in chk./gross plot	
Wheat : Barley		Wheat : Barley	
1.	0 : 100	0.0	25.4
2.	20 : 80	4.1	20.3
3.	40 : 60	8.2	15.2
4.	50 : 50	10.1	12.7
5.	60 : 40	12.3	10.0
6.	80 : 20	16.4	5.0
7.	100 : 0	20.2	0.0

## 3. DESIGN :

(i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 4. (iv) (a) 42'×33'. (b) 39'×30'. (v) Field border 3' around. Plot border 1½'. (vi) Yes.

## 4. GENERAL :

(i) Poor. Damage is about 10%. (ii) Rust. (iii) Grain and straw yield. (iv) (a) 1952-1953. (b) and (c) No. (v) (a) Hardoi and Baharaich. (b) N.A. (vi) Nil. (vii) Experiment conducted by C.P.(R).

## 5. RESULTS :

- (i) 637.3 lb./ac.  
 (ii) 104.2 lb./ac.  
 (iii) Treatment differences are not significant.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	728.0
2.	579.0
3.	607.0
4.	612.6
5.	562.2
6.	622.7
7.	749.3
S.E./mean	=52.1 lb./ac.

Crop :-Wheat and Barley.

Ref :-U.P. 53(54).

Site :-Govt Agri. Farm, Partapgarh.

Type :-'X'.

Object :-To study the effect of different seed rate proportions of Wheat and Barley grown mixed, on yield and its residual effect on the succeeding *kharif* crop.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) and (c) N.A. (ii) (a) Loam. (b) N.A. (iii) 1.11.1953. (iv) (a) 5 ploughings and harrowings. (b) Main crop (wheat) to be sown first in lines east-west through seed drill ; subsequently barley to be similarly sown north-south across wheat lines. (c) Wheat at 40 seers/ac. and barley at 50 seers/ac. (d) and (e) N.A. (v) (1) 45 mds./ac. of well decayed F.Y.M. 2-3 weeks before sowing on 12.10.1953 and (2) 1.25 md./ac. of Super to be placed 3"-4" deep in soil in furrows behind the plough a couple of days before sowing. (vi) Wheat C. 13 (early) and barley C. 251 (N.A.) (vii) Irrigated. (viii) Weeding on 25.12.1953. (ix) N.A. (x) 28.3.1954.



## 2. TREATMENTS :

	Seed rate proportions		Seed rate in lb./plot	
	Wheat : Barley		Wheat : Barley	
1.	0	: 100	0.0	: 1.94
2.	20	: 80	0.31	: 1.54
3.	40	: 60	0.62	: 1.16
4.	50	: 50	0.78	: 0.96
5.	60	: 40	0.93	: 0.77
6.	80	: 20	1.24	: 0.38
7.	100	: 0	1.56	: 0.0

## 3. DESIGN :

(i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 4. (iv) (a) 33'×25'. (b) 30'×22', (v) Plot border 1.5' and field border 3' around. Block partition 3' to serve as irrigation channel. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Rust attack on both crops. (iii) Grain and straw yield. (iv) (a) 1952—1953. (b) and (c) No. (v) (a) Baharaich and Hardoi. (b) N.A. (vi) Nil. (vii) Experiment conducted by C.P.(R).

## 5. RESULTS :

- (i) 1165 lb./ac.  
(ii) 94.38 lb./ac.  
(iii) Treatment differences are highly significant.  
(iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	1428
2.	1230
3.	1291
4.	1210
5.	1014
6.	1011
7.	968
S.E./mean	=47.19 lb./ac.

Crop :- Jowar and Lobia (*Kharif*).

Ref :- U.P. 53(35).

Site :- Govt. Agri. Farm, Partapgarh.

Type :- 'X'.

Object :- To study the effect of different seed rate proportions of *Jowar* and *Lobia* grown mixed, on growth and yield and its residual effect on the succeeding *rabi* crop.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) (a) Light loam. (b) N.A. (iii) 13.7.1953. (v) (a) Ploughing on 7.7.1953, preparation of land on 13.7.1953. (b) Sown behind the plough. (c) *Jowar* 8 srs./ac. and *lobia* 4 srs./ac. (alternate line of each). (d) and (e) N.A. (v) (1) Well decayed F.Y.M. at 150-200 mds/ac. all over the field 2-3 weeks before sowing, (2) Super is placed at 30 srs./ac. 3"-4" deep in the soil behind the plough 4-5 days before sowing and (3) gypsum applied as surface dressing. (vi) *Jowar* 88 and *Lobia* T. 2. (vii) Unirrigated. (viii) Weeding and hoeing on 9.8.1953. (ix) N.A. (x) 7 and 8.12.1953.

## 2. TREATMENTS :

	Seed rate proportions	
	<i>Jowar</i> : <i>Lobia</i>	
1.	0	: 100
2.	20	: 80
3.	40	: 60
4.	50	: 50
5.	60	: 40
6.	80	: 20
7.	100	: 0

## 3. DESIGN :

(i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 4. (iv) (a) 42'×33'. (b) 39'×30'. (v) Plot border 1.5' and field border 3' around; block partition 3'. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Nil. (iii) Grain and straw yield of each crop. (iv) (a) 1953—continued. (b) and (c) No. (v) (a) and (b) No. (vi) Nil. (vii) Experiment conducted by C.P.

## 5. RESULTS :

- (i) 110.6 lb./ac.  
 (ii) 10.42 lb./ac.  
 (iii) Treatment differences are highly significant.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	57.1
2.	106.4
3.	112.0
4.	119.8
5.	125.4
6.	129.9
7.	123.2
S.E./mean	=5.21 lb./ac.

Crop :- Jowar and Arhar.

Ref :- U.P. 53(213).

Site :- Govt. Agri. Farm, Partapgarh.

Type :- 'X'.

Object :- To study the effect of different seed rate proportions of *Jowar* and *Arhar* grown mixed, on growth and yield and its residual effect on the succeeding *rabi* crop.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Wheat and Barley. (c) Green manuring. (ii) (a) Light loam. (b) N.A. (iii) 6.7.1953 (iv) (a) Ploughing and preparation on 5 and 6.7.1953. (b) Sown behind the plough. (c), (d) and (e) N.A. (v) Date of Manuring 5.7.1953. F.Y.M. or *ghura* 150–200 mds./ac. all over the field 2–3 weeks before sowing Super 30 lb./ac. of  $P_2O_5$  3"–4" deep in soil behind the plough, 4–5 days before sowing apply gypsum 20 srs./ac. as surface dressing. Apply 15 srs./ac. of A/S as top dressing about a fortnight after germination following a light shower of rain. (vi) *Jowar* 8B and *Arhar* 66 (early). (vii) Unirrigated. (viii) Weeding on 12 and 15.8.1953. (ix) N.A. (x) 7 and 8.12.1953.

## 2. TREATMENTS :

Seed rate proportions	
Jowar : Arhar	
1.	0 : 100
2.	20 : 80
3.	40 : 60
4.	50 : 50
5.	60 : 40
6.	80 : 20
7.	100 : 0

## 3. DESIGN :

(i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 4. (iv) (a) 42'×23'. (b) 39'×30'. (v) 1½' ring round the net plot. (vi) Yes.

## 4. GENERAL :

(i) The crop of *jowar* was almost wiped out by heavy rains. (ii) No. (iii) Grain yield. (iv) (a) to (c) No. (v) (a) and (b) No. (vi) The yield of *arhar* in treatment 1 is not available. (vii) The experiment was conducted by C.P.

## 5. RESULTS :

- (i) 70.26 lb./ac.  
 (ii) 10.35 lb./ac.  
 (iii) Treatment differences are highly significant.

(iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	—
2.	30.80
3.	43.06
4.	62.19
5.	75.65
6.	89.40
7.	120.50
S.E./mean	=5.18 lb./ac.

Crop :- Cotton and Groundnut.  
Site :- Govt. Cotton Res. Sub-Stn., Raya.

Ref :- U.P. 48(32),  
Type :- 'X'.

Object :- To study the effect of inter cropping Groundnut with Cotton.

### 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Gram. (c) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis, Raya. (iii) 5.6.1948. (iv) (a) Ploughings with *desi* twice 4.6.1948. (b) Sown behind *desi* plough. (c) 20 lb./ac. (d) 8 rows 2' apart per plot and plants 1½' apart, (e) N.A. (v) Nil. (vi) Cotton C 520 (medium). (vii) Irrigated. (viii) Harrowing on 6.6.1948, 1.7.1948. Weedings on 2, 11 and 26.8.1948 and 28 and 29.9.1948. Thinning on 24.7.1948. (ix) 27.76". (x) 15 and 23.10.1948 and 7.11.1948.

### 2. TREATMENTS :

1. Cotton 100%.
2. Cotton 75%+Groundnut 25%.
3. Cotton 50%+Groundnut 50%.
4. Cotton 25%+Groundnut 75%.
- 5- Groundnut 100%.

### 3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 6. (iv) (a) and (b) 78' × 16'. (v) No. (vi) Yes.

### 4. GENERAL :

(i) Normal. (ii) No. (iii) Cotton and Groundnut yield. (iv) (a) to (c) No. (v) (a) and (b) No. (vi) Nil. (vii) The expt. was conducted by E.B.(C).

### 5. RESULTS :

- (i) 139.2 Rs./ac.
- (ii) 29.29 Rs./ac.
- (iii) Treatment differences are highly significant.
- (iv) Av. value of produce in Rs. /ac.

Treatment	Av. value
1.	88.3
2.	121.4
3.	144.3
4.	160.8
5.	181.4
S.E./mean	=11.96 Rs /ac.

Crop :- Wheat and Mustard.  
Site :- Govt. Cotton Res. Sub-Stn., Raya.

Ref :- U.P. 52(80).  
Type :- 'X'.

Object :- To study the effect of different seed rate proportions of Wheat and Mustard grown mixed, on yield and its residual effect on the succeeding *kharif* crop.

### 1 BASAL CONDITIONS :

(i. (a) Nil. (b) *Moong*. (c) N.A. (ii) (a) Sandy loam. (b) Refer soil analysis, Raya. (iii) 1.11.1952. (iv) (a) 4 *desi* ploughings. (b) N.A. (c) As per treatments. (d) and (e) N.A. (v) (1) 3 C.L. compost applied all over the field 2-3 weeks before sowing and (2) 1½ mds. of Super placed at a depth of 3"-4" behind the plough all over the field 2 days before sowing. (vi) Wheat Pb. 591 (medium-late) and mustard-yellow. (vii) Irrigated. (viii) N.A. (ix) N.A. (x) Musrtard 13.3.1953 and wheat 16.3.1953.

## 2. TREATMENTS :

Seed rate proportions			Seed rate required in chk./gross plot	
Wheat : Mustard			Wheat	Mustard
1.	0	: 100	0.0	: 1.5
2.	20	: 80	5.0	: 1.2
3.	40	: 60	10.1	: 0.9
4.	50	: 50	12.7	: 0.7
5.	60	: 40	15.2	: 0.6
6.	80	: 20	20.3	: 0.3
7.	100	: 0	25.4	: 0.0

## 3. DESIGN :

(i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 4. (iv) (a) 42' x 33'. (b) 39' x 30'. (v) Plot border=1½' around and field border=3' around. (vi) Yes.

## 4. GENERAL :

(i) Normal. (ii) Some plants of mustard were attacked by aphids. (iii) Grain and straw yield. (iv) (a) 1952-1953. (b) and (c) No. (v) (a) Baharaich and Etawah. (b) N.A. (vi) Nil. (vii) Experiment conducted by C.P. (R).

## 5. RESULTS :

- (i) 1194 lb./ac.  
 (ii) 222.9 lb./ac.  
 (iii) Treatment differences are highly significant.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	558
2.	825
3.	1102
4.	1307
5.	1429
6.	1410
7.	1724
S.E./mean	= 111.4 lb./ac.

Crop :- Wheat and Mustard.

Ref :- U.P. 53(65).

Site :- Govt. Cotton Res. Sub-Stn., Raya.

Type :- 'X'.

Object :- To study the effect of different seed rate proportions of Wheat and Mustard grown mixed, on yield and its residual effect on the succeeding *kharif* crop.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Moong*. (c) Nil. (ii) (a) Sandy loam. (b) Refer soil analysis, Raya. (iii) 16.11.1953. (iv) (a) Ploughing with *desi* plough on 25, 26. 10.1953 and with cultivator on 18.10.1953. (b) Sown behind plough in alternate lines. (c) Wheat at 50 srs./ac. and mustard at 3 srs./ac. (d) and (e) N.A. (v) (1) 45 mds./ac. well decayed F.Y.M. 2-3 weeks before sowing and (2) 1.25 mds./ac. of P<sub>2</sub>O<sub>5</sub> as (Super to be placed 3"-4" deep in soil in furrows behind the plough a couple of days before sowing. (vi) Wheat Pb. 591 and mustard-yellow. (vii) Irrigated. (viii) Weeding and hoeing. (ix) N.A. (x) Mustard on 23.3.1954 and wheat on 8.4.1954.

## 2. TREATMENTS :

Seed rate proportions			Seed rate required in chk./gross plot	
Wheat : Mustard			Wheat	Mustard
1.	0	: 100	0	: 0.19
2.	20	: 80	0.64	: 0.15
3.	40	: 60	1.29	: 0.12
4.	50	: 50	1.63	: 0.08
5.	60	: 40	1.95	: 0.07
6.	80	: 20	2.61	: 0.04
7.	100	: 0	3.26	: 0

## 3. DESIGN :

(i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 4. (iv) (a) 42'×33'. (b) 39'×30'. (v) Plot border 1.5' and field border 3' around ; block partition 3' to serve as irrigation channel. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Nil. (iii) Grain and straw yield. (iv) (a) 1952—1953. (b) and (c) No. (v) (a) Etawah and Baharaich. (b) N.A. (vi) Nil. (vii) Experiment conducted by C.P. (R).

## 5. RESULTS :

- (i) 1565 lb./ac.  
 (ii) 152.6 lb./ac.  
 (iii) Treatment differences are highly significant.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	665
2.	1208
3.	1626
4.	1689
5.	1959
6.	1762
7.	2048
S.E./mean	=76.3 lb./ac.

Crop :- Barley and Pea (*Rabi*).

Ref :- U.P. 53(69).

Site :- Govt. Cotton Res. Sub-Stn., Raya.

Type :- 'X'.

Object :- To study the physiological response of mixed cropping to application of N, P, K and CaO.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) (a) Sandy loam. (b) Refer soil analysis, Raya. (iii) 2.12.1953. (iv) (a) Ploughing with victory plough on 14.9.1953 and with *desi* plough on 27.9.1953, 29.9.1953, 15.10.1953 and 16.11.1953. (b) Sown behind the plough in alternate lines. (c) Barley 30 seers/ac. (1.56 lb./plot) and Pea 8 seers/ac. (10.32 lb./plot.) (d) N.A. (e) N.A. (v) Nil. (vi) Barley C-54, Pea T-63. (vii) Irrigated. (viii) Weeding and hoeing at the proper time are common in practice. (ix) N.A. (x) Pea 25.3.1954 and Barley 4.4.1954.

## 2. TREATMENTS :

All combinations of (1), (2), (3) and (4)

- (1) Two levels of N as A/S :  $N_0=0$  and  $N_1=40$  lb./ac.  
 (2) Two levels of  $P_2O_5$  as Super :  $P_0=0$  and  $P_1=50$  lb./ac.  
 (3) Two levels of  $K_2O$  as Pot. Sul :  $K_0=0$  and  $K_1=40$  lb./ac.  
 (4) Two levels of CaO as Gypsum :  $C_0=0$  and  $C_1=60$  lb./ac.

A/S applied on 5.1.1954 ; Super on 1.12.1953, Pot. Sul. on 4.1.1953 and Gypsum on 4.1.1954.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 16. (b) N.A. (iii) 3. (iv) (a) 22'×37'. (b) 19'×34'. (v) Plot border 1.5' and field border 2' around. Block partition 3' to serve as irrigation channel. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Slight damage caused by incidence of aphids. (iii) Grain and straw yield. (iv) (a) 1953—continued. (b) and (c) No. (v) (a) Baharaich, Kalai, Aligarh and Lucknow. (b) N.A. (vi) Nil. (vii) Experiment conducted by C.P.(R).

## 5. RESULTS :

- (i) 1962 lb./ac.  
 (ii) 260.5 lb./ac.  
 (iii) Main effect of K and interactions  $N \times K$ ,  $K \times C$ ,  $N \times K \times C$  are all significant. Main effect of C is highly significant. Other main effects and interactions are not significant.

(iv) Table of mean and differential response in lb./ac.

	Mean response	N		P		K		C	
		Absence	Presence	Absence	Presence	Absence	Presence	Absence	Presence
N	-15.54	—	—	58.51	-89.59	-213.85	182.78	89.58	-120.65
P	-72.61	1.44	-146.66	—	—	-170.50	25.28	24.56	-169.78
K	169.42	-28.90	367.73	71.53	267.31	—	—	-25.01	364.84
C	247.44	352.56	142.33	344.61	150.27	52.02	442.87	—	—

S.E. of mean response=75.19 lb./ac.

S.E. of differential response=106.34 lb./ac.

Crop :- Barley and Pea.

Site :-Govt. Res. Stn., Varanasi.

Ref :- U.P.53(160).

Type :-'X'.

Object :—To study the effect of differing seed rate proportions of Barley and Pea grown mixed, on yield and its residual effect on the succeeding *kharif* crop.

## 1. BASAL CONDITIONS:

(i) (a) Paddy-Pea, Fallow-Barley and Paddy-Fallow. (b) Paddy. (c) Nil. (ii) (a) Clay loam. (b) Refer soil analysis, Varanasi. (iii) 29.11.1953. (iv) (a) *palewa* 20.11.1953, ploughings 28, 29.11.1953. (b) Sown behind the plough; main crop barley sown first in lines east-west behind the plough; subsequently Pea similarly sown north-south; *i.e.* across the barley lines. (c) As per treatments. (d) N.A. (e) N.A. (v) (1) 3 C.L. (45 md.) of well decayed F.Y.M. or compost supplied all over the field 2-3 weeks before sowing. (2) 1½ md. of Super to be placed at a depth of 3"-4" in furrows behind the plough all over the field a couple of days before sowing. (vi) Barley and Pea (Improved). (vii) Irrigated. (viii) N.A. (ix) N.A. (x) 12.4.1954.

## 2. TREATMENTS :

	Seed rate proportion Barley : Pea		Seed rate in chk./plot Barley : Pea	
1.	0	: 100	0.0	: 20.3
2.	20	: 80	5.0	: 16.3
3.	40	: 60	10.1	: 12.2
4.	50	: 50	12.7	: 10.0
5.	60	: 40	15.2	: 8.1
6.	80	: 20	20.3	: 4.0
7.	100	: 0	25.4	: 0.0

## 3. DESIGN :

(i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 4. (iv) (a) 42'×33'. (b) 39'×30'. (v) Field border 3' around. Plot border 1½'. Irrigation channel 3'. (vi) Yes.

## 4. GENERAL :

(i) Satisfactory. (ii) Attacked by rust. (iii) Grain and straw yield. (iv) (a) 1952—contd. (b) No. (c) No. (v) (a) Faizabad, Kalyanpur, Atarra, Kalai, Etawah and Kanpur. (b) N.A. (vi) Nil. (vii) Experiment conducted by C.P.(R).

## 5. RESULTS :

- (i) 887.9 lb./ac.
- (ii) 94.73 lb./ac.
- (iii) Treatment differences are significant.
- (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	995.6
2.	923.8
3.	954.9
4.	904.7
5.	789.8
6.	804.2
7.	842.5
S.E./mean	=47.36 lb./ac.

Crop :- Gram and Linseed.

Ref :- U.P. 52(79).

Site :- Regional Res. Stn., Varanasi.

Type :- 'X'.

Object :- To study the effect of different seed rate proportions of Gram and Linseed grown mixed on yield and its residual effect on the succeeding *kharif* crop.

#### 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) (a) Loam. (b) Refer soil analysis, Varanasi. (iii) 1 and 2.11.1952. (iv) (a) Ploughing and harrowing on 11, 27.9.1952; 1, 18, 31.10.1952 and 1.11.1952. (b) N.A. (c) As per treatments. (d) and (e) N.A. (v) Date of manuring 15.10.1952. (1) 3 C.L. of well decayed F.Y.M. applied equally all over the field and (2) 1½ md. of Super to be placed at a depth of 3"-4" in furrows behind the plough all over the field. (vi) Gram T. 87 (late) and linseed local. (vii) Irrigated. (viii) and (ix) N.A. (x) 28.3.1953.

#### 2. TREATMENTS :

1.	Seed rate proportion		Seed rate in chk./gross plot	
	Gram : Linseed		Gram : Linseed	
1.	0	: 100	0.0	: 6.1
2.	20	: 80	4.0	: 4.8
3.	40	: 60	8.1	: 3.6
4.	50	: 50	10.1	: 3.0
5.	60	: 40	12.2	: 2.4
6.	80	: 20	16.3	: 1.2
7.	100	: 0	20.3	: 0

#### 3. DESIGN :

(i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 4. (iv) (a) 42'×33'. (b) 39'×30'. (v) Field border=3' around and plot border=1½'. (vi) Yes.

#### 4. GENERAL :

(i) Poor. (ii) Nil. (iii) Grain and straw yield. (iv) (a) 1952-1954. The experiment failed in 1953. (b) and (c) No. (v) (a) Lucknow, Baharaich, Hamirpur and Banda. (b) N.A. (vi) Nil. (vii) Experiment conducted by C.P.(R).

#### 5. RESULTS :

- (i) 464.1 lb./ac.  
(ii) 139.3 lb./ac.  
(iii) Treatment differences are highly significant.  
(iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	177.1
2.	351.8
3.	451.1
4.	473.9
5.	521.8
6.	607.9
7.	665.4
S.E./mean	=69.63 lb./ac.

Crop :-Wheat and Gram.

Ref :-U.P. 52(95).

Site :-Regional Res. Stn., Varanasi.

Type :-'X'.

Object : To study the effect of different seed rate proportions of Wheat and Gram grown mixed, on yield and its residual effect on the succeeding *kharif* crop.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) (a) Clay loam. (b) Refer soil analysis, Varanasi. (iii) 15.11.1952. (iv) (a) 7 Ploughings. (b) N.A. (c) As per treatments. (d) and (e) N.A. (v) (1) 3 C.L. (45 md.) of well decayed F.Y.M. applied all over the field on 30.10.1952 and (1) 1½ md. of Super placed at a depth of 3"-4" in furrows behind the plough all over the field on 14.11.1952. (vi) Wheat—NP. 52 (medium early) and gram T. 87 (late). (vii) Irrigated. (viii) to (x) N.A.

## 2. TREATMENTS :

	Seed rate proportion		Seed used in chk./gross plot	
	Wheat	Gram	Wheat	Gram
1.	0	100	0.0	20.3
2.	20	80	6.1	16.3
3.	40	60	12.2	12.2
4.	50	50	15.2	10.1
5.	60	40	18.3	8.1
6.	80	20	24.4	4.0
7.	100	0	30.5	0.0

## 3. DESIGN :

(i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 4. (iv) (a) 42'×33'. (b) 39'×30'. (v) Field border=3' around and plot border=1½'. (vi) Yes.

## 4. GENERAL :

(i) Normal. (ii) Nil. (iii) Grain and straw yield. (iv) (a) 1952—1956. (b) and (c) No. (v) (a) Lucknow, Kanpur, Baharaich, Pratapgarh, Aligarh, Banda, Etawah and Jhansi. (b) N.A. (vi) Nil. (vii) Experiment conducted by C.P.(R).

## 5. RESULTS :

- (i) 1046 lb./ac.  
(ii) 171.6 lb./ac.  
(iii) Treatment differences are highly significant.  
(iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	232
2.	795
3.	1180
4.	1230
5.	1231
6.	1259
7.	1393
S.E./mean	=85.8 lb /ac.

Crop :-Wheat and Gram.

Ref :- 53(152)

Site :-Regional Res. Stn., Varanasi.

Type :-'X'.

Object :—To study the effect of different seed rate proportions of Wheat and Gram grown mixed on yield and its residual effect on the succeeding *kharif* crop.

## 1. BASAL CONDITIONS :

(i) (a) Sugarcane—Sugarcane, Fallow—Wheat, *Sanai*—Wheat. (b) *Sanai* (c) Nil. (ii) (a) Loam. (b) Refer soil analysis, Varanasi. (iii) 16.11.1953. (iv) (a) Ploughings on 10 and 31.10.1953, 12 and 14.11.1953. (b) Sown behind the plough, main crop wheat sown first in lines east—west behind the plough, subsequently gram sown north—south *i. e.* across the wheat lines. (c) As per treatments. (d) and (e) N.A. (v) 3 C.L. (45 md.) of well decayed F.Y.M or compost to be applied 2—3 weeks before sowing all over the field. (ii) 1½ md. of Super to be placed at a depth of 3"—4" in furrows behind the plough all over the field, a couple of days before sowing. Date of manuring 31.10.1953. (vi) Wheat NP. 52 and Gram T 87 (vii) Irrigated. (viii) Not recorded. (ix) N.A. (x) 27.3.1954.



## 2. TREATMENTS :

Seed rate proportion			Seed rate in chk/plot		
	Wheat	: Gram	Wheat	:	Gram
1.	0	: 100	0.0	:	20.3
2.	20	: 80	6.1	:	16.3
3.	40	: 60	12.2	:	12.2
4.	50	: 50	15.2	:	10.1
5.	60	: 40	18.3	:	8.1
6.	80	: 20	24.4	:	4.0
7.	100	: 0	30.5	:	0.0

## 5. DESIGN :

(i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 4. (iv) (a) 42'×33'. (b) 39'×30'. (v) Field border 3'; plot border 1½'; irrigation channel 3'. (vi) Yes.

## 4. GENERAL :

(i) Satisfactory. (ii) Attacked by rust. (iii) Grain and straw yield. (iv) (a) 1952-1956. (b) and (c) No. (v) (a) Etawah, Kalyanpur (Kanpur), Atarra, Baharaich, Kalai (Aligarh). (b) N.A. (vi) Nil. (vii) The expt. was conducted by C.P.(R),

## 5. RESULTS :

- (i) 1167 lb./ac.  
(ii) 171.2 lb./ac.  
(iii) Treatment differences are not significant.  
(iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	890
2.	1264
3.	1109
4.	1215
5.	1270
6.	1230
7.	1188
S.E./mean	=85.6 lb./ac.

Crop :-Wheat and Gram (*Rabi*).

Zone :-Orrai (Jalaun).

Ref :-U.P. 52(253).

Type :-'X'.

Object :-To draw out a suitable fertilizer schedule for the agriculturally important soil types.

## 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) Bundelkhand Type 2 and 3 (iii) N.A. (iv) Improved. (v) (a) After application of manure, the field was levelled by drawing a *paa*. (b) Sown in lines parallel to the fertilizer line. (c) N.A. (d) 1" to 2" away from the fertilizer line. (e) N.A. (vi) N.A. (vii) N.A. (viii) N.A. (ix) N.A. (x) N.A.

## 2. TREATMENTS :

- Control (no manure).
- 50 lb./ac. of N as A/S.
- 30 lb./ac. of N as A/S+60 lb./ac. of P<sub>2</sub>O<sub>5</sub> as Super.

A/S added to surface at sowing time super is placed at a depth of about 3"-4" at the sole of the furrow and in the side of the seed row made by either an iron plough or two *desi* ploughs one behind the other in the same furrow.

## 3. DESIGN :

(i), (ii) Villages selected in the district and unreplicated experiment laid out. 18 trials. (iii) (a) N.A. (b) 1/40 ac. (iv) N.A.

## GENERAL :

(i) N.A. (ii) N.A. (iii) Grain and straw yield. (iv) (a) No. (b) and (c) N.A. (v) N.A. (vi) Nil. (vii) The expt. was conducted by A.C. on cultivators' fields.

## 5. RESULTS :

## I Crop : Wheat

- (i) 1338 lb./ac.  
(ii) 165.8 lb./ac.  
(iii) Treatment differences are highly significant.  
(iv) Av. yield of grain lb./ac.

Treatment	Av. yield
1.	1091
2.	1393
3.	1529
S.E./mean	=39.1 lb./ac.

## II Crop : Gram

- (i) 252 lb./ac.  
(ii) 39.70 lb./ac.  
(iii) Treatment differences are highly significant.  
(iv) Av. yield of grain in lb /ac.

Treatment	Av. yield
1.	216
2.	252
3.	288
S.E./mean	=9.36 lb./ac.

Crop :- Arhar and Jowar (*Kharif*.)

Ref :- U.P. 50(246).

Zone :- In 5 tahsils of Kanpur.

Type :- 'X'.

Object :- To draw out a fertilizer schedule for agriculturally important soil type.

## 1. BASAL CONDITIONS :

- (i) (a) to (c) N.A. (ii) N.A. (iii) N.A. (iv) Improved. (v) (a) to (c) N.A. (vi) July 1950. (vii) N.A. (viii) N.A. (ix) N.A. (x) November 1950.

## 2. TREATMENTS :

- Control.
- 15 lb./ac. of N as A/S.
- 15 lb./ac. of N as A/S+30 lb./ac. of P<sub>2</sub>O<sub>5</sub> as Super.

## 3. DESIGN :

- (i) and (ii) R.B.D. in which villages have been taken as replications (no. of villages=17) and field selected randomly in a randomly selected village. (iii) (a) and (b) N.A. (iv) N.A.

## 4. GENERAL :

- (i) Satisfactory. (ii) N.A. (iii) Yield of *arhar* and *jowar*. (iv) (a) No. (b) and (c) N.A. (v) (a) and (b) N.A. (vi) Nil. (vii) The experiment was conducted by A.C.

## 5. RESULTS :

- (i) 567 lb./ac.  
(ii) 61.84 lb./ac.  
(iii) Treatment differences are highly significant.  
(iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	454
2.	573
3.	673
S.E./mean	=15.00 lb./ac.

Crop :- Apple.

Ref :- U.P. 48(110).

Site :- Govt. Hill Fruit Res. Stn., Chaubattia.

Type :- 'M'.

Object :- To find out the residual effect of manures on the growth and bearing of Apple.

## 1. BASAL CONDITIONS :

- (i) Under orchard. (ii) (a) Clay loam. (b) N.A. (iii) *Budding*. (iv) Delicious. (v) Last week of November 1939 and spacing : 20' x 20'. (vi) About 2 years. (vii) Application of lime according to the requirements of soil, by spreading and mixing in the soil, given at the time of planting and also in 1951. (viii) Grass is turned in the soil and not removed. (ix) Nil. (x) Unirrigated. (xi) Nil. (xii) From August to September.

## 2. TREATMENTS :

All combinations of (1), (2), (3) and (4)

(1) 2 levels of N as A/S :  $N_0=0$  and  $N_1=4.4$  oz./tree.

(2) 2 levels of K :  $K_0=0$  and  $K_1=2.4$  oz./tree.

(3) 2 levels of  $P_2O_5$  as Super :  $P_0=0$ ,  $P_1=6.9$  oz./tree.

(4) 4 root stocks :  $R_1$ =Malling type XIII,  $R_2$ =Malling type II,  $R_3$ =Meston-779 and  $R_4$ =Meston-793.

Treatments applied in 1939.

## 3. DESIGN :

(i)  $2^3 \times 4$  confounded Fact. in R.B.D.,  $R \times N \times P \times K$ , interaction is totally confounded. (b) 16 plots/block and 2 blocks/replication. (iii) 1. (iv) 6. (v) A row of trees left around the plot. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) Woolly aphid, stem black, stem brown and apple root borer ; mechanical control methods used like pruning etc. (iii) Measurement of girth and yield of fruit. (iv) (a) 1939—contd. (b) N.A. (v) N.A. (vi) Nil. (vii) The experiment was conducted by Hort (C). It appears that the manures were applied in 1939 and continued upto 1944, but in the original records or files, it is nowhere clearly mentioned that the manures were applied each year from 1939 to 1944, from 1945 no manures were applied but again the manures were applied in 1950, but it is not known when manuring was stopped.

## 5. RESULTS :

(i) 20.49 lb./tree.

(ii) 10.50 lb./tree.

(iii) None of the effects is significant.

(iv) Av. yield of apple in lb./tree.

	$R_1$	$R_2$	$R_3$	$R_4$	Mean	$K_0$	$K_1$	$P_0$	$P_1$
$N_0$	14.48	22.60	20.06	22.45	20.12	21.88	18.37	18.13	22.12
$N_1$	24.40	30.00	18.35	10.71	20.86	22.05	19.68	18.78	22.95
Mean	19.44	26.30	19.66	16.58	20.49	21.96	19.02		
$P_0$	14.26	28.93	11.09	19.54	18.46	17.71	19.20		
$P_1$	24.62	23.67	28.23	13.62	22.53	26.22	18.84		
$K_0$	22.03	26.60	20.25	19.00					
$K_1$	16.86	26.00	19.07	14.17					

S.E. of marginal means of N, P or K

=2.62 lb./tree.

S.E. of marginal mean of R

=3.71 lb./tree.

S.E. of body of  $R \times K$ ,  $R \times N$  or  $R \times P$  table

=5.25 lb./tree.

S.E. of body of  $N \times P$ ,  $N \times K$  or  $P \times K$  table

=3.71 lb./tree.

Crop :- Apple.

Ref :- U.P. 49(219).

Site :- Govt. Hill Fruit Res. Stn., Chaubattia.

Type :- 'M'.

Object: —To find out the residual effect of manures on the growth and bearing of Apple.

## 1. BASAL CONDITIONS :

(i) Under orchard. (b) (a) Clay loam. (b) N.A. (iii) Budding. (iv) Delicious. (v) Last week of Nov. 1939 and spacing  $20' \times 20'$ . (vi) About 2 years. (vii) Application of lime according to the requirements of soil by spreading and mixing in the soil at the time of planting and also in 1951. (viii) Grass is turned in the soil and not removed from the soil. (ix) Nil. (x) Unirrigated. (xi) N.A. (xii) August to September.

## 2. TREATMENTS :

All combinations of (1), (2), (3) and (4)

(1) 2 levels of N as A/S :  $N_0=0$  and  $N_1=4.4$  oz/tree.

(2) 2 levels of K :  $K_0=0$  and  $K_1=2.4$  oz/tree.

(3) 2 levels of  $P_2O_5$  as Super :  $P_0=0$  and  $P_1=6.9$  oz/tree.

(4) 4 root stocks :  $R_1$ =Malling type XIII,  $R_2$ =Malling type II,  $R_3$ =Meston 779 and  $R_4$ =Meston 793.

Treatments applied in 1939.

## 3. DESIGN :

(i)  $2^3 \times 4$  (confounded Fact. in R.B.D.,  $R \times N \times P \times K$  interaction is totally confounded. (ii) (a) 16 plots/block and 2 blocks/replication. (b) N.A. (iii) 1. (iv) 6. (v) All round each plot a row of tree left. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) Woolly aphid, stem black, stem brown and apple root borer ; mechanical control method like pruning etc. (iii) Girth measurements and fruit yield. (iv) (a) 1939—contd. (b) N.A. (v) N.A. (vi) Nil. (vii) The experiment was conducted by Hort (C). It appears that the manures were applied in 1939 and continued upto 1944, but in the original records or files, it is no where clear that the manures were applied each year from 1939 to 1944. From 1945 no manures were applied but again the manures were applied in 1950, but it is not known when manuring was stopped.

## 5. RESULTS :

(i) 41.88 lb./tree.

(ii) 16.99 lb./tree.

(iii) R effect is highly significant and interaction  $R \times P$  is significant. Others are not significant.

(iv) Av. yield of apple in lb./tree.

	$R_1$	$R_2$	$R_3$	$R_4$	Mean	$K_0$	$K_1$	$P_0$	$P_1$
$N_0$	29.07	60.50	38.44	46.22	43.56	47.03	40.09	40.01	47.11
$N_1$	30.50	47.62	33.65	22.00	40.19	41.99	38.39	45.51	34.87
Mean	29.78	67.56	36.04	34.11	41.88	44.51	39.24	2.764	40.99
$P_0$	27.04	86.21	23.30	34.48	42.76	49.46	36.06		
$P_1$	32.52	48.90	48.79	33.74	40.99	39.56	42.42		
$K_0$	29.18	75.16	33.88	39.82					
$K_1$	30.38	59.96	38.21	28.41					

S.E. of marginal mean of N, P or K = 4.25 lb./tree.

S.E. of marginal means of R = 6.01 lb./tree.

S.E. of body of  $R \times K$ ,  $R \times N$  or  $R \times P$  tables = 8.50 lb./tree.

S.E. of body of  $N \times P$ ,  $P \times K$  or  $N \times K$  tables = 6.01 lb./tree.

Crop :- Apple.

Ref :- U.P. 50(276).

Site :- Govt. Hill Fruit Res. Stn., Chaubattia.

Type :- 'M'.

Object :- To find out the residual effects of manures on the growth and bearing of Apple.

## 1. BASAL CONDITIONS :

(i) Under orchard. (ii) Clay loam. (b) N.A. (iii) Budding. (iv) Delicious. (v) Last week of Nov., 1939. Spacing  $20' \times 20'$ . (vi) About two years. (vii) Application of lime according to the requirements of soil, by spreading and mixing in the soil at the time of planting and also in 1951. (viii) Grass is turned in the soil and not removed from the land. (ix) Nil. (x) Unirrigated. (xi) N.A. (xii) August to September.

## 2. TREATMENTS :

All combinations of (1), (2), (3) and (4)

(1) 2 levels of N as A/S :  $N_0=0$  and  $N_1=4.4$  oz/tree.

(2) 2 levels of K :  $K_1=0$  and  $K_1=2.4$  oz/tree.

(3) 2 levels of  $P_2O_5$  as Super :  $P_0=0$  and  $P_1=6.9$  oz/tree.

(4) 4 root stocks :  $R_1$ =Malling type XIII,  $R_2$ =Malling type II,  $R_3$ =Meston-779 and  $R_4$ =Meston-793. Treatments applied in 1939.

## 3. DESIGN :

(i)  $2^3 \times 4$  confounded fact. in R.B.D.  $R \times N \times P \times K$  interaction totally confounded. (ii) (a) 16 plots/block and 2 blocks/replication. (b) N.A. (iii) 1. (iv) 6. (v) Allround each plot one row of tree left. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) Woolly aphid, stem black, stem brown and apple root borer—mechanical methods like pruning etc. applied. (iii) Girth measurement and fruit yield. (iv) (a) 1939—contd. (b) N.A. (v) N.A. (vi) Nil. (vii) The experiment was conducted by Hort (C). It appears that the manures were applied in 1939 and continued upto 1944, but in the original records or files it is nowhere clearly mentioned that the manures were applied each year from 1939 to 1944. From 1945 no manures were applied but again the manures were applied in 1950, but is not known when manuring was stopped.

## 5. RESULTS :

(i) 45.70 lb./tree.

(ii) 35.50 lb./tree.

(iii) None of the effects is significant.

(iv) Av. yield of fruit in lb./tree.

	$R_1$	$R_2$	$R_3$	$R_4$	Mean	$K_0$	$K_1$	$P_0$	$P_1$
$N_0$	24.63	47.66	37.27	41.93	37.87	45.40	30.34	25.82	49.92
$N_1$	47.21	81.26	46.79	38.88	53.54	58.44	48.63	56.66	50.41
Mean	35.92	64.46	42.03	40.40	45.70	51.92	39.48		
$P_0$	30.22	66.55	25.16	43.03	41.24	51.36	31.12		
$P_2$	41.62	62.36	58.90	37.78	50.16	52.48	47.85		
$K_0$	43.43	86.17	34.70	43.38	51.92				
$K_1$	28.41	42.74	49.36	37.42	39.48				

S.E. of marginal mean of N, P or K

= 8.88 lb./tree.

S.E. of marginal mean of R

=12.55 lb./tree.

S.E. of body of  $R \times K$ ,  $R \times N$  or  $R \times P$  table

=17.75 lb./tree.

S.E. of body of  $N \times P$ ,  $P \times K$  or  $N \times K$  table

=12.55 lb./tree.

Crop :- Apple.

Ref :- U.P. 51(260).

Site :- Govt. Hill Fruit Res. Stn., Chaubattia.

Type :- 'M'.

Object :- To find out the residual effect of manures on the growth and bearing of Apple.

## 1. BASAL CONDITIONS :

(i) Under orchard. (ii) (a) Clay loam. (b) N.A. (iii) Budding. (iv) Delicious. (v) Last week of Nov. 1939. Spacings  $20' \times 20'$ . (vi) About 2 years. (vii) Application of lime according to the requirements of soil by spreading and mixing in the soil, at the time of planting and also in 1951. (viii) Grass is turned in the soil and is not removed from the land. (ix) Nil. (x) Unirrigated. (xi) N.A. (xii) From August to September 1951.

**2. TREATMENTS :**

All combinations of (1), (2), (3) and (4)

(1) 2 levels of N as A/S :  $N_0=0$  and  $N_1=4.4$  oz./tree.

(2) 2 levels of K :  $K_0=0$  and  $K_1=2.4$  oz./tree.

(3) 2 levels of  $P_2O_5$  as Super :  $P_0=0$  and  $P_1=6.9$  oz./tree.

(4) 4 root stocks :  $R_1$ =Malling type XIII,  $R_2$ =Malling type II,  $R_3$ =Meston 779 and  $R_4$ =Meston 793.

Treatments applied in 1939.

**3. DESIGN :**

(i)  $2^3 \times 4$  confounded fact. in R.B.D.  $R \times N \times P \times K$  interaction is totally confounded. (ii) (a) 16 plots/block, 2 blocks/replication. (b) N.A. (iii) 1. (iv) 6. (v) One row of trees left all round each plot. (vi) Yes.

**4. GENERAL :**

(i) N.A. (ii) Woolly aphis, stem borer, stem brown and apple root borer. Mechanical methods like pruning etc. applied. (iii) Girth measurement and yield of fruit. (iv) (a) 1939—contd. (b) N.A. (v) N.A. (vi) Nil. (vii) The experiment was conducted by Hort (C). It appears that the manures were applied in 1939 and continued up to 1944, but in the original records or files it is nowhere clearly mentioned that the manures were applied each year from 1939 to 1944. From 1945 no manures were applied but again the manures were applied in 1950, but it is not known when manuring stopped.

**5. RESULTS :**

(i) 48.53 lb./tree.

(ii) 24.10 lb./tree.

(iii) None of the effects is significant.

(iv) Av. yield of fruits in lb./tree.

	$R_1$	$R_2$	$R_3$	$R_4$	Mean	$K_0$	$K_1$	$P_0$	$P_1$
$N_0$	38.50	45.32	50.57	62.66	49.26	47.18	51.34	47.18	51.35
$N_1$	46.30	63.64	53.46	27.76	47.79	54.67	40.91	48.05	47.53
Mean	42.40	54.48	52.02	45.21	48.53	50.93	46.12		
$P_0$	30.64	66.66	47.49	45.68	47.62	53.90	41.33		
$P_1$	54.16	42.31	56.54	44.78	49.44	47.96	50.92		
$K_0$	49.44	56.52	48.14	49.61					
$K_1$	35.36	52.45	55.89	40.80					

S.E. of marginal means of N, P or K

= 6.03 lb./tree

S.E. of marginal means of R

= 8.52 lb./tree

S.E. of body of  $R \times K$ ,  $R \times N$  or  $R \times P$  tables

= 12.05 lb./tree

S.E. of body of  $N \times P$ ,  $P \times K$  or  $N \times K$  tables

= 8.52 lb./tree

Crop :- Apple.

Ref :- U.P. 52(301).

Site :- Govt. Hill Fruit Res. Stn., Chaubattia.

Type :- 'M'.

Object :- To find out the residual effects of manures on the growth and bearing of Apple.

**1. BASAL CONDITIONS :**

(i) Under orchard. (ii) (a) Clay loam. (b) N.A. (iii) By budding. (iv) Delicious. (v) Last week of November 1939; spacing  $20' \times 20'$ . (vi) About 2 years. (vii) Application of lime according to the requirements of soil, by spreading and mixing in the soil, given at the time of planting and also in 1951. (viii) Grass is turned in the soil and is not removed from the soil. (ix) Nil. (x) Unirrigated. (xi) N.A. (xii) August to September 1952.

**2. TREATMENTS :**

All combinations of (1), (2), (3) and (4)

(1) 2 levels of N as A/S :  $N_0=0$  and  $N_1=4.4$  oz./tree.

(2) 2 levels of K :  $K_0=0$  and  $K_1=2.4$  oz./ac.

(3) 2 levels of  $P_2O_5$  as Super :  $P_0=0$  and  $P_1=6.9$  oz./tree.

(4) 4 root stocks :  $R_1$ =Malling type XIII,  $R_2$ =Malling type II,  $R_3$ =Meston 779 and  $R_4$ =Meston 793.

Treatments applied in 1939.

**3. DESIGN :**

(i)  $2^3 \times 4$  confounded Fact. in R.B.D  $R \times N \times P \times K$  interaction is totally confounded. (ii) (a) 16 plots/block and 2 blocks/replication. (b) N.A. (iii) 1. (iv) 6. (v) A row of tree left around the plot. (vi) Yes.

**4. GENERAL :**

(i) N.A. (ii) Woolly aphis, stem black, stem brown and apple root borer—mechanical control methods like pruning etc. (iii) Girth measurement and yield. (iv) (a) 1939—contd. (v) N.A. (vi) Nil. (vii) The experiment was conducted by Hort (C). It appears that the manures were applied in 1939 and continued upto 1944, but in the original records or files it is no where clear that the manures were applied each year from 1939 to 1944. From 1945 no manures were applied but again the manures were applied in 1950, but it is not known when manuring was stopped.

**5. RESULTS :**

(i) 106.0 lb./tree.

(ii) 50.69 lb./tree.

(iii) None of the effects is significant.

(iv) Av. yield of fruit in lb./tree.

	$R_1$	$R_2$	$R_3$	$R_4$	Mean	$K_0$	$K_1$	$P_0$	$P_1$
$N_0$	112.5	88.9	106.6	151.7	115.0	112.1	117.8	82.0	147.9
$N_1$	87.4	94.6	107.8	98.6	97.1	114.1	80.1	93.6	100.7
Mean	100.0	91.8	107.2	125.2	106.0	113.1	98.9		
$P_0$	84.7	88.8	78.2	99.5	87.8	96.9	78.7		
$P_1$	115.3	94.7	136.2	150.8	124.3	129.3	119.2		
$K_0$	121.9	114.1	102.7	113.7					
K	78.0	69.5	111.7	136.6					

S.E. of marginal means of N, P or K

=12.67 lb./tree.

S.E. of marginal mean of R

=17.92 lb./tree.

S.E. of body of  $R \times K$ ,  $R \times N$ , or  $R \times P$  tables

=25.34 lb./tree.

S.E. of body of  $N \times P$ ,  $P \times K$  or  $N \times K$  tables

=17.92 lb./tree.

Crop :-Apple.

Ref :-U.P. 53(82).

Site :-Govt. Hill Fruit Res. Stn., Chaubattia.

Type :-'M'.

Object :-To find out the residual effect of manures upon the growth and bearing of Apple.

**1. BASAL CONDITIONS :**

(i) Under forest. (ii) (a) and (b) N.A. (iii) Budding. (iv) Delicious. (v) Last week of Nov. 1939. Spacing :  $20' \times 20'$  (vi) About 2 years. (vii) Application of lime according to the requirement of soil by spreading and mixing in the soil, given at the time of planting and also in 1951. (viii) N.A. (ix) Nil. (x) Unirrigated. (xi) N.A. (xii) N.A.

## 2. TREATMENTS :

All combinations of (1), (2), (3) and (4)

- (1) 2 levels of N as A/S :  $N_1=4.4$  oz./tree and  $N_2=1.0$  lb./ac.  
 (2) 2 levels of K :  $K_1=6.9$  oz./tree and  $K_2=2.7$  lb./tree.  
 (3) 2 levels of  $P_2O_5$  as Super :  $P_1=2.4$  oz./tree and  $P_2=0.3$  lb./tree.  
 (4) 4 root stocks :  $R_1$ =Malling type XIII,  $R_2$ =Malling type II,  $R_3$ =Meston 779 and  $R_4$ =Meston 794.

## 3. DESIGN :

(i)  $2^3 \times 4$  confounded Fact. in R.B.D.  $R \times N \times P \times K$  is totally confounded. (ii) (a) 16 plots/block ; 2 blocks/replication. (b) N.A. (iii) 1. (iv) 6. (v) A row of other trees kept around each plot. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) Woolly aphid—D.D.T. sprayed. Stem black, stem brown and apple root borers—mechanical control applied. (iii) Measurement of girth and yield. (iv) (a) 1939—contd. (Remodelled in 1953). (b) N.A. (v) N.A. (vi) Nil. (vii) The expt. was conducted by Hort. (C).

## 5. RESULTS :

- (i) 76.37 lb./tree.  
 (ii) 30.53 lb./tree.  
 (iii) None of the effects is significant.  
 (iv) Av. yield of fruits in lb./tree.

	$R_1$	$R_2$	$R_3$	$R_4$	Mean	$K_1$	$K_2$	$P_1$	$P_2$
$N_1$	76.68	67.42	92.96	96.05	83.28	87.66	78.90	76.23	90.33
$N_2$	70.10	74.56	81.60	51.60	69.49	74.78	64.16	65.01	73.91
Mean	73.39	70.99	87.28	73.82	76.37	81.22	71.53		
$P_1$	49.24	85.57	85.03	62.62	70.62	79.18	62.06		
$P_2$	97.54	56.42	89.53	85.03	82.13	83.26	81.00		
$K_1$	84.81	67.54	84.73	87.81					
$K_2$	61.98	74.46	89.84	59.84					

S.E. of marginal means of N, P or K	= 7.63 lb./tree.
S.E. of marginal mean of R	= 10.79 lb./tree.
S.E. of body of $R \times K$ , $R \times N$ or $R \times P$ tables	= 15.26 lb./tree.
S.E. of body of $N \times P$ , $P \times K$ or $N \times K$ tables	= 10.79 lb./tree.

Crop :-Apple.

Ref :-U.P. 51(249).

Site :-Govt. Hill Fruit Res. Stn., Chaubattia.

Type :-'M'.

Object :-To find out a suitable depth for applying  $P_2O_5$ .

## 1. BASAL CONDITIONS :

(i) The trees were under catch crop trial before bearing. (ii) (a) Clay loam. (b) N.A. (iii) Grafted. (iv) Apple Delicious—grown on Root stock MT II. (v) 1st. week of December, 1939. Spacing  $20' \times 20'$ . (vi) One year after grafting. (vii) Lime was applied according to requirements before starting the experiment in 1951. (viii) N.A. (ix) No. (x) Unirrigated. (xi) N.A. (xii) August to September 1951.

## 2. TREATMENTS :

All combinations of (1) and (2)

- (1) 3 levels of  $P_2O_5$  as Super :  $P_0=0$ ,  $P_1=4$  and  $P_2=6$  lb./tree.  
 (2) 2 depths of application :  $D_1=9''$  and  $D_2=18''$ .

Super sprinkled in the bottom of trenches, dug  $9''$  or  $18''$  deep around the tree, just below the drip of the tree, which is filled afterwards. Date of application : early March 1951.



## 3. DESIGN :

(i) 3×2 Fact. in R.B.D. (ii) (a) 6. (b) N.A. (iii) 9. (iv) One. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) Woolly aphis, stem black, stem brown, and apple root borer—mechanical method of controlling applied. (iii) Girth measurement and apple yield. (iv) (a) 1951—contd. (b) N.A. (v) N.A. (vi)  $P_1D_2$  yield is estimated in replication VIII. (vii) The experiment was conducted by Hort (C).

## 5. RESULTS :

- (i) 26.08 lb./tree.  
 (ii) 26.04 lb./tree.  
 (iii) None of the effects is significant.  
 (iv) Av. yield of fruits in lb./tree.

Control = 23.12

	D <sub>1</sub>	D <sub>2</sub>	Mean
P <sub>1</sub>	35.66	29.24	32.45
P <sub>2</sub>	22.98	22.37	22.68
Mean	29.32	25.80	27.56

S.E. of D<sub>1</sub> or P<sub>2</sub> marginal mean = 4.72 lb./tree  
 S.E. of control mean = 4.72 lb./tree.  
 S.E. of P<sub>1</sub>D<sub>2</sub> mean = 7.16 lb./tree.  
 S.E. of any mean in the body of table except P<sub>1</sub> D<sub>2</sub> mean = 6.68 lb./tree.

Crop :- Apple.

Ref :- U.P. 52(296).

Site :- Govt. Hill Fruit Res. Stn., Chaubattia.

Type :- 'M'.

Object :- To find out a suitable depth for applying P<sub>2</sub>O<sub>5</sub>.

## 1. BASAL CONDITIONS :

(i) The trees were under catch crop trial before bearing. (ii) (a) Clay loam. (b) N.A. (iii) Grafted. (iv) Apple delicious grown on root stock MTH. (v) 1st week of December, 1939 and spacings 20'×20'. (vi) One year after grafting. (vii) Lime was applied according to the requirement before starting the experiment in 1951. (viii) Digging, preparation of *thalas* and prunings. (ix) No. (x) Unirrigated. (xi) N.A. (xii) August to September 1952.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 3 levels of P<sub>2</sub>O<sub>5</sub> as Super : P<sub>0</sub>=0, P<sub>1</sub>=4 and P<sub>2</sub>=6 lb./tree.

(2) 2 depths of application : D<sub>1</sub>=9" and D<sub>2</sub>=18".

Super sprinkled in the bottom of trenches, dug 9" or 18" deep around the tree, just below the drip of the tree, which is filled afterwards. Date of application : early March, 1951.

## 3. DESIGN :

(i) 3×2 Fact. in R.B.D. (ii) (a) 6. (b) N.A. (iii) 9. (iv) 1. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) Woolly aphis, stem black, stem brown and apple root borer—mechanical methods for controlling adopted. (iii) Girth measurement and yield of fruits. (iv) (a) 1951—contd. (b) N.A. (v) N.A. (vi) Control yield was estimate I for replication II, III and P<sub>1</sub>D<sub>2</sub> yield for replication no. VIII (v i) Experiment conducted by Hort. (C).

## 5. RESULTS :

- (i) 74.07 lb./tree.  
 (ii) 31.22 lb./tree.  
 (iii) Only effect of D is significant.

(iv) Av. yield of fruit in lb./tree.

Control=63.46

	D <sub>1</sub>	D <sub>2</sub>	Mean
P <sub>1</sub>	87.46	72.34	79.90
P <sub>2</sub>	94.23	63.46	78.84
Mean	90.84	67.90	79.37

S.E. of P<sub>2</sub> or D<sub>1</sub> marginal mean = 7.36 lb./tree.  
 S.E. of control mean = 7.36 lb./tree.  
 S.E. of P<sub>1</sub>D<sub>2</sub> mean = 11.16 lb./tree.  
 S.E. of any mean in body of table except P<sub>1</sub>D<sub>2</sub> mean = 10.41 lb./tree.

Crop :- Apple.

Ref:- U P. 53(80).

Site :- Govt. Hill Fruit Res. Stn., Chaubattia.

Type :- 'M'.

Object :- To find out a suitable depth for applying P<sub>2</sub>O<sub>5</sub>.

## 1. BASAL CONDITIONS :

(i) The trees were under catch crop trial before bearing. (ii) (a) Clay loam. (b) N.A. (iii) Grafted. (iv) Apple delicious. (v) 1st week of December, 1939. Spacing 20' x 20'. (vi) One year after grafting. (vii) Lime was applied according to requirement before starting the experiment. (viii) Digging, preparation of *thalas*. (ix) No. (x) Unirrigated. (xi) 42.84°. (xii) 22.8.1953.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 3 levels of P<sub>2</sub>O<sub>5</sub> as Super : P<sub>0</sub>=0, P<sub>1</sub>=4 and P<sub>2</sub>=6 lb./tree.(2) 2 depths of application : D<sub>1</sub>=9" and D<sub>2</sub>=18".

## 3. DESIGN :

(i) 3 x 2 Fact. in R.B.D. (ii) (a) 6. (b) N.A. (iii) 9. (iv) 1. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) Woolly aphis, stem black, stem brown and apple root borer—mechanical control. (iii) Girth and yield (iv) (a) 1951—contd. (b) N.A. (v) N.A. (vi) Control yield in replication II and III and treatment P<sub>1</sub>D<sub>2</sub> in replication VIII were estimated as these were missing. (vii) The experiment was conducted by Hort (C).

## 5. RESULTS :

- (i) 116.1 lb./tree.  
 (ii) 65.05 lb./tree.  
 (iii) Only effect of D is significant.  
 (iv) Av. yield of fruit in lb./tree.

Control=106.5

	D <sub>1</sub>	D <sub>2</sub>	Mean
P <sub>1</sub>	159.5	105.4	132.4
P <sub>2</sub>	139.2	79.4	109.3
Mean	149.3	92.4	120.9

S.E. of D<sub>1</sub> or P<sub>2</sub> marginal mean = 15.33 lb./tree.  
 S.E. of control mean = 15.33 lb./tree.  
 S.E. of P<sub>1</sub>D<sub>2</sub> mean = 23.25 lb./tree.  
 S.E. of any mean in body of table except P<sub>1</sub>D<sub>2</sub> mean = 21.68 lb./tree.

Crop :- Apple.  
Site :- Govt. Hill Fruit Res. Stn., Chaubattia.

Ref :- U.P. 53(298).  
Type :- 'M'.

Object :- To evolve methods for the improvement of spent up land in Kumaon Hills.

### 1. BASAL CONDITIONS :

(i) After deforestation in 1948 potato crop was taken, after which Belladonna was planted. In 1920—1921 apple and cherries were planted. For the last ten years it was covered by graminces grasses, wild rose and other bushes. (ii) (a) Loam. (b) N.A. (iii) By budding. (iv) (a) Cox's orange. Pippin on Meston 779. (v) Terracing of about an acre of land done. The pits 4' x 4' x 4' and 20' apart dug and apple plants planted. One replication planted in 1951, two in 1952 and one in 1953. (vi) 2 years. (vii) 3 lb. of A/S and 0.65 mds. of compost every year per tree in March by spreading round the tree and then digging it in. (viii) Pruning, digging, sowing of soyabeans and turning it in. (x) Soyabeans planted during the rains and buried in the soil just before flowering. (x) Unirrigated. (xi) N.A. (xii) No yield of fruits.

### 2. TREATMENTS :

All combinations of (1) and (2)

(1) 2 doses of lime :  $L_1$ =single and  $L_2$ =double.

(2) 4 doses of  $P_2O_5$  as Super :  $P_0=0$ ,  $P_1=1\frac{1}{2}$ ,  $P_2=3$  and  $P_3=4\frac{1}{2}$  lb./tree.

Actual doses of lime N.A. Lime spread in September every year during turning in of soyabean. Super in March, by spreading round the tree and then digging in.

### 3. DESIGN :

(i) 4 x 2 Fact. in R.B.D. (ii) (a) 8. (b) N.A. (iii) 3. (iv) 6. (v) One row of apple trees around the field. (vi) Yes.

### 4. GENERAL :

(i) Good. (ii) Stem borer—application of chloroform. Root borers—Mechanical methods of removing it. Test caterpillar—spreading of 25% D.D.T. (iii) Girth measurement taken on 27.2.1953. (iv) (a) 1952—continued. (b) N.A. (v) N.A. (vi) Nil. (vii) The experiment was conducted by S.C.(C).

### 5. RESULTS :

- (i) 3.17 cm./tree.  
(ii) 0.18 cm./tree.  
(iii) Only P effect is significant.  
(iv) Av. girth of tree in cm.

	$P_0$	$P_1$	$P_2$	$P_3$	Mean
$L_1$	3.22	3.32	3.08	3.11	3.18
$L_2$	3.14	3.42	2.97	3.13	3.16
Mean	3.18	3.37	3.02	3.12	3.17

S.E. of L means = 0.05 cm/tree.

S.E. of P means = 0.07 cm/tree.

S.E. of body of table = 0.10 cm/tree.

Crop :- Apple.  
Site :- Govt. Hill Fruit Res. Stn., Chaubattia.

Ref :- U.P. (4896).  
Type :- 'C'.

Object :- To find out the effect of mulching on the growth and bearing of Apple trees raised on deep and shallow rooted stocks and also to determine if by training trees into different shapes the extent of hailstorm damage can be reduced materially.

### 1. BASAL CONDITIONS :

(i) Under forest. (ii) (a) Clay loam. (b) N.A. (iii) Budding. (iv) Scion variety Delicious. (v) 2nd week of December, 1959. Spacing=20' x 20'. (vi) One year after budding. (vii) N.A. (viii) Pruning digging below the trees and preparation of *thalas*. (ix) No. (x) Unirrigated. (xi) N.A. (xii) August to September 1948.

## 2. TREATMENTS :

## Main-plot treatments :

3 mulchings :  $M_1$ =pine needles,  $M_2$ =oak needles and  $M_3$ =no mulching (control).

## Sub-plot treatments :

## All combinations of (1) and (2)

(1) 2 shapes of trees :  $S_1$ =Pyramid and  $S_2$ =Vase.

(2) 2 root stocks :  $R_1$ =Crab C (deep rooted) and  $R_2$ =Malling type II (shallow rooted).

## 3. DESIGN :

(i) Split-plot. (ii) (a) 3 main-plots/replication and 4 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) 6. (v) No. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) Woolly aphid, stem black and stem brown—mechanical methods of controlling. (iii) Yield and girth measurement. (iv) (a) 1939—N.A. (b) N.A. (v) N.A. (vi) Nil. (vii) The experiment was conducted by Hort(C).

## 5. RESULTS :

- (i) 16.69 lb./tree.  
 (ii) (a) 15.40 lb./tree.  
 (b) 7.83 lb./tree.  
 (iii) None of the effects is significant.  
 (iv) Av. yield of fruits in lb./tree.

	$R_1$	$R_2$	Mean	$S_1$	$S_2$
$M_1$	11.16	16.08	13.62	14.27	12.98
$M_2$	16.92	16.91	16.92	19.51	14.32
$M_3$	19.95	19.10	19.52	24.15	14.90
Mean	16.01	17.36	16.69	19.31	14.07
$S_1$	19.59	19.02			
$S_2$	12.43	15.70			

## S.E. of difference of two

- |                                 |                 |
|---------------------------------|-----------------|
| 1. M marginal means             | =6.29 lb./tree. |
| 2. S or R marginal means        | =2.61 lb./tree. |
| 3. S or R means at a level of M | =4.52 lb./tree. |
| 4. M means at a level of S      | =7.05 lb./tree. |
| S.E. of body of S×R table       | =2.61 lb./tree. |

Crop :- Apple.

Ref :- U.P. 49(199).

Site :- Govt. Hill Fruit Res. Stn., Chaubattia.

Type :- 'C'.

Object :- To find out the effect of mulching upon the growth and bearing of Apple trees raised on deep rooted and shallow rooted stocks and also to determine if by training trees into different shapes the extent of hailstorm damage can be reduced materially.

## 1. BASAL CONDITIONS :

(i) Under forest. (ii) (a) Clay loam. (b) N.A. (iii) Budding. (iv) Scion variety Delicious. (v) 2nd week of December, 1939 and spacing 20'×20'. (vi) 1 year after budding. (vii) N.A. (viii) Pruning, digging below the trees and preparation of *thalas*. (ix) No. (x) Unirrigated. (xi) N.A. (xii) August to September 1949.

## 2. TREATMENTS :

## Main-plot treatments :

3 mulchings :  $M_1$ =pine needles,  $M_2$ =oak needles and  $M_3$ =no mulching (control).

## Sub-plot treatments :

All combinations of (1) and (2)

(1) 2 shapes of trees :  $S_1$ =Pyramid and  $S_2$ =Vase.

(2) 2 root stocks :  $R_1$ =Crab C (deep rooted) and  $R_2$ =Malling type II (shallow rooted).

## 3. DESIGN :

(i) Split-plot. (ii) (a) 3 main-plots/replication and 4 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) 6. (v) No. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) Woolly aphis, stem borer and stem brown—mechanical method of controlling. (iii) Girth measurement and yield. (iv) (a) 1939—N.A. (b) N.A. (v) N.A. (vi) Nil. (vii) The experiment was conducted by Hort (C).

## 5. RESULTS :

(i) 41.84 lb./tree.

(ii) (a) 36.36 lb./tree.

(b) 20.23 lb./tree.

(iii) Only S effect is highly significant.

(iv) Av. yield of fruit in lb./tree.

	$R_1$	$R_2$	Mean	$S_1$	$S_2$
$M_1$	36.68	38.63	37.66	50.17	25.14
$M_2$	41.51	56.33	48.92	68.00	29.85
$M_3$	35.59	42.30	38.94	45.79	32.10
Mean	37.93	45.75	41.84	54.65	29.03
$S_1$	55.70	53.60			
$S_2$	20.15	37.90			

## S.E. of difference of two

1. M marginal means = 14.84 lb./tree.
2. S or R marginal means = 6.74 lb./tree.
3. S or R means at a level of M = 11.68 lb./tree.
4. M means at a level of S or R = 16.99 lb./tree.

S.E. of body of  $S \times R$  table = 6.74 lb./tree.

Crop :- Apple.

Ref :- U.P. 50(260).

Site :- Govt. Hill Fruit Res. Stn., Chaubattia.

Type :- 'C'.

Object :- To find out the effect of mulching on the growth and bearing of Apple trees raised on deep rooted and shallow rooted stocks and also to determine if by training trees into different shapes the extent of hailstorm damage can be reduced materially.

## 1. BASAL CONDITIONS :

(i) Under forest. (ii) (a) Clay loam. (b) N.A. (iii) Budding. (iv) Scion variety Delicious. (v) 2nd week of December, 1939 and spacing 20' x 20'. (vi) One year after budding. (vii) N.A. (viii) Pruning, digging below the trees and preparation of *thalas*. (ix) No. (x) Unirrigated. (xi) N.A. (xii) August to September 1950.

## 2. TREATMENTS :

## Main-plot treatments :

3 mulching :  $M_1$ =pine needles,  $M_2$ = oak needles and  $M_3$ =no mulching (control).

## Sub-plot treatments :

All combinations of (1) and (2)

(1) 2 shapes of trees :  $S_1$ =Pyramid and  $S_2$ =Vase.

(2) 2 root stocks :  $R_1$ =Crab C (deep rooted) and  $R_2$ =Malling type II (shallow rooted).

## 3. DESIGN :

(i) Split-plot. (ii) 3 main-plots/replication and 4 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) 6. (v) No. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) Woolly aphis, stem black and stem brown—mechanical methods of controlling. (iii) Girth measurement and yield. (iv) (a) 1939—N.A. (b) N.A. (v) N.A. (vi) Nil. (vii) The experiment was conducted by Hort (C).

## 5. RESULTS :

(i) 39.55 lb./tree.

(ii) (a) 44.16 lb./tree.

(b) 18.04 lb./tree.

(iii) Only S effect and interaction  $S \times R$  are highly significant.

(iv) Av. yield of fruit in lb./tree.

	$R_1$	$R_2$	Mean	$S_1$	$S_2$
$M_1$	39.59	39.98	39.78	48.56	31.01
$M_2$	37.77	39.02	38.40	47.63	29.16
$M_3$	41.23	39.72	40.48	48.65	32.31
Mean	39.53	39.57	39.55	48.28	30.83
$S_1$	57.39	39.17			
$S_2$	21.67	39.98			

## S.E. of difference of two

1. M marginal means

= 18.03 lb./tree.

2. S or R marginal means

= 6.01 lb./tree.

3. S or R means at a level of M

= 10.42 lb./tree.

4. M means at a level of S or R

= 19.48 lb./tree.

S.E. of body of  $S \times R$  table

= 6.01 lb./tree.

Crop :- Apple.

Ref :- U.P. 51(247).

Site :- Govt. Hill Fruit Res. Stn., Chaubattia.

Type :- 'C'.

Object :- To find out the effect of mulching on the growth and bearing of apple trees raised on deep rooted and shallow rooted stocks and also to determine if by training trees into different shapes the extent of hailstorm damage can be reduced materially.

## 1. BASAL CONDITIONS :

(i) Under forest. (ii) (a) Clay loam. (b) N.A. (iii) Budding. (iv) Scion variety Delicious. (v) 2nd week of December, 1939. Spacing 20' x 20'. (vi) One year after budding. (vii) N.A. (viii) N.A. (ix) No. (x) Un-irrigated. (xi) N.A. (xii) August to September 1951.

## 2. TREATMENTS :

## Main-plot treatments :

3 mulchings :  $M_1$ =pine needle,  $M_2$ =oak needles and  $M_3$ =no mulching (control).

## Sub-plot treatments :

All combinations of (1) and (2)

(1) 2 shapes of trees :  $S_1$ =Pyramid and  $S_2$ =Vase.

(2) 2 root stocks :  $R_1$ =Crab C (deep rooted) and  $R_2$ =Malling type II (shallow rooted).

**3. DESIGN :**

(i) Split-plot. (ii) (a) 3 main-plots/replication and 4 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) 6. (v) No. (vi) Yes.

**4. GENERAL :**

(i) N.A. (ii) Woolly aphis, stem black and stem brown—mechanical methods of controlling. (iii) Yield and girth measurement. (iv) (a) 1939—N.A. (b) N.A. (v) N.A. (vi) Nil. (vii) The experiment was conducted by Hort (C).

**5. RESULTS :**

- (i) 10.92 lb./tree.  
 (ii) (a) 18.48 lb./tree.  
 (b) 8.78 lb./tree.  
 (iii) None of the effects is significant.  
 (iv) Av. yield of fruits in lb./tree.

	R <sub>1</sub>	R <sub>2</sub>	Mean	S <sub>1</sub>	S <sub>2</sub>
M <sub>1</sub>	15.27	6.36	10.82	12.20	9.43
M <sub>2</sub>	6.30	15.05	10.68	9.39	11.96
M <sub>3</sub>	9.49	13.06	11.27	7.60	14.94
Mean	10.35	11.49	10.92	9.73	12.11
S <sub>1</sub>	12.00	7.47			
S <sub>2</sub>	8.71	15.51			

**S.E. of difference of two**

- |                                 |                 |
|---------------------------------|-----------------|
| 1. M marginal means             | =7.54 lb./tree. |
| 2. S or R marginal means        | =2.93 lb./tree. |
| 3. S or R means at a level of M | =5.07 lb./tree. |
| 4. M means at a level of S or R | =8.35 lb./tree. |
| S.E. of body of S×R table       | =2.93 lb./tree. |

**Crop :-Apple.****Ref :-U.P. 52(295).****Site :-Govt. Hill Fruit Res. Stn., Chaubattia.****Type :-'C'.**

**Object :-**To find out the effect of mulching on the growth and bearing of Apple trees raised on deep rooted and shallow rooted stocks and also to determine if by training trees into different shapes the extent of hailstorm damage can be reduced materially.

**1. BASAL CONDITIONS :**

(i) Under forest. (ii) (a) Clay loam. (b) N.A. (iii) Budding. (iv) Scion variety Delicious. (v) 2nd week of December, 1939. Spacing 20'×20'. (vi) One year after budding. (vii) N.A. (viii) N.A. (ix) No. (x) Unirrigated. (xi) N.A. (xii) August to September 1952.

**2. TREATMENTS :****Main-plot treatments :**

3 mulchings : M<sub>1</sub>=pine needles, M<sub>2</sub>=oak needles and M<sub>3</sub>=no mulching (control).

**Sub-plot treatments :**

All combinations of (1) and (2)

(1) 2 shapes of trees : S<sub>1</sub>=Pyramid and S<sub>2</sub>=Vase.

(2) 2 root stocks : R<sub>1</sub>=Crab C (deep rooted) and R<sub>2</sub>=Malling type II (shallow rooted).

**3. DESIGN :**

(i) Split-plot. (ii) (a) 3 main-plots/replication and 4 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) 6. (v) No. (vi) Yes.

**4. GENERAL :**

(i) N.A. (ii) Woolly aphid, stem black and stem brown—mechanical methods of controlling. (iii) Yield and girth measurement. (iv) (a) 1939—N.A. (b) N.A. (v) N.A. (vi) Nil. (vii) The experiment was conducted by Hort (C).

**5. RESULTS :**

- (i) 40.74 lb./ree.  
 (ii) (a) 42.67 lb./tree.  
 (b) 22.48 lb./tree.  
 (iii) None of the effects is significant.  
 (iv) Av. yield of fruits in lb./tree.

	R <sub>1</sub>	R <sub>2</sub>	Mean	S <sub>1</sub>	S <sub>2</sub>
M <sub>1</sub>	33.73	15.64	24.68	19.02	30.35
M <sub>2</sub>	29.35	45.96	37.66	39.52	35.79
M <sub>3</sub>	59.74	60.05	59.89	64.14	55.64
Mean	40.94	40.55	40.74	40.89	40.59
S <sub>1</sub>	45.55	36.24			
S <sub>2</sub>	36.33	44.86			

**S.E. of difference of two**

- |                                 |                  |
|---------------------------------|------------------|
| 1. M marginal means             | =17.42 lb./tree. |
| 2. S or R marginal means        | = 7.49 lb./tree. |
| 3. S or R means at a level of M | =12.98 lb./tree. |
| 4. M means at a level of S or R | =19.69 lb./tree. |
| S.E. of body of S × R table     | = 7.49 lb./tree. |

**Crop :- Apple.****Ref :- U.P. 53(81).****Site :- Govt. Hill Fruit Res. Stn., Chaubattia.****Type :- 'C'.**

**Object :-** To find out the effect of mulching on the growth and bearing of Apple trees raised on deep rooted and shallow rooted stocks and also to determine if by training trees into different shapes the extent of hailstorm damage can be reduced materially.

**1. BASAL CONDITIONS :**

(i) Under forest. (ii) N.A. (iii) Budding. (iv) Scion variety Delicious. (v) 2nd week of December 1939. Spacing 20' × 20' (vi) One year after budding. (vii). Nil. (viii) Pruning, digging below the trees and preparation of *thalas*. (ix) No. (x) Unirrigated. (xi) 42.84°. (xii) 3.9.1953 to 7.9.1953.

**2. TREATMENTS :****Main-plot treatments :**

3 mulchings : M<sub>1</sub>=pine needles, M<sub>2</sub>=oak needles and M<sub>3</sub>=no mulching (control).

**Sub-plot treatments :**

All combinations of (1) and (2)

(1) 2 shapes of trees : S<sub>1</sub>=Pyramid and S<sub>2</sub>=Vase.

(2) 2 root stocks : R<sub>1</sub>=Crab C (deep rooted) and R<sub>2</sub>=Malling type II (shallow rooted).

**3. DESIGN :**

(i) Split-plot. (ii) (a) 3 main-plots/replication and 4 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) 6. (v) No. (vi) Yes.

**4. GENERAL :**

(i) N.A. (ii) Woolly aphid, stem black, stem brown and apple root borer—mechanical control adopted. (iii) Yield and girth measurement. (iv) (a) 1939—N.A. (b) N.A. (v) N.A. (vi) Hail storm did not occur during the period under report, the damage due to it was not recorded. (vii) The experiment was conducted by Hort (C).



## 5. RESULTS :

- (i) 75.53 lb./tree.  
 (ii) (a) 72.55 lb./tree.  
 (b) 56.27 lb./tree.  
 (iii) None of the effects is significant.  
 (iv) Av. yield of fruit in lb./tree.

	R <sub>1</sub>	R <sub>2</sub>	Mean	S <sub>1</sub>	S <sub>2</sub>
M <sub>1</sub>	121.60	62.56	92.08	111.28	72.87
M <sub>2</sub>	94.82	71.11	82.97	102.54	63.40
M <sub>3</sub>	55.08	48.02	51.55	63.52	39.58
Mean	90.50	60.56	75.53	92.45	58.62
S <sub>1</sub>	125.39	59.50			
S <sub>2</sub>	55.61	61.62			

## S.E. of difference of two

1. M marginal means =29.62 lb./tree.  
 2. S or R marginal means =18.76 lb./tree.  
 3. S or R means at a level of M =32.49 lb./tree.  
 4. M means at a level of S or R =37.48 lb./tree.  
 S.E. of body of S × R table =18.76 lb./tree.

Crop :- Apple.

Ref :- U.P. 51(248).

Site :- Govt. Hill Fruit Res. Stn., Chaubattia.

Type :- 'C'.

Object :- To find out the comparative value of Kudzu Vine, local variety of soyabeans and common grass grown in the orchard in influencing the vigour and productivity of Apple.

## 1. BASAL CONDITIONS :

- (i) Under orchard—experiment laid out in buffer trees of NPK manurial trial. (ii) (a) Clay loam. (b) N.A.  
 (iii) Budding. (iv) Jonathan. (v) Last week of November 1939. Spacing 20' × 20'. (vi) About 2 years.  
 (vii) Nil. (viii) N.A. (ix) Nil. (x) Unirrigated. (xi) N.A. (xii) August to September 1951.

## 2. TREATMENTS :

1. Kudzu growings.  
 2. Local soyabeans.  
 3. Control—common cultural methods.

Kudzu was planted in 1951 and soyabean was sown in the 3rd week of June 1951.

## 3. DESIGN :

- (i) R.B.D. (ii) (a) 3. (b) N.A. (iii) 30. (iv) 1. (v) Nil. (vi) Yes.

## 4. GENERAL :

- (i) N.A. (ii) N.A. (iii) Girth measurement and yield. (iv) (a) No. (b) N.A. (v) N.A. (vi) Nil. (vii) The experiment was conducted by Hort (C).

## 5. RESULTS :

- (i) 30.11 lb./tree.  
 (ii) 32.31 lb./tree.  
 (iii) Treatment differences are not significant.  
 (iv) Av. yield of fruits in lb./tree.

Treatment	Av. yield
1.	23.98
2.	40.83
3.	25.51
S.E./mean	= 5.90 lb./tree.

Crop :- Apple.

Ref :- U.P. 50(262).

Site :- Govt. Hill Fruit Res. Stn., Chaubattia.

Type :- 'D'.

Object :- To find out a suitable insecticidal control measure against defoliating beetles.

## 1. BASAL CONDITIONS :

(i) N.A. (ii) (a) Clay loam. (b) N.A. (iii) By grafting. (iv) Delicious. (v) Planting during February at a space of 20' x 20' in pits filled during January. (Pits were dug 4' x 4' x 4'). (vi) 2 years. (vii) Nil. (viii) Pruning during winter and ringing around the base of trees during February. (ix) Nil. (x) Unirrigated. (xi) N.A. (xii) Plucking fruits from July and August 1950.

## 2. TREATMENTS :

1. D.D.T. emulsion 0.25%.
2. Lead chromate at 6 lbs. in 100 gallons of water.
3. D.D.T. wettable powder 0.125%.
4. Paris green at 6 lbs. in 100 gallons of water.
5. Control.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 5. (iv) One tree. (v) Nil. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Defoliating leaves, controlled by spraying. (iii) % area of damaged leaves a few days after treatments. (iv) (a) No. (b) N.A. (v) N.A. (vi) No plot wise yield data is available. The results have been taken from the report. (vii) The experiment was conducted by Ento(C). Paris green and D.D.T. wet powder had a phytocidal effect on the leaves. No data could, therefore, be obtained on these two treatments.

## 5. RESULTS :

- (i) 25.85 percent.  
 (ii) 6.2930 percent.  
 (iii) Treatment differences are significant.  
 (iv) Av. percent of damaged area/plot.

Treatment	Av. percent
1.	11.67
2.	21.81
3.	—
4.	—
5.	44.08
S./mean	= 2.8143 percent.

Crop :- Apple.

Ref :- U.P. 48(104).

Site :- Govt. Hill Fruit Res. Stn., Chaubattia.

Type :- 'D'.

Object :- To study the effect of growing different catch crops on the incidence of stem black disease of different varieties of Apple.

## 1. BASAL CONDITIONS :

(i) Under orchard. (ii) (a) Clay Loam. (b) N.A. (iii) By grafting. (iv) As per treatments. (v) Planted in 1939. (vi) About 2 years. (vii) N.A. (viii) Prunings, digging below the trees etc. (ix) As per treatments. (x) Unirrigated. (xi) N.A. (xii) From August to September 1948.

## 2. TREATMENTS :

## Main-plot treatments :

5 catch crops : C<sub>1</sub> = Potatoes, C<sub>2</sub> = Soyabeans, C<sub>3</sub> = Maduwa, D<sub>4</sub> = Sawan and raddish. and C<sub>5</sub> = Control (No catch crops.)

## Sub-plot treatments :

3 varieties of apple : V<sub>1</sub> = Delicious (on root stock Malling Type II), V<sub>2</sub> = Beauty of Bath (on root stock Malling Type II). and V<sub>3</sub> = Peach Alexander (on *Prunus dirvaricata* root stock).

## 3. DESIGN :

(i) Split-plot. (ii) (a) 5 main-plots/replication and 3 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) 6. (v) Apple trees between main-plot treatments. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) Under study and stem brown. (iii) Girth measurement, yield and no. of twigs affected with the stem black disease. (iv) (a) 1945-1949. (b) N.A. (v) N.A. (vi) Nil. (vii) The expt. was conducted by Myco (C). x=no. of effected twigs/plot.

## 5. RESULTS :

- (i)  $0.74 \sqrt{x+\frac{1}{2}}$ /plot.  
 (ii) (a)  $0.5213 \sqrt{x+\frac{1}{2}}$ /plot.  
 (b)  $0.6488 \sqrt{x+\frac{1}{2}}$ /plot.  
 (iii) Main effect of C is not significant. Main effect of V is highly significant. Interaction is not significant.  
 (iv) Twigs affected/plot

Treatment	mean value of $\sqrt{x+\frac{1}{2}}$ /plots.
V <sub>1</sub>	1.50
V <sub>2</sub>	0.70
V <sub>3</sub>	0.01
S.E./mean	=0.1451 $\sqrt{x+\frac{1}{2}}$ /plot.

Crop :- Apple.

Ref :- U.P. 49(204).

Site :- Govt. Hill Fruit Res. Stn., Chaubattia.

Type :- 'D'.

Object :- To study the effect of growing different catch crops on the incidence of stem black disease of different varieties of Apple.

## 1. BASAL CONDITIONS :

(i) Under orchard. (ii) (a) Clay loam. (b) N.A. (iii) By grafting. (iv) As per treatments. (v) Planted in 1939. (vi) About 2 years. (vii) N.A. (viii) Prunings and diggings below the trees etc. (ix) As per treatments. (x) Unirrigated. (xi) N.A. (xii) August to September 1949.

## 2. TREATMENTS :

Main-plot treatments :

5 catch crops : C<sub>1</sub>=Potatoes, C<sub>2</sub>=Soyabeans, C<sub>3</sub>=*Maduwa*, C<sub>4</sub>=*Sawan* and 'raddish and C<sub>5</sub>=control (no catch crop).

Sub-plot treatments :

3 varieties : V<sub>1</sub>=Delicious (on root stock Malling type II), V<sub>2</sub>=Beauty of Bath (on root stock Malling type II) and V<sub>3</sub>=Peach Alexander (on *prunus dirvaricata* root stock).

## 3. DESIGN :

(i) Split-plot. (ii) (a) 5 main-plots/replication and 3 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) 6. (v) Apple trees between main-plot treatments. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) Under study and stem brown. (iii) Girth measurement, yield and the number of twigs affected with the stem black disease. (iv) (a) 1945-1949. (b) N.A. (v) N.A. (vi) Nil. (vii) The experiment was conducted by Myco (C). x=no. of affected twigs/plot.

## 5. RESULTS :

- (i)  $1.62 \sqrt{x+\frac{1}{2}}$ /plot.  
 (ii) (a)  $0.6122 \sqrt{x+\frac{1}{2}}$ /plot.  
 (b)  $0.5852 \sqrt{x+\frac{1}{2}}$ /plot.  
 (iii) Main effect of C is not significant. Main effect of V is highly significant.. Interaction CxV is not significant.  
 (iv) Twigs affected/plot.

Treatment	mean value of $\sqrt{x+\frac{1}{2}}$ /plot.
V <sub>1</sub>	2.30
V <sub>2</sub>	1.84
V <sub>3</sub>	0.71
S.E./mean	= 0.1309 $\sqrt{x+\frac{1}{2}}$ /plot

Crop :- Apple.

Ref :- U.P. 48(103).

Site :- Govt. Hill Fruit Res. Stn., Chaubattia.

Type :- 'D'.

Object :—To study the correlation of the stem black disease with different types of pruning and mulching operations.

## 1. BASAL CONDITIONS :

(i) Under forest. (ii) Clay loam. (b) N.A. (iii) By budding, (iv) Delicious. (v) 2nd week of Dec. 1939 and spacings 20' x 20'. (vi) Planted in 1939, one year after budding. (vii) N.A. (viii) Pruning and digging below the trees and preparation of *thalas*. (ix) No. (x) Unirrigated. (xi) N.A. (x) August to September 1948.

## 2. TREATMENTS :

Main-plot treatments :

3 mulchings :  $M_1$  = Pine needles,  $M_2$  = Oak leaves and  $M_3$  = No mulching (control).

Sub-plot treatments :

All combinations of (1) and (2)

(1) 2 prunings :  $P_1$  = Pyramid shaped and  $P_2$  = Vase shaped.

(2) 2 root stocks :  $S_1$  = Crab C (deep rooted) and  $S_2$  = Malling type II (shallow rooted).

## 3. DESIGN :

(i) Split-plot. (ii) (a) 3 main-plots/replication and 4 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) 6. (v) No. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) Under study and stem brown. (iii) Girth measurement, yield of fruits, no. of twigs affected with the disease. (iv) (a) 1945 to 1949. (b) N.A. (v) N.A. (vi) Original records are not available. Results taken from reports. (vii) The expt. was conducted by Myco (C).  $x$  = number of affected twigs/tree.

## 5. RESULTS :

(i) 0.82  $\sqrt{x + \frac{1}{2}}$ /tree.

(ii) (a) 8.5718  $\sqrt{x + \frac{1}{2}}$ /tree.

(b) 0.3602  $\sqrt{x + \frac{1}{2}}$ /tree.

(iii) Only P effect is highly significant.

(iv) Twigs affected/plot.

Treatment	Mean value of $\sqrt{x + \frac{1}{2}}$ /tree.
$P_1$	0.40
$P_2$	1.23
S.E./mean	= 0.0849 $\sqrt{x + \frac{1}{2}}$ /plot.

Crop :- Apple.

Ref :- U.P. 49(203).

Site :- Govt. Hill Fruit Res. Stn., Chaubattia.

Type :- 'D'.

Object :—To study the correlation of the stem black disease with different types of pruning and mulching operations.

## 1. BASAL CONDITIONS :

(i) Under forest. (ii) (a) Clay loam. (b) N.A. (iii) By budding. (iv) Delicious. (v) 2nd week of December, 1939. Spacing 20' x 20'. (vi) Planted in 1939, one year after budding. (vii) N.A. (viii) N.A. (ix) No. (x) Unirrigated. (xi) N.A. (xii) From August to September 1949.

## 2. TREATMENTS :

Main-plot treatments :

3 mulchings :  $M_1$  = Pine needles,  $M_2$  = Oak leaves and  $M_3$  = No mulching (control).

Sub-plot treatments :

All combinations of (1) and (2)

(1) 2 prunings :  $P_1$  = Pyramid shaped and  $P_2$  = Vase shaped.

(2) 2 root stocks :  $S_1$  = Crab C (deep rooted) and  $S_2$  = Malling type II (shallow rooted).

## 3. DESIGN :

(i) Split-plot. (ii) (a) 3 main-plots/replication and 4 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) 6. (v) No. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) Under study and stem brown. (iii) Girth measurement, fruit yield and no. of twigs affected with the disease. (iv) (a) 1945—1949. (b) N.A. (v) N.A. (vi) Nil. (vii) The expt. conducted by Myco. (C).  
 $x$  = no. of affected twigs/plot.

## 5. RESULTS :

- (i) 1.69  $\sqrt{x+\frac{1}{2}}$ /plot.  
 (ii) (a) 0.7062  $\sqrt{x+\frac{1}{4}}$ /plot.  
 (b) 0.5220  $\sqrt{x+\frac{1}{2}}$ /plot.  
 (iii) Main effects of M and S are not significant. Main effect of P is highly significant. Interactions M×P and M×S are significant.  
 (iv) Av. value of  $\sqrt{x+\frac{1}{2}}$ /plot.

	S <sub>1</sub>	S <sub>2</sub>	Mean	P <sub>1</sub>	P <sub>2</sub>
M <sub>0</sub>	1.90	1.44	1.67	0.94	2.40
M <sub>1</sub>	1.36	2.00	1.68	1.62	1.75
M <sub>2</sub>	2.00	1.45	1.73	1.56	1.90
Mean	1.75	1.63	1.69	1.37	2.01

S.E. of difference of two

- |                                 |                                       |
|---------------------------------|---------------------------------------|
| 1. marginal means of M          | =0.2883 $\sqrt{x+\frac{1}{2}}$ /plot. |
| 2. marginal means of P or S     | =0.1740 $\sqrt{x+\frac{1}{2}}$ /plot. |
| 3. P or S means at a level of M | =0.3014 $\sqrt{x+\frac{1}{2}}$ /plot. |
| 4. M means at a level of P or S | =0.3585 $\sqrt{x+\frac{1}{2}}$ /plot. |

Crop :-Apple.

Ref :-U.P. 49(202).

Site :-Govt. Hill Fruit Res. Stn., Chaubattia.

Type :-'D'.

Object :-A field trial on the efficacy of Perenox and Bordeaux against latent infection.

## 1. BASAL CONDITIONS :

(i) Under orchard. (ii) (a) Clay loam. (b) N.A. (iii) By grafting. (iv) Delicious. (v) N.A. (vi) N.A. (vii) Nil. (viii) N.A. (ix) No. (x) Unirrigated. (xi) N.A. (xii) N.A.

## 2. TREATMENTS :

- Control.
- Bordeaux mixture (2 : 10 : 40)
- Perenox 0.125%.
- Perenox 0.25%.
- Perenox 0.125% + Albolinium 2 at 4 ozs./100 gallons of spray.

These were used in April 1949 and observations taken during 5 weeks beginning from the first week of September.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 5. (iv) One. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) Under study. (iii) % of latent infection. (iv) (a) 1948—1949. (b) N.A. (v) N.A. (vi) The plotwise yield data is not available. The results are taken from the report. (vii) The experiment was conducted by Myco (C).

## 5. RESULTS :

- (i) 29.2 % of latent infection.  
 (ii) 7.7470 % of latent infection.  
 (iii) Treatment differences are highly significant.

(iv) Av. % of latent infection.

Treatment	% of latent infection
1.	41.3
2.	25.0
3.	34.0
4.	23.0
5.	22.5
S.E./mean	=3.4646 % of latent infection

**Crop :- Apple.****Ref :- U.P. 49(201).****Site :- Govt. Hill Fruit Res. Stn., Chaubattia.****Type :- 'D'.****Object :-**A field trial on the efficacy of Perenox and Bordeaux against storage rot of Apple fruit.**1. BASAL CONDITIONS :**

(i) N.A. (ii) (a) and (b) N.A. (iii) N.A. (iv) Delicious. (v) N.A. (vi) N.A. (vii) N.A. (viii) N.A. (ix) N.A. (x) N.A. (xi) N.A. (xii) N.A.

**2. TREATMENTS :**

1. Control.
2. Bordeaux mixture (2 : 10 : 40).
3. Perenox 0.125%.
4. Perenox 0.25%.
5. Perenox 0.125% + Albolinium 2 at 4 ozs./100 gallons of spray.  
Spraying done in April 1949 at the petal fall stage.

**3. DESIGN :**

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 5. (iv) 1. (v) N.A. (vi) Yes.

**4. GENERAL :**

(i) N.A. (ii) Under study. (iii) % of storage rot. (iv) (a) 1948—1949. (b) N.A. (v) N.A. (vi) The plotwise yield data is N.A. The results have been taken from the reports. (vii) The experiment was conducted by Myco (C).

**5. RESULTS :**

- (i) 33 % of storage rot.
- (ii) 8.94 % of storage rot.
- (iii) Treatment differences are significant.
- (iv) Av. % of storage rot.

Treatment	% of storage rot
1.	49
2.	30
3.	31
4.	24
5.	31
S.E./mean	= 4.00 % of storage rot.

**Crop :- Apple.****Ref :- U.P. 48(99).****Site :- Govt. Hill Fruit Res. Stn., Chaubattia.****Type :- 'D'.****Object :-**A field trial on the efficacy of Perenox and Bordeaux mixture against leaf spot disease.**1. BASAL CONDITIONS:**

(i) Under orchard. (ii) (a) Clay loam. (b) N.A. (iii) Grafting. (iv) Delicious. (v) N.A. (vi) N.A. (vii) Nil. (viii) N.A. (ix) No. (x) Unirrigated. (xi) N.A. (xii) N.A.

## 2. TREATMENTS :

1. Control.
2. Bordeaux mixture (2 : 10 : 40).
3. Perenox 0.125%.
4. Perenox 0.25%.
5. Perenox 0.125%+Albolinium at 4 ozs./100 gallons.

Spraying was done on 3rd April 1948 at petal fall stage, observations taken in August.

## 3. DESIGN :

- (i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 5. (iv) 1. (v) N.A. (vi) Yes.

## 4. GENERAL :

- (i) N.A. (ii) Under study. (iii) % of leaf spot disease. (iv) (a) 1948—1949. (b) N.A. (v) N.A. (vi) The plot wise yield data is N.A. The results have been taken from the report. (vii) The experiment was conducted by Myco (C).

## 5. RESULTS :

- (i) 1.81 % of leaf spot disease.  
 (ii) 0.3191 % of leaf spot disease.  
 (iii) Treatment differences are highly significant.  
 (iv) Av. % of leaf spot disease.

Treatment	% of leaf spot disease
1.	2.82
2.	1.46
3.	1.84
4.	1.38
5.	1.56
S.E./mean	=0.1427 % of leaf spot disease.

Crop :- Apple.

Ref :- U.P. 49(200).

Site :-Govt. Hill Fruit Res. Stn., Chaubattia.

Type :-'D'.

Object :—A field trial on the efficacy of Perenox and Bordeaux mixture to control leaf spot disease.

## 1. BASAL CONDITIONS :

- (i) Under orchard. (ii) (a) Clay loam. (b) N.A. (iii) By grafting. (iv) Delicious. (v) and (vi) N.A. (vii) No. (viii) N.A. (ix) and (x) No. (xi) and (xii) N.A.

## 2. TREATMENTS :

1. Control.
2. Bordeaux mixture (2 : 10 : 40).
3. Perenox 0.125%.
4. Perenox 0.25%.
5. Perenox 0.125%+Albolinium 2 at 4 oz/100 gallons of spray.

Spraying was done at the petal fall stage and observations were taken in August for leaf spot disease.

## 3. DESIGN :

- (i) R.B.D. (ii) (a) 5 (b) N.A. (iii) 5. (iv) 1. (v) No. (vi) Yes.

## 4. GENERAL :

- (i) N.A. (ii) Under study. (iii) % of infection of leaf spot disease. (iv) (a) 1948—1949. (b) N.A. (v) N.A. (vi) The plot wise data is not available. The results are taken from report. (vii) The experiment was conducted by Myco (C).

## 5. RESULTS :

- (i) 1.133 % of leaf spot.  
 (ii) 0.2179% of leaf spot.  
 (iii) Treatment differences are highly significant.  
 (iv) Treatment % of leaf spot infection

1.	2.394
2.	0.636
3.	1.083
4.	0.758
5.	0.794
S.E./mean	= 0.974% of leaf spot.

Crop :- Apple.

Ref :- U.P. 50(261).

Site :- Govt Hill Fruit Res. Stn., Chaubattia.

Type :- 'D'.

Object :- To control the pre-harvest fruit drop of Apple by means of hormones.

## 1. BASAL CONDITIONS :

(i) Buffer trees in stock x manure trial. (ii) (a) Clay loam. (b) N.A. (iii) By budding. (iv) Jonathan. (v) Last week of Nov. 1939 and spacing 20' x 20'. (vi) Planted in 1939 one year after budding. (viii) Nil. (ix) No. (x) Unirrigated. (xi) N.A. (xii) 5.7.1950 to 26.9.1950.

## 2. TREATMENTS :

Sprayings of :

1. 10 p.p.m. of 2, 4-Dichlorophenoxyacetic acid.
2. 15 p.p.m. of 2, 4-Dichlorophenoxyacetic acid.
3. 20 p.p.m. of 2, 4-Dichlorophenoxyacetic acid.
4. 10 p.p.m. of L-Napthaleneacetic acid (commercial chemical used = Planofex).
5. 15 p.p.m. of L-Napthaleneacetic acid.
6. 20 p.p.m. of L-Napthaleneacetic acid.
7. Control

Spraying done on 8.7.1950.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 6. (iv) 2. (v) Generally one or two rows of trees on either side of the plot. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) Woolly aphis, stem black, stem brown and apple root borer—mechanical methods of control adopted. (iii) Record of no. fruits present on the trees on the day of spraying, no. of fruits shed at weekly intervals and then finally the no. of fruits harvested. Analysis is done of % of fruits dropped. (iv) (a) 1950 to 1953. (b) N.A. (v) N.A. (vi) The data was converted into  $\sin^{-1}\sqrt{p}$  and then analysed where p = percent of fruits dropped. (vii) The experiment was conducted by Hort (C).

## 5. RESULTS :

(i) 24.63 degrees.

(ii) 6.037 degrees.

(iii) Treatment differences are significant.

(iv) Treatment	Mean angle	Av. % of fruit drop (transformed back)
1.	22.52	15.05
2.	29.97	15.25
3.	22.98	15.55
4.	26.62	20.40
5.	18.97	10.99
6.	22.93	15.55
7.	28.43	22.97

S.E./mean = 2.464 degrees.

Crop :- Apple.

Ref :- U.P. 51(250).

Site :- Govt. Hill Fruit Res. Stn., Chaubattia.

Type :- 'D'.

Object :- To control the pre-harvest fruit drop of Apple by means of hormones.

## 1. BASAL CONDITIONS :

(i) Buffer trees in stock x manure trial. (ii) (a) Clay loam. (b) N.A. (iii) By budding. (iv) Jonathan. (v) Last week of November 1939 and spacings 20' x 20'. (vi) Planted in 1939, one year after budding. (vii) Nil. (viii) No. (ix) No. (x) Unirrigated. (xi) N.A. (xii) 27.6.1951 to 28.8.1951.

## 2. TREATMENTS :

1. 10 p.p.m. of 2,4-Dichlorophenoxyacetic acid.
2. 15 p.p.m. of 2,4-Dichlorophenoxyacetic acid.
3. 20 p.p.m. of 2,4-Dichlorophenoxyacetic acid.
4. 10 p.p.m. of L-Napthaleneacetic acid (commercial chemical used = Planofex)



5. 15 p.p.m. of L—Naphthaleneacetic acid.
  6. 20 p.p.m. of L—Naphthaleneacetic acid.
  7. Control.
- Spraying done on 20.6.1951.

### 3. DESIGN :

- (i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 6. (iv) 2. (v) Generally 1 or 2 rows of trees on either side of the plot. (vi) Yes.

### 4. GENERAL :

- (i) N.A. (ii) Woolly aphis, stem black, stem brown and apple root-borer—mechanical methods of control adopted. (iii) Fruits dropped and the total no. of fruits including those finally harvested. (iv) (a) 1950—1953. (b) N.A. (v) N.A. (vi) The data has been converted into  $\sin^{-1}\sqrt{p}$  and then analysed where  $p$ =percentage of fruits dropped. (vii) The experiment was conducted by Hort (C).

### 5. RESULTS :

- (i) 29.64 degrees.  
 (ii) 8.649 degrees.  
 (iii) Treatment differences are not significant.
- | (iv) Treatment | Mean angle | Av. % drop of fruits (transformed back) |
|----------------|------------|---|
| 1.             | 34.38      | 32.08                                   |
| 2.             | 35.45      | 33.76                                   |
| 3.             | 25.61      | 19.01                                   |
| 4.             | 25.74      | 19.21                                   |
| 5.             | 27.67      | 21.88                                   |
| 6.             | 26.98      | 20.89                                   |
| 7.             | 31.62      | 27.72                                   |
- S.E./mean = 3.5310 degrees.

Crop :- Apple.

Ref :- U.P. 52(297).

Site :- Govt. Hill Fruit Res. Stn., Chaubattia.

Type :- 'D'.

Object :- To control the pre-harvest fruit drop of Apple by means of hormones.

### 1. BASAL CONDITIONS :

- (i) Buffer trees in stock  $\times$  manure trial. (ii) (a) Clay loam. (b) N.A. (iii) By budding. (iv) Jonathan. (v) Last week of November 1939 and spacings 20'  $\times$  20'. (vi) Planted in 1939, one year after budding. (vii) Nil. (viii) No. (ix) No. (x) Unirrigated. (xi) N.A. (xii) 31.7.1952 to 25.8.1952.

### 2. TREATMENTS :

1. 10 p.p.m. 2,4—Dichlorophenoxyacetic acid.
  2. 15 p.p.m. 2,4—Dichlorophenoxyacetic acid.
  3. 20 p.p.m. 2,4—Dichlorophenoxyacetic acid.
  4. 10 p.p.m. L - Naphthaleneacetic acid (commercial chemical used=Planofex).
  5. 15 p.p.m. L—Naphthaleneacetic acid.
  6. 20 p.p.m. L—Naphthaleneacetic acid.
  7. Control.
- Spraying on 2.8.1952.

### 3. DESIGN :

- (i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 6. (iv) 2. (v) Generally 1 or 2 rows of trees on either side of the plot. (vi) Yes.

### 4. GENERAL :

- (i) N.A. (ii) Woolly aphis, stem black, stem brown, apple root borer—mechanical methods adopted for controlling. (iii) % of fruits dropped. (iv) (a) 1950—1953. (b) N.A. (v) N.A. (vi) The data has been converted into  $\sin^{-1}\sqrt{p}$  and then analysed where  $p$ =percent of fruits dropped. (vii) The experiment was conducted by Hort (C).

## 5. RESULTS :

(i)	38.32	degrees	
(ii)	6.1257	degrees.	
(iii)	Treatment differences are not significant.		
(iv)	Treatment	Mean angles	Av. % of fruits drop (transformed back)
	1.	37.94	37.92
	2.	43.03	46.63
	3.	41.38	43.75
	4.	40.03	41.49
	5.	35.85	34.46
	6.	31.94	28.22
	7.	38.08	38.12
		S.E./mean	=2.5008 degrees.

Crop :- Apple

Ref :- U.P. 53(79)

Site :- Govt. Hill Fruit Res. Stn., Chaubattia.

Type :- 'D'.

Object :- To control the pre-harvest drop of Apple.

## 1. BASAL CONDITIONS :

(i) Buffer tress in stock  $\times$  manure trial. (ii) N.A. (iii) Budding. (iv) Jonathan (v) Last week of Nov. 1939 and spacing 20'  $\times$  20'. (vi) Planted in 1939—one year after budding. (vii) Nil. (viii) No. (ix) No. (x) Unirrigated. (xi) 42.84°. (xii) 25.8.1953.

## 2. TREATMENTS :

Two frequencies of spray viz. one spraying and two sprayings at an interval of 10 days with 3 concentrations as follows :—

1. 10 p.p.m.	5. 15 p.p.m.
2. 15 p.p.m.	6. 20 p.p.m.
3. 20 p.p.m.	7. Control.
4. 10 p.p.m.	

Treatments 1, 2, 3 given on 24.7.1953 and treatments 4, 5, 6 on 3.8.1953. Name of the chemical sprayed —N.A.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 5. (iv) 1. (v) No. (vi) Yes.

## 4. GENERAL :

(i) Good (ii) Woolly Aphis—D.D.T. sprayed. Stem black, stem brown, apple root borers—mechanical control. (ii) No. of fruits dropping at weekly interval and total no. of fruits harvested. (iv) (a) 1948—1949. (b) and (c) N.A. (v) N.A. (vi) Nil. (vii) The expt. was conducted by Hort (C).

## 5. RESULTS :

- (i) 26.71 degrees/tree.  
(ii) 6.31 degrees/tree.  
(iii) Treatment differences are not significant,  
(iv) Mean no. of fruits dropped per tree [converted to  $\sin^{-1}\sqrt{p}$  when p is % drop of fruit].

Treatment	Mean $\sin^{-1}\sqrt{p}$ .
1.	26.46
2.	25.10
3.	26.28
4.	27.94
5.	25.84
6.	24.00
7.	31.34
S.E./mean	=2.8250 degrees.

Crop :- Apple.  
Site :- Ranikhet (Almora).

Ref :- U.P. 48(44).  
Type :- 'D'.

Object :- A trial on the efficacy of stomach poisons against defoliating beetles.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) N.A. (iii) N.A. (iv) N.A. (v) (a) to (e) N.A. (vi) N.A. (vii) N.A. (viii) N.A. (ix) N.A. (x) N.A.

2. TREATMENTS :

1. Lead Arsenate-lime mixture (Lead arsenate 1 oz, lime 2 ozs, and water 3 gallons).
  2. Lead nitrate—Potassium bicromate mixture (Lead nitrate 2 ozs, pot. bichro. 1 oz, and water 4 gallons).
  3. Paris green—lime mixture (P. green  $\frac{1}{2}$  oz. lime  $1\frac{1}{2}$  ozs. and water 4 gallons).
  4. Control.
- Chemicals sprayed in June (a little before the start of monsoon).

3. DESIGN :

(i), (ii) R.B.D. with six replications. (iii) one tree as a unit of plot. (iv) N.A.

4. GENERAL :

(i) N.A. (ii) Under study. (iii) Assessment of the effect was made on the % of defoliation recorded in five degrees of perforation (slight, quarter,  $\frac{1}{2}$ ,  $\frac{3}{4}$ th and totally damaged) and converting them in terms of total defoliation. (iv) (a) 1948—49. (b) N.A. (c) N.A. (v) N.A. (vi) Nil. (vii) The expt. was conducted by Ento (C). The plotwise yield data is not available. The results have been taken from the report.

5. RESULTS :

- (i) 20.9 % of attacked leaves/plot (in terms of total defoliation).
- (ii) 11.02 % of attacked leaves/plot (in terms of total defoliation).
- (iii) Treatment differences are significant.
- (iv) Treatment                      Mean % of atcked leaves per plot in terms of

	complete defoliation
1.	19.9
2.	11.2
3.	27.7
4.	24.9
S.E./mean	=4.50 % of at cked leaves/plot.

Crop :- Apple.  
Site :- Ranikhet (Almora).

Ref :- U.P. 49 (104).  
Type :- 'D'.

Object :- A trial on the efficacy of stomach poisons against defoliating beetles.

1. BASAL CONDITIONS :

(i) (a) to (c) N. A. (ii) N.A. (iii) N.A. (iv) N.A. (v) (a) to (e) N.A. (vi) N.A. (vii) N.A. (viii) N.A. (ix) N.A. (x) N.A.

2. TREATMENTS :

1. Lead arsenate-lime spray (Lead arsenate one ozs., quick lime 3 ozs. and water 3 gallons).
  2. Lead chromate spray (Lead acetate 2 ozs. and potassuim bichromate 1 oz, water 3 gallons).
  3. Paris green-lime spray (Paris green 2 ozs, Lime 3 ozs, and water 3 gallons).
  4. Control.
- The trees received one spraying in the first week of July, 1949.

3. DESIGN :

(i) and (ii) R.B.D. with 6 replications. (iii) (a) and (b) one tree/plot. (iv) N.A.

4. GENERAL :

(i) N.A. (ii) Under study. (iii) The estimation of damage was made in October, when the attack of the beetles was completely over. (iv) (a) 1948—1949. (b) and (c) N.A. (v) N.A. (vi) Nil. (vii) The experiment was conducted by Ento (C). The plotwise yield data is not available and the results have been taken from report.

**5. RESULTS :**

- (i) 18.95 % of damaged leaves/plot (in terms of complete defoliation).  
 (ii) 4.85 % of damaged leaves/plot (in terms of complete defoliation).  
 (iii) Treatment differences are highly significant.  
 (iv)
- | Treatments | % of damaged leaves/plot |
|------------|--------------------------|
| 1.         | 15.2                     |
| 2.         | 9.3                      |
| 3.         | 17.1                     |
| 4.         | 34.2                     |
| S.E./mean  | 1.98                     |

**Crop :-Apple.****Ref :-U.P. 51(40).****Site :-Ramgarh (Nainital).****Type :-'D'.****Object :-To study the efficacy of stomach poisons against defoliating beetles.****1. BASAL CONDITIONS :**

- (i) (a) N.A. (b) Apple. (c) N.A. (ii) Clay loam. (iii) Nil. (iv) Improved. (v) (a) Ringing around the tree and pruning during winter. (b) to (e) N.A. (vi) N.A. (vii) Unirrigated. (viii) N.A. (ix) N.A. (x) N.A.

**2. TREATMENTS :**

1. D.D.T. emulsion 0.25%.  
 2. Lead chromate.  
 3. Control.  
 Spraying on 18.7.1951.

**3. DESIGN :**

- (i) Surveying at the spot. (ii) 7 replications in R.B.D. (iii) 20' x 20' (1 tree per plot). (iv) N.A.

**4. GENERAL :**

- (i) Good. (ii) Under study. (iii) Percentage damage to the leaves of apple trees. (iv) (a) No. (b) N.A. (c) N.A. (v) N.A. (vi) Nil. (vii) The expt. was conducted by Ento (C).

**5. RESULTS :**

(i) to (iv).

Treatments	Mean Angle (in degrees)	Transformed back mean percentage
1.	18.16	10.11
2.	28.60	23.18
3.	32.34	28.82
G.M.	26.37	
S.E./mean	1.3452	
Significance	Highly significant.	

**Crop :- Apple.****Ref :- U.P. 52(101).****Site :- Jilling Estate (Nainital).****Type :- 'D'.****Object :-To study the effects of insecticides against San Jose scale.****1. BASAL CONDITIONS :**

- (i) (a) N.A. (b) Apple. (c) Nil. (ii) Clay loam. (iii) N.A. (iv) Improved. (v) (a) Ringing around the base of tree and pruning during winter every year. (b) to (e) N.A. (vi) N.A. (vii) N.A. (viii) N.A. (ix) N.A. (x) N.A.

**2. TREATMENTS :**

1. Diesel oil emulsion 4%.
2. D.D.T. emulsion 0.5%.
3. Sandofin A+Euphyton 2%.
4. Lime Sulphur (S. gr. 1.3, 1 in 10).
5. Control.

Date of spraying 8/9.2.1952.

**3. DESIGN :**

(i) By surveying. (ii) 5 replications in R.B.D. (iii) (a) and (b) 20' x 20' (1 apple tree/plot). (iv) N.A.

**4. GENERAL :**

(i) Fair. (ii) San Jose scale—as per treatments. (iii) Counting dead and live scales—two months after the spray. (iv) (a) No. (b) and (c) N.A. (v) N.A. (vi) Nil. (vii) The experiment was conducted by Ento (C).

**5. RESULTS :**

(i) to (iv)

Treatment	Mean angle (in degrees)
1.	62.71
2.	75.97
3.	73.41
4.	64.08
5.	26.08
G.M.	60.45
S.E./mean	1.8584
Significance	Highly significant

Crop :- Apple.

Site :- Ramgarh (Nainital).

Ref :- U.P. 52(104).

Type :- 'D'.

Object :- To study the effect of stomach poisons against defoliating beetles during rainy season.

**1. BASAL CONDITIONS :**

(i) (a) N.A. (b) Apple. (c) N.A. (ii) Clay loam. (iii) Leaf mould and cowdung. (iv) Improved. (v) (a) Pruning and ringing round the tree. (b) to (c) N.A. (vi) N.A. (vii) Unirrigated. (viii) N.A. (ix) N.A. (x) N.A.

**2. TREATMENTS :**

1. Lead arsenate 4 lbs./100 gallons.
  2. Calcium arsenate 2 lbs./100 gallons.
  3. Lead chromate 6 lbs./100 gallons.
  4. Paris green 2 lbs./100 gallons.
  5. D.D.T. emulsion 0.5%.
  6. Control.
- Spraying on 2, 3.7.1953.

**3. DESIGN :**

(i) By survey. (ii) 5 replications in R.B.D. (iii) (a) and (b) 20' x 20' (1 apple tree/plot). (iv) N.A.

**4. GENERAL :**

(i) Good. (ii) Defoliating beetles—as per treatments. (iii) Percentage leaf area eaten away by the beetles. (iv) (a) No. (b) and (c) N.A. (v) N.A. (vi) Nil. (vii) The experiment was conducted by Ento (C).

**5. RESULTS :**

(i) to (iv)

Treatment	Mean angle (in degrees)	Transformed back mean percentage
1.	17.47	9.42
2.	20.24	12.33
3.	19.93	11.33
4.	19.04	11.03
5.	12.50	5.14
6.	31.74	27.90
G.M.	20.15	
S.E./mean	1.7304	
Significance	Highly significant	

Crop :- Apple.  
Site :- Jeolikote (Nainital).

Ref :- U.P. 53(70).  
Type :- 'D'.

Object :- To study different control measures of the chrysomelid beetle.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) N.A. (iii) N.A. (iv) N.A. (v) (a) to (e) N.A. (vi) N.A. (vii) N.A. (viii) N.A. (ix) N.A. (x) N.A.

2. TREATMENTS :

1. D.D.T. emulsion 0.25%.
  2. Parathion emulsion 0.05%.
  3. Lead Arsenate 2 lbs. in 100 gallons of water.
  4. Lead Chromate 4 lbs. in 100 gallons of water.
  5. Lime Sulphur (sp. gr. 1.3) 1 in 30 parts of water.
  6. Soft Soap Nicotine Sulphate (nicotine sulphate, 40%, 1 in 800 water).
  7. Control.
- Spraying on 24.2.1953.

3. DESIGN :

(i) and (ii) 4 replications in R.B.D. (iii) (a) and (b) 10' x 10'. (iv) N.A.

4. GENERAL :

(i) N.A. (ii) N.A. (iii) Percentage area of leaves damaged by grubs and adults. (iv) (a) No. (b) and (c) N.A. (v) N.A. (vi) Nil. (vii) The experiment was conducted by Ento (C).

5. RESULTS :

(i) to (iv)

Treatment	Mean angle (in degrees)	Transformed back mean percentage
1.	6.63	1.82
2.	8.15	2.49
3.	8.87	2.87
4.	8.94	2.90
5.	9.34	3.10
6.	10.07	3.53
7.	16.23	8.23
G.M.	9.75	
S.E./mean	0.5010	
Significance	Highly significant	

Crop :- Citrus (*Mosambi*).

Ref :- U.P. 51(290).

Site :- Castle Grant Orchard, B.R. College, Agra. Type :- 'M'.

Object :- To study the effect of Nitrogen obtained from different sources on the performance of *Mosambi*.

1. BASAL CONDITIONS :

(i) In young age upto 6 years the plants received 20 seers of compost/tree in every year with frequent addition of fish manure or bone meal every third year till the age of 9 years. Manuring only then in the last two years by 40 seers of compost per tree annually. Irrigation and weeding according to needs. (ii) (a) Loam. (b) Refer soil analysis, B.R. College, Agra. (iii) Budded on *khatta* stock. (iv) N.A. (v) Planted in 1934 at 29' x 20' in pits 3' x 3' filled with 4 mds. of F.Y.M. and soil mixed together. (vi) N.A. (vii) Nil. (viii) Two weedings (ix) Nil. (x) Irrigated. (xi) N.A. (xii) N.A.

2. TREATMENTS :

All combinations of (1) and (2) + a control.

(1) Forms of N : M<sub>1</sub> = compost and M<sub>2</sub> = A/S.

(2) 3 levels of N : N<sub>1</sub> = 1, N<sub>2</sub> = 2, N<sub>3</sub> = 3 lb./tree.

A/S as uniform texture mixed with equal amount of dry powdered soil broadcast evenly in the assigned basin and thoroughly incorporated in the soil by a light hoeing followed by light irrigation, same method for compost (not mixed with soil). Applied on 9.1.1951.

3. DESIGN :

(i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 3. (iv) (a) 1. (b) N.A. (v) 20' x 20'. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) N.A. (iii) Girth measurement, length of shoot, no. of leaves, size of leaves, fruit set, fruit drop, fruit size and yield. (iv) (a) No. (b) N.A. (v) N.A. (vi) N.A. (vii) The experiment was conducted by B.R.C. No plot wise yield data were available in the thesis.

## 5. RESULTS :

- (i) 19.68 lb./tree.  
 (ii) 8.34 lb./tree.  
 (iii) Effect of N and interaction M×N are significant, effect of M is not significant.  
 (iv) Av. yield of *mosambi* in lb./tree.

Control=13.42

	M <sub>1</sub>	M <sub>2</sub>	Mean
N <sub>1</sub>	12.58	11.47	12.03
N <sub>2</sub>	31.47	12.13	21.80
N <sub>3</sub>	23.50	33.22	28.30
Mean	22.52	18.94	20.73

S.E. of difference of two

1. marginal means of N =4.81 lb./tree.  
 2. marginal means of M =3.93 lb./tree.  
 3. means of body of M×N table =6.81 lb./tree.  
 S.E. for the control mean =4.81 lb./tree.

Crop :-Citrus (Grape fruit)

Ref :-U. P. 52 (71).

Site :- Govt. Nursery, Bageswar.

Type :- 'D'.

Object :-To study the effect of various fungicides against fruit spot disease of Grape fruit variety.

## 1. BASAL CONDITIONS :

(i) Nil. (ii) (a) Sandy loam. (b) N. A. (iii) N. A. (iv) Mixed. (v) N. A. (vi) More than 8 years  
 (vii) Nil. (viii) Nil. (ix) Nil. (x) Irrigated. (xi) N. A. (xii) N. A.

## 2. TREATMENTS :

1. Perenox 0.3%.
2. Lime sulphur 1 : 20, sp. gr. 1.3.
3. Thiovit 0.3%.
4. Sandolin.
5. Control.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N. A. (iii) 6. (iv) One. (v) Nil. (vi) Yes.

## 4. GENERAL :

(i) N. A. (ii) Under study. (iii) Percentage of infection. (iv) (a) No. (b) N. A. (v) N. A. (vi) N. A.  
 (vii) The experiment was conducted by Myco (C).

## 5. RESULTS :

(i) to (iv)

Treatment	Mean angle (in degrees)	Transformed back mean percentages
1.	31.00	26.76
2.	35.44	33.77
3.	25.45	18.78
4.	28.60	23.18
5.	34.36	32.03
G. M.	30.97	
S.E./mean	2.5068.	
Significance	N.S.	

**Crop :- Citrus (Lemon Seedlings).**  
**Site :- Govt. Nursury, Bageswar.**

**Ref :- U.P. 52(70)**  
**Type :- 'D'.**

**Object :-** To study the effect of various fungicides against leaf scab disease of citrus.

**1. BASAL CONDITIONS :**

(i) Nil. (ii) (a) Sandy loam. (b) N.A. (iii) By seed. (iv) Lemon local. (v) N.A. (vi) 2 years. (vii) Nil. (viii) Nil. (ix) No. (x) Irrigated. (xi) N.A. (xii) N.A.

**2. TREATMENTS :**

1. Lime sulphur (1 : 20. sp. gravity 1.13)
2. Thiovit 0.25%.
3. Perenox 0.25%.
4. Sandolin 0.25%.
5. Ultra sulphur 0.25%.
6. Control.

**3. DESIGN :**

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 5. (iv) One row of seedlings (3' high). 30 ft. in lengths with adequate buffer rows. (v) Two rows. (vi) Yes.

**4. GENERAL :**

(i) N.A. (ii) Under study. (iii) Percentage of infection on 5 and 6 December 1952. (iv) (a) No. (b) N.A. (v) N.A. (vi) Nil. (vii) The experiment was conducted by Myco (C).

**5. RESULTS :**

(i) to (iv)

Treatment	Mean angle (in degrees)	Transformed back mean percentage.
1.	36.83	36.07
2.	45.69	51.19
3.	49.81	58.27
4.	42.12	45.04
5.	46.26	52.18
6.	55.50	67.81
G. M.	46.04	
S.E./mean	1.2226	
Significance	Highly significant	

**Crop :- Citrus (Grape Fruit).**

**Ref :- U.P. 53(189).**

**Site :- Govt. Hort. Farm, Jeolikote.**

**Type :- 'D'.**

**Object :-** To study the control measures of fruit spot disease of Citrus (grape fruit).

**1. BASAL CONDITIONS :**

(i) Orchard. (ii) (a) Sandy loam. (b) N.A. (iii) Grafted plants. (iv) Grape Fruit. (v) The experiment was laid out on 20.9.1953. (vi) More than 10 years. (vii) N.A. (viii) N.A. (ix) Nil. (x) Irrigated. (xi) N.A. (xii) N.A.

**2. TREATMENTS :**

- |   |                        |
|---|------------------------|
| 1. Lime Sulphur 1 : 30 (Sp. gravity 1.33) | 5. Sandolin 0.3%       |
| 2. Perenox 0.3%.                          | 6. Dithane Z.78 0.3%.  |
| 3. Coppesan 0.3 %.                        | 7. Ultra Sulphur 0.3%. |
| 4. Thiovit 0.3%.                          | 8. Control.            |

**3. DESIGN :**

(i) R.B.D. (ii) (a) 8. (b) N.A. (iii) 6. (iv) 8. (v) Nil. (vi) Yes.

**4. GENERAL :**

(i) N.A. (ii) Under study. (iii) Percentage of infection on January 13, 1954. (iv) (a) 1953-54. (b) N.A. (v) N.A. (vi) Nil. (vii) The experiment was conducted by Myco (C) at Bageswar (Almora).



## 5. RESULTS :

(i) to (iv)

Treatment	Mean angle (in degrees)	Transformed back mean percentage
1.	43.35	47.14
2.	37.54	37.26
3.	42.60	45.85
4.	40.35	41.99
5.	42.31	45.36
6.	45.58	51.00
7.	46.54	52.66
8.	51.19	60.60
G.M.	43.68	
S.E./mean	1.4650	
Significance	Highly significant	

Crop :- Citrus (Lemon Seedlings).

Ref :- U.P. 53(187)

Site :- Govt. Hort. Farm, Jeolikote.

Type :- 'D'.

Object :- To study the efficacy of different insecticides against Leaf scab disease.

## 1. BASAL CONDITIONS :

(i) Nursery plots. (ii) (a) Sandy loam. (b) N.A. (iii) By seed. (iv) Lemon (Local). (v) 4 rows of 14' each (16-18 plants/row) at a distance 1' apart. (vi) 2 years old. (2.5'—3.5' in height). (vii) N.A. (viii) N.A. (ix) Nil. (x) Irrigated. (xi) N.A. (xii) N.A.

## 2. TREATMENTS :

- |  |                         |
|--|-------------------------|
| 1. Lime Sulphur 1 : 30 (Sp. gravity 1.33). | 5. Dithane Z.78 0.25%.  |
| 2. Perenox 0.25%.                          | 6. Ultra Sulphur 0.25%. |
| 3. Coppesan 0.25%.                         | 7. Sandolin 0.25%.      |
| 4. Thiovit 0.25%.                          | 8. Control.             |

## 3. DESIGN :

(i) R.B.D. (ii) (a) 8. (b) N.A. (iii) 5. (iv) 64-72 plants/plot. (v) 3' between plots. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) Under study. (iii) Percentage infection/plot on 5.12.1953. (iv) (a) 1953—contd. (b) N.A. (v) N.A. (vi) Nil. (vii) The experiment was conducted by Myco (C) at Bageswar (Almora).

## 5. RESULTS :

(i) to (iv)

Treatment	Mean angles (in degrees)	Transformed back mean percentage
1.	33.42	30.53
2.	47.76	54.76
3.	36.48	33.50
4.	46.15	51.98
5.	45.35	50.60
6.	43.96	48.21
7.	41.55	44.06
8.	57.33	70.60
G.M.	44.00	
S.E./mean	1.0901	
Significance	Highly significant.	

Crop :- Citrus (Malta).  
Site :- Govt. Hort. Farm, Jeolikote.

Ref :- U.P. 53(74).  
Type :- 'D'.

Object :- To study the effectiveness of ovicides on eggs of Citrus white fly.

### 1. BASAL CONDITIONS :

(i) Experiments were conducted on *Malta* to which G.M. (soyabean) and N were given. (ii) (a) Gravelly soil. (b) N.A. (iii) By budding. (iv) *Malta*. (v) N.A. (vi) One year old. (vii) Pine leaf compost. (viii) Hoeing. (ix) Wheat during winter. (x) Irrigated. (xi) 69.49". (xii) N.A.

### 2. TREATMENTS :

1. Lime Sulphur (sp. gr. 1.3) 5%.
  2. D.D.T. emulsion 0.25%.
  3. Control.
- Sprayed on 31.7.1953 at 2 gallons/tree.

### 3. DESIGN :

(i) R.B.D. (ii) (a) 3. (b) N.A. (iii) 7. (iv) 1. (v) No. (vi) Yes.

### 4. GENERAL :

(i) Medium. (ii) Under study. (iii) No. of living nymphs and no. of eggs from which they hatched. (iv) (a) 1953—contd. (b) N.A. (v) N.A. (vi) Nil. (vii) The experiment was conducted by Ento (C). The data has been converted into  $\sin^{-1}\sqrt{p}$  and then analysed where  $p$  is % no. eggs to no. of hatched nymphs.

### 5. RESULTS :

(i) to (iv)

Treatment	Mean emergence of nymphs per tree in $\sin^{-1}\sqrt{p}$
1.	14.01
2.	21.90
3.	56.83
G.M.	30.92
S.E./mean	1.50
Significance	Highly significant

Crop :- Citrus (Malta).  
Site :- Govt. Hort. Farm, Jeolikote.

Ref :- U.P. 53(71).  
Type :- 'D'.

Object :- To study the effectiveness of ovicides on eggs of Citrus white fly.

### 1. BASAL CONDITIONS :

(i) Experiment were conducted on *Malta* to which G.M. (soyabean) and N were given. (ii) (a) Gravelly soil. (b) N.A. (iii) By budding. (iv) *Malta*. (v) N.A. (vi) One year old. (vii) Pine leaf compost. (viii) Hoeing. (ix) Wheat during winter. (x) Irrigated. (xi) 69.49". (xii) November.

### 2. TREATMENTS :

1. D.D.T. emulsion 0.25%.
  2. B.H.C. wettable powder 0.01%.
  3. Toxaphene emulsion 0.125%.
  4. Chlordane emulsion 0.125%.
  5. Parathion emulsion 0.05%.
  6. Lime Sulphur 5%.
  7. Fresh oil rosin soap 2.5%.
  8. Kerosene oil emulsion 4%.
  9. Control (no treatment).
- Sprayed on 30.3.1953 at 1½ gallons per tree.

### 3. DESIGN :

(i) R.B.D. (ii) (a) 9. (b) N.A. (iii) 5. (iv) 1. (v) No. (vi) Yes.

### 4. GENERAL :

(i) Medium. (ii) Under study. (iii) The no. of living nymphs and no. of eggs from which they hatched on 30.4.1953. (iv) (a) 1953—contd. (b) N.A. (v) N.A. (vi) Nil. (vii) The experiment was conducted by Ento (C).

## 5. RESULTS :

(i) to (iv)

Treatment	Mean emergence of nymphs per tree in $\sin^{-1}\sqrt{p}$	Treatment	Mean emergence of nymphs per tree in $\sin^{-1}\sqrt{p}$
1.	16.70	6.	17.04
2.	21.90	7.	37.24
3.	20.30	8.	36.52
4.	22.44	9.	40.24
5.	19.46		
G.M.	25.76		
S.E./mean	1.78		
Significance	Highly significant		

Crop :-Citrus.

Ref :-U.P. 52(106).

Site :-Govt. Hort. Farm, Jeolikote.

Type :-'D'.

Object :-To study the efficacy of different insecticides against Citrus leaf miner.

## 1. BASAL CONDITIONS :

(i) N.A. (ii) (a) Clay. (b) N.A. (iii) N.A. (iv) N.A. (v) Budding and inarching. (vi) N.A. (vii) Compost at 1 md/pit. (viii) Nil. (ix) Nil. (x) Unirrigated. (xi) N.A. (xii) Nil.

## 2. TREATMENTS :

1. D.D.F. emulsion 0.5 % (1 : 50)
2. D.D.T. emulsion 0.25% (1 : 100)
3. Fish oil rosin soap 2 lbs in 4 gallons.
4. Soft soap nicotine sulphate (soap 4.2, nicotine 102 and water 2.5 gallons.)
5. Parathion 0.1% (1 : 200).
6. Parathion 0.5% (1 : 400).
7. Control.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 5. (iv) 1. (v) Nil. (vi) Yes.

## 4. GENERAL :

(i) Stunted. (ii) Under study. (iii) % mortality. (iv) (a) No. (b) N.A. (v) N.A. (vi) Nil. (vii) The experiment was conducted by Ento (C).

## 5. RESULTS :

(i) to (iv)

Treatment	Mean angle (in degrees)	Transformed back mean percentage
1.	55.31	67.43
2.	31.63	27.72
3.	28.22	22.64
4.	27.84	22.09
5.	41.39	43.77
6.	41.93	44.70
7.	27.08	21.02
G.M.	36.20	
S.E./mean	2.4658	
Significance	Highly significant.	

Crop :-Citrus.

Ref :-U.P. 50(272).

Site :-Govt. Bot. Gardens, Kanpur.

Type :-'D'.

Object :-To study the effect of insecticides on immature Citrus leaf miner.

## 1. BASAL CONDITIONS :

(i) N.A. (ii) (a) and (c) N.A. (iii) N.A. (iv) N.A. (v) N.A. (vi) N.A. (vii) N.A. (viii) N.A. (ix) N.A. (x) N.A. (xi) N.A. (xii) N.A.

## 2. TREATMENTS :

1. Spraying with 0.25 D.D.T. emulsion.
2. Spraying with 0.60 D.D.T. emulsion.
3. Nicotine in 2% kerosene oil was sprayed.
4. Nicotine in 3% kerosene oil was sprayed.
5. Spraying with nicotine sulphate soap emulsion.
6. Control.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 5. (iv) N.A. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) Under study. (iii) Population and mortality of larvae and pupae. (iv) (a) and (b) N.A. (v) Nil. (vi) Nil. (vii) The experiment was conducted by Ento (K).

## 5. RESULTS :

(i) to (iv) Treatment	Mean angle	Transformed back mean percentage
1.	19.03	10.99
2.	16.97	8.91
3.	15.49	7.53
4.	14.65	6.84
5.	14.11	6.38
6.	0.00	0.50
G.M.	13.38	
S.E./mean	1.4931	
Significance	Highly significant.	

Crop :- Citrus.

Ref :- U.P. 52(308).

Site :- National Bot. Gardens, Lucknow.

Type :- 'D'.

Object :- To study the effect of insecticides on immature Citrus leaf miner.

## 1. BASAL CONDITIONS :

(i) N.A. (ii) (a) and (b) N.A. (iii) N.A. (iv) N.A. (v) N.A. (vi) N.A. (vii) N.A. (viii) N.A. (ix) N.A. (x) N.A. (xi) N.A. (xii) N.A.†

## 2. TREATMENTS :

1. Parathion spray 0.025%.
2. Parathion spray 0.05%.
3. B.H.C. water suspension spray 0.25%.
4. B.H.C. (Hexyclan M.O.) emulsion spray 0.25%.
5. D.D.T. emulsion spray 0.25%.
6. Lead Arsenate spray (Lead Arsenate powder 1 part, lime 1½ part, Gur 3 parts water 320 parts).
7. Control (No treatment).

## 3. DESIGN :

(i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 4. (iv) 8 plants in one set, each set having two plots. (v) No. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) Under study. (iii) Population and mortality of larvae and pupae. (iv) (a) No. (b) N.A. (v) N.A. (vi) Nil. (vii) The expt. was conducted by Ento (K).

## 5. RESULTS :

(i) to (iv).

Treatment	Mean value of $\sqrt{x+0.5}$	Transformed back mortality counts
1.	1.4184	1.51
2.	1.4753	1.68
3.	1.0550	0.61
4.	1.2735	1.12
5.	1.5380	1.87
6.	1.6104	2.09
7.	0.7071	0.00
G.M.	1.2971	
S.E./mean	0.2026	
Significance	N.S.	

Crop :- Citrus.

Ref :- U.P. 52(303).

Site :- National Bot. Gardens, Lucknow.

Type :- 'D'.

Object :- To study the effect of insecticides on the mortality of immature Citrus leaf miner.

## 1. BASAL CONDITIONS :

(i) N.A. (ii) (a) and (b) N.A. (iii) N.A. (iv) N.A. (v) N.A. (vi) N.A. (vii) N.A. (viii) N.A. (ix) N.A. (x) N.A. (xi) N.A. (xii) N.A.

## 2. TREATMENTS :

1. Spraying with 0.05% parathion emulsion.
2. Spraying with 0.1% parathion emulsion.
3. Spraying with Nicotine sulphate (4%) + 50% D.D.T. soap + water (1 : 4 : 800 by weight) spray.
4. Spraying with 0.5% B.H.C. suspension.
5. Control.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 5. (iv) one. (v) No. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) Under study. (iii) Population and mortality of larvae and pupae. (iv) (a) No. (b) N.A. (v) N.A. (vi) N.A. (vii) The data has been converted into  $\sin^{-1}\sqrt{p}$  and then analysed. Transformed back mean percentages are given after applying bias correction. The expt. was conducted by Ento (K.)

## 5. RESULTS :

(i) to (iv).

Treatments	Mean angle	Transformed back mean percentage
1.	64.20	80.75
2.	72.05	90.10
3.	57.24	70.58
4.	38.82	39.41
5.	0.00	0.50
G.M.	46.46	
S.E./mean	2.2006	
Significance	Highly significant	

Crop :- Citrus.

Ref :- U.P. 51(254).

Site :- National Bot. Gardens, Lucknow.

Type :- 'D'.

Object :- To study the effect of insecticides on immature Citrus leaf miner.

## 1. BASAL CONDITIONS :

(i) N.A. (ii) (a) and (b) N.A. (iii) N.A. (iv) N.A. (v) N.A. (vi) N.A. (vii) N.A. (viii) N.A. (ix) N.A. (x) N.A. (xi) N.A. (xii) N.A.

**2. TREATMENTS :**

1. Spraying with 0.25% D.D.T. emulsion.
2. Spraying with 0.5% D.D.T. emulsion.
3. Spraying with Nicotine sulphate, soap and Guesrol 550.
4. Spraying with Nicotine sulphate and soap emulsion.
5. Control.

**3. DESIGN :**

- (i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 5. (iv) N.A. (v) N.A. (vi) Yes.

**4. GENERAL :**

- (i) N.A. (ii) Under study. (iii) Population and mortality of larvae and pupae. (iv) (a) No. (b) N.A. (v) N.A. (vi) Nil. (vii) The experiment was conducted by Ento(K).

**5. RESULTS :**

(i) to (iv)

Treatments	Mean value of concomitant variate	Mean value of $\sqrt{x+0.5}$	
		Unadjusted	Adjusted
1.	1.80	1.2504	1.2450
2.	1.20	1.1602	1.2473
3.	1.60	1.3718	1.4045
4.	1.40	1.0177	1.0776
5.	3.20	0.7071	0.5229
G.M.	1.84	1.1014	
Error mean square	2.8650		
S.E./mean	0.1095		
Significance	Highly significant		

**Crop :- Citrus.****Site :- National Bot. Gardens, Lucknow.****Ref :- U.P. 51(255).****Type :- 'D'.****Object :-**To study the effect of insecticides on immature Citrus leaf miner.**1. BASAL CONDITIONS :**

- (i) N.A. (ii) (a) and (b) N.A. (iii) N.A. (iv) N.A. (v) N.A. (vi) N.A. (vii) N.A. (viii) N.A. (ix) N.A. (x) N.A. (xi) N.A. (xii) N.A.

**2. TREATMENTS :**

1. Spraying with 0.25% D.D.T. emulsion.
2. Spraying with 0.5% D.D.T. emulsion.
3. Spraying with 0.25% Hexyclan M.O. spray.
4. Spraying with Nicotine sulphate, soap and Guesrol 550.
5. Spraying with 0.05% Ekatox.
6. Spraying with 0.1% Ekatox.
7. Control (No treatment).

**3. DESIGN :**

- (i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 4. (iv) N.A. (v) N.A. (vi) Yes.

**4. GENERAL :**

- (i) N.A. (ii) Under study. (iii) Population and mortality of larvae and pupae. (iv) (a) No. (b) N.A. (v) N.A. (vi) Nil. (vii) The experiment was conducted by Ento (K).

**5. RESULTS :**

(i) to (iv)

Treatment	Mean value of $\sqrt{x+0.5}$	Transformed back mortality counts
1.	1.0550	0.61
2.	1.6995	2.38
3.	0.9659	0.43
4.	1.3862	1.42
5.	1.4183	1.51
6.	1.0550	0.61
7.	0.7071	0.00
G.M.	1.1839	
S.E./mean	0.1552	
Significance	N.A.	

Crop :- Citrus.

Ref :- U.P. 51(43).

Site :- Jeolikote (Nainital).

Type :- 'D'.

Object :—To find out insecticidal control measures against Citrus green bug.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Citrus. (c) N.A. (ii) Clay. (iii) Nil. (iv) Improved. (v) (a) Ringing around the base of tree. (b) to (e) N.A. (vi) N.A. (vii) Unirrigated. (viii) N.A. (ix) N.A. (x) N.A.

## 2. TREATMENTS :

1. D.D.T. emulsion 0.5%.
  2. D.D.T. emulsion 0.25%.
  3. D.D.T. guesrol 550, 0.25%.
  4. D.D.T. guesrol 550, 0.25%.
  5. Control
- Spraying on 10 and 19.9.1951.

## 3. DESIGN :

(i) and (ii) R.B.D. with 4 replications. (iii) (a) and (b) 20' x 20' (1 tree/plot). (iv) N.A.

## 4. GENERAL :

(i) Good. (ii) Control measures as per treatments. (iii) % of fruit fall. (iv) (a) No. (b) N.A. (c) N.A. (v) N.A. (vi) Nil. (vii) Nil. (viii) The experiment was conducted by Ento (c).

## 5. RESULTS :

- (i) 34.69 degree.
- (ii) 2.9669 degree.
- (iii) Treatment differences are highly significant.

(iv) Treatments	Mean angle (in degree) corresponding to % of fall of fruits after second spraying.	Transformed back mean percentage after applying bias correction.
1.	22.04	14.44
2.	28.58	23.16
3.	25.78	19.22
4.	38.32	38.57
5.	42.98	46.52
6.	50.45	59.36
S.E./mean	1.4834	

Crop :- Citrus

Ref :- U.P 51(42)

Site :- Jeolikote (Nainital).

Type :- 'X'.

Object :—To find out insecticidal control measures against Citrus leaf miner.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) Citrus. (c) N.A. (ii) Clay. (iii) N.A. (iv) Improved. (v) (a) Ringing around the trees. (b) to (e) N.A. (vi) N.A. (vii) Unirrigated. (viii) N.A. (ix) N.A. (x) N.A.

## 2. TREATMENTS :

1. D.D.T. emulsion 0.5%.
  2. D.D.T. emulsion 0.25%.
  3. Guesrol 550 0.5%.
  4. Guesrol 550 0.25%.
  5. Fish oil rosin soap.
  6. Control.
- Spraying on 5.9.51.

## 3. DESIGN :

(i) and (ii) R.B.D. with 4 Replications. (iii) (a) and (b) 20' x 20' (one tree/plot). (iv) N.A.

## 4. GENERAL:

(i) Stunted. (ii) Control measures as per treatments, (iii) % mortality. (iv) (a) No. (b) N.A. (c) N.A. (v) N.A. (vi) Nil. (vii) The experiment was conducted by Ento (C).

## 5. RESULTS :

- (i) 54.41 degree.  
 (ii) 2.5502 degree.  
 (iii) Treatment differences are highly significant.

(iv) Treatment	Mean angle (in degrees) corresponding to % mortality of citrus leaf miner.	Transformed back mean % after applying bias correction
1.	64.10	80.61
2.	57.98	71.67
3.	65.16	82.03
4.	56.90	69.99
5.	54.91	66.78
6.	27.39	21.45

S.E./mean = 1.2751

Crop :- Citrus.

Ref :- U.P. 51(41).

Site :- Jeolikote (Nainital).

Type :- 'D'.

Object :—To find out the insecticidal control measures against Citrus green bug.

## 1. BASAL CONDITIONS :

- (i) (a) N.A. (b) Citrus. (c) N.A. (ii) Clay. (iii) Nil. (iv) Improved. (v) (a) Ringing around the base of tree. (b) to (e) N.A. (vi) N.A. (vii) Unirrigated. (viii) N.A. (ix) N.A. (x) N.A.

## 2. TREATMENTS :

1. D.D.T. emulsion 0.5%.
  2. D.D.T. emulsion 0.25%.
  3. D D.T. 550 0.5%.
  4. D.D.T. 550 0.25%.
  5. Fish oil rosin soap 1 lb. in 4 gallons of water.
  6. Control.
- Spraying on 28.81.951.

## 3. DESIGN :

- (i) and (ii) R.B.D. with 2 replications. (iii) (a) and (b) 20'×20' (1 tree/plot.) (iv) N.A.

## 4. GENERAL :

- (i) Good. (ii) Control measures as per treatments. (iii) % of fruit fall. (iv) (a) No. (b) and (c) No. (v) N.A. (vi) Nil. (vii) The experiment was conducted by Ento (C) on cultivators' fields.

## 5. RESULTS :

- (i) 36.40 degree.  
 (ii) 5.5453 degree.  
 (iii) Treatment differences are significant.

(iv) Treatment	Mean angle (in degrees) corresponding to % fall of fruit	Transformed back mean % after applying bias correction
1.	24.64	17.72
2.	31.17	27.02
3.	28.06	22.41
4.	39.92	41.28
5.	45.40	50.69
6.	49.22	57.28

S.E./mean = 3.921



Crop :- Citrus.  
Site :- Jeolikote (Nainital).

Ref :- U.P. 52(105).  
Type :- 'D'.

Object :- To find out the effect of different ovicides sprayed over the eggs of Citrus white fly.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) Citrus. (c) N.A. (ii) Clay. (iii) Compost at 1 md./pit. (iv) Improved. (v) (a) Ringing around the base of stem. (b) to (e) N.A. (vi) Perennial crop. (vii) Unirrigated. (viii) N.A. (ix) N.A. (x) N.A. .

2. TREATMENTS :

1. Kerosene oil emulsion 4%.
2. D.D.T. 0.25%.
3. Fish oil rosin soap 1 lb. in 4 gallons of water.
4. Lime sulphur 1 in 20 (sp. gr. 1.3).
5. Control.

Date of spray 25.7.1952.

3. DESIGN :

(i) and (ii) R.B.D with 5 replications. (iii) (a) and (b) 20' x 20' (1 tree/plot). (iv) N.A.

4. GENERAL :

(i) Good. (ii) Control measures as per treatments. (iii) Population of eggs before and after treatments. (iv) (a) No. (b) and (c) N.A. (v) N.A. (vi) Nil. (vii) The experiment was conducted by Ento (C) on cultivators' fields.

5. RESULTS :

(i)	23.26 degree.		
(ii)	3.435 degree.		
(iii)	Treatment differences are highly significant.		
(iv)	Treatment	Mean angle (in degree) corresponding to % nymphs	Transformed back mean percentage after applying bias correction
	1.	20.15	12.25
	2.	11.23	4.25
	3.	25.78	19.22
	4.	8.62	2.73
	5.	50.50	59.44
		S.E./mean = 1.536	

Crop :- Citrus.  
Site :- Majhkoli (Nainital).

Ref :- U.P. 52(108).  
Type :- 'D'.

Object :- To find out suitable insecticides for the pupae of Citrus white fly.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) Citrus. (c) Nil. (ii) Clay loam. (iii) Pine leaf compost. (iv) *Malta (Mosambi)*. (v) (a) Ringing round the base of tree for application of compost. (b) to (e) N.A. (vi) Perennial crop. (vii) Unirrigated. (viii) N.A. (ix) N.A. (x) Perennial crop.

2. TREATMENTS :

1. D.D.T. 0.5%.
2. D.D.T. 0.25%.
3. Parathion (1 c.c. in 800 c.c. of water).
4. Fish oil rosin soap 1 lb. in 4 gallons of water.
5. Sandolin 0.5% + Ephyton 2%.
6. Lime sulphur 1 : 20.
7. Control.

Date of experiment 17 and 18.12.1952.

3. DESIGN :

(i) and (ii) R.B.D. with 5 replications. (iii) (a) and (b) 20' x 20' (1 tree/plot). (iv) N.A.

## 4. GENERAL :

- (i) Stunted. (ii) Control measures as per treatments. (iii) Number of eggs and the number of nymphs. (iv) (a) No. (b) N.A. (c) N.A. (v) N.A. (vi) Nil. (vii) The experiment was conducted by Ento (C) on cultivators' fields.

## 5. RESULTS :

(i) 53.88 degree.  
(ii) 2.961 degrees.  
(iii) Treatment differences are highly significant.

(iv) Treatment	Mean angle (in degree) corresponding to % kill	Transformed back mean percentage after applying bias correction
1.	72.88	90.93
2.	65.93	83.03
3.	60.79	75.93
4.	45.38	50.66
5.	63.23	79.41
6.	49.20	57.23
7.	19.77	11.83
	S.E./mean	= 1.324

Crop :-Citrus.  
Site :-Jeolikote (Nainital).

Ref :-U.P. 52 (103).  
Type :-'D'.

Object :—To find out the effect of different ovicides sprayed over the eggs of Citrus white fly.

## 1. BASAL CONDITIONS :

- (i) (a) N.A. (b) Citrus. (c) N.A. (ii) Clay loam. (iii) Nil. (iv) Improved. (v) (a) Ringing round the tree. (b) to (e) N.A. (vi) Perennial crop. (vii) Unirrigated. (viii) N.A. (ix) N.A. (x) N.A.

## 2. TREATMENTS :

- Gaevinalin 5 c.c. in one gallon of water.
- Lime sulphur 1 in 20.
- D.D.T. 0.25%.
- Fish oil rosin soap 1 lb. in 4 gallons of water.
- Kerosene oil emulsion 4% : stock sol. 33.3%.
- Control.

Date of spray 15.4.1952.

## 3. DESIGN ;

- (i) and (ii) R.B.D. with 5 replications. (iii) (a) and (b) 20' x 20' (1 tree/plot). (iv) N.A.

## 4. GENERAL :

- (i) Good. (ii) Control measures as per treatments. (iii) Number of eggs and number of nymphs. (iv) (a) No. (b) and (c) N.A. (v) N.A. (vi) Nil. (vii) The experiment was conducted by Ento (C) on cultivators' fields.

## 5. RESULTS :

(i) 31.97 degree.  
(ii) 4.024 degree.  
(iii) Treatment differences are highly significant.

(iv) Treatment	Mean angle (in degree) corresponding % hatched nymphs	transformed back mean % after applying bias correction
1.	41.90	44.65
2.	5.60	1.44
3.	10.50	3.79
4.	45.84	51.46
5.	42.52	45.73
6.	65.48	82.45
	S.E./mean	=1.799

Crop :- Citrus.  
Site :- Bhimtal (Nainital).

Ref :- U.P. 53(76).  
Type :- 'D'.

Object :- To find the effect of nymphicides against the nymphs of Citrus white fly.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) N.A. (iii) N.A. (iv) N.A. (v) (a) to (c) N.A. (vi) N.A. (vii) N.A. (viii) N.A.  
(ix) N.A. (x) N.A.

2. TREATMENTS :

1. D.D.T. emulsion 0.25%.
2. Sandolin 0.5%.
3. Sandolin+Enphyton 2%.
4. .D.T. Suspension 0.5%.
5. Control.

Date of spraying 30.8.1953 sprayed 2 gallons per tree with the help of sprayer.

3. DESIGN :

(i) to (ii) R.B.D. with 4 replications. (iii) (a) and (b) 2 citrus trees. (iv) N.A.

4. GENERAL :

(i) N.A. (ii) N.A. (iii) Population of nymphs and % of kill. (iv) (a) 1953—N.A. (b) N.A. (c) N.A.  
(v) N.A. (vi) The data was converted to  $\sin^{-1}\sqrt{p}$  and then analysed. (vii) The experiment was conducted by Ento. (C) on cultivators' fields.

5. RESULTS :

(i) 48.95 for 2 sq. inch leaf area.

(ii) 6.26 for 2 sq. inch leaf area.

(iii) Treatment differences are highly significant.

(iv) Treatment	Mean % of reduction in $\sin^{-1}\sqrt{p}$
1.	57.95
2.	56.38
3.	52.45
4.	47.02
5.	30.95

S.E./mean = 3.13

Crop :- Citrus.  
Site :- Jeolikote (Nainital).

Ref :- U.P. 53(75).  
Type :- 'D'.

Object :- To find out suitable control measures against the Citrus green bug, *Rhynchocories humeralis* causing premature drop of Citrus fruit.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) N.A. (iii) N.A. (iv) N.A. (v) (a) to (c) N.A. (vi) N.A. (vii) N.A. (viii) N.A.  
(ix) N.A. (x) N.A.

2. TREATMENTS ;

1. D.D.T. emulsion 0.25%.
2. D.D.T. emulsion 0.5%.
3. D.D.T. suspension 0.5%.
4. B.H.C. suspension 0.5%.
5. Control.

Date of treatments 4.8.1953. Quantity of spray used— $\frac{1}{2}$  gallons per tree. *Malta* and Orange trees of varying height bearing 5 - 107 fruits and fruit has started falling ; sprayer used.

3. DESIGN :

(i) to (ii) R.B.D. with 4 replications. (iii) (a) and (b) 2 citrus trees. (iv) N.A.

## 4. GENERAL :

(i) % of fall was varying. (ii) N.A. (iii) Pupae of Citrus green bug and number of fruits examined *i.e.* Citrus green bugs per 100 fruits. (iv) (a) and (b) N.A. (c) N.A. (v) N.A. (vi) Nil. (vii) The experiment was conducted by Ento (C) on cultivators' fields.  $x$  = population of Citrus green bug per 100 fruits.

## 5. RESULTS :

(i)  $2.57 \sqrt{x+0.5}/\text{plot}$ .(ii)  $0.3678 \sqrt{x+0.5}/\text{plot}$ .

(iii) Treatment differences are highly significant.

(iv) Treatment	Mean value of $\sqrt{x+0.5}/\text{plot}$	Population of Citrus green bug per 100 fruits/plot (Transformed back)
1.	2.39	5.21
2.	1.79	2.70
3.	2.58	6.16
4.	2.45	5.50
5.	3.64	12.75
	S.E./mean	$=0.184\sqrt{x+0.5}/\text{plot}$

Crop :- Citrus.

Site :- Ranikhet (Almora).

Ref :- U.P. 49(102).

Type :- 'D'.

Object :- To find out suitable insecticides for Citrus white fly eggs.

## 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) N.A. (iii) N.A. (iv) N.A. (v) (a) to (e) N.A. (vi) N.A. (vii) N.A. (viii) N.A. (ix) N.A. (x) N.A.

## 2. TREATMENTS :

- Soft soap Nicotine sulphate (Nicotine sulphate 40%, 1 in 800 parts of water).
- Kerosene oil emulsion 3%.
- Fish oil rosin (1 lb. in 4 gallons of water).
- Lime sulphur (sp. gravity 1.17, dilution 1 in 15 parts of water).
- D.D.T. emulsion 0.25% (Gladstone Marshall).
- Control.

Treatments used in August 1949 as ovicides. Treatments used in October 1949 as nymphicides.

## 3. DESIGN :

(i) and (ii) R.B.D. (iii) (a) and (b) One tree/plot. (iv) N.A.

## 4. GENERAL :

(i) N.A. (ii) Control measures part of treatments. (iii) Counts of living and dead insects. (iv) (a) No. (b) and (c) N.A. (v) N.A. (vi) Nil. (vii) The experiment was conducted by Ento (C) on cultivators' fields.

## 5. RESULTS :

(i) to (iv)

Treatment	% of hatching of eggs after treatments	% of kill of white Nymphs
1.	51.7	22.1
2.	45.4	38.9
3.	43.7	69.6
4.	9.8	74.7
5.	11.8	94.7
6.	67.3	14.3
S.E./mean	=3.96	S.E./mean =3.78

Crop :- Citrus.  
Site :- Majkholi (Almora).

Ref :- U.P. 51(38).  
Type :- 'D'.

Object :- To find out a suitable insecticidal control measure against Citrus white fly.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) Citrus. (c) N.A. (ii) Clay loam. (iii) Nil. (iv) Improved. (v) (a) Ringing round the base of tree. (b) to (e) N.A. (vi) N.A. (vii) Unirrigated. (viii) N.A. (ix) N.A. (x) N.A.

2. TREATMENTS :

1. D.D.T. emulsion 0.25%.
  2. Rosin soap 1 lb. in 4 gallons of water.
  3. Lime Sulphur 1 : 30.
  4. Control.
- Spraying during February 1951.

3. DESIGN :

(i) and (ii) R.B.D. with 6 replications. (iii) (a) 20' x 20' (1 malta tree/plot). (b) N.A. (iv) N.A.

4. GENERAL :

(i) Fair. (ii) Control measures as per treatments. (iii) % mortality of nymphs of white fly after spraying. (iv) (a) Yes. (b) and (c) N.A. (v) N.A. (vi) Nil. (vii) The experiment was conducted by Ento (C) on cultivators' fields.

5. RESULTS :

- (i) 39.96 degree.
- (ii) 5.405 degree.

(iii) Treatment differences are highly significant.

(iv) Treatment	Mean angle (in degree) corresponding to % mortality of Nymphs	Transformed back mean % after applying bias correction
1.	67.21	84.65
2.	43.07	46.66
3.	35.30	33.57
4.	14.25	6.50
	S.E./mean = 2.207	

Crop :- Citrus  
Site :- Majkholi (Almora).

Ref :- U.P. 51(44)  
Type :- 'D'.

Object :- To find out a suitable insecticidal control measure against Citrus white fly.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) Citrus. (c) N.A. (ii) Clay loam. (iii) Nil. (iv) Improved. (v) (a) Ringing around the main base of of tree. (b) to (e) N.A. (vi) N.A. (vii) Unirrigated. (viii) N.A. (ix) N.A. (x) N.A.

2. TREATMENTS :

1. D.D.T. emulsion 0.25%.
  2. D.D.T. emulsion 5%.
  3. Lime sulphur 1 : 10.
  4. Linseed oil rosin soap 1 lb. in 4 gallons of water.
  5. Sandolin 0.5% + Enphyton 2%.
  6. Control.
- Spraying during Dec. 1951.

3. DESIGN :

(i) and (ii) R.B.D. with 4 replications. (iii) (a) 20' x 20' (1 tree/plot). (b) N.A. (iv) N.A.

4. GENERAL :

(i) good. (ii) Control measures as per treatments. (iii) % mortality in pupae 2 months after treatment during 1st. week of Feb. 1951. (iv) (a) No. (b) N.A. (c) N.A. (v) N.A. (vi) Nil. (vii) The experiment was conducted by Ento (C) on cultivators' fields.

## 5. RESULTS :

(i) 52.72 degree.  
(ii) 2.675 degree.  
(iii) Treatment differences are highly significant.

(iv) Treatment	Mean angle	Transformed back mean percentage after applying bias correction
1.	65.16	82.03
2.	73.53	91.56
3.	50.00	58.60
4.	49.73	58.13
5.	59.36	73.79
6.	18.52	10.49
S.E./mean	=1.3375	

Crop :- Citrus.

Ref :- U.P. 53(77).

Site :- Majkholi (Almora).

Type :- 'D'.

Object :- To find out suitable insecticides against the pupae of Citrus white fly.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) N.A. (c) N.A. (ii) N.A. (iii) N.A. (iv) N.A. (v) N.A. (vi) N.A. (vii) N.A.  
(viii) N.A. (ix) N.A. (x) N.A.

## 2. TREATMENTS :

1. D.D.T. emulsin 0.5%.
2. D.D.T. emulsion 0.25%.
3. Lime sulphur (33°B) 1 : 20.
4. Parathion emulsion 0.05%.
5. Sandolin A 0.5% + Albolinium at 4 oz. per 100 gallons.
6. Sandolin A 0.25% + Albolinium at 4 oz. per 100 gallons.
7. No treatment.

Date of treatment 13.12.53. Av. quantity of spray 5 lb./tree.

## 3. DESIGN :

(i) to (ii) R.B.D. with 4 replications. (iii) (a) and (b) 2 citrus trees/plot. (iv) N.A.

## 4. GENERAL :

(i) N.A. (ii) Control measures as per treatments. (iii) % reduction in pupae. (iv) (a) and (b) N.A.  
(c) N.A. (v) N.A. (vi) Nil. (vii) The experiment was conducted by Ento (C) on cultivators' field.

## 5. RESULTS :

(i) 58.38 degree.  
(ii) 11.1034 degree.  
(iii) Treatment differences are not significant.

(iv) Treatment	Mean angle (in degree) corresponding % reduction in population of pupae	Transformed back mean % after applying bias correction
1.	67.63	85.15
2.	59.99	74.74
3.	56.70	69.66
4.	57.39	70.75
5.	61.52	79.81
6.	57.06	70.23
7.	46.34	52.31
S.E./mean	= 5.552 degree.	

Crop :- Citrus (Malta).  
Site :- Ranikhet (Almora).

Ref :- U.P. 49(205).  
Type :- 'D'.

Object :—To find out suitable control measures for Citrus sooty mould disease.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) Under orchard. (c) N.A. (ii) Clay loam. (iii) Nil. (iv) Malta. (v) (a) to (e) N.A. (vi) N.A. (vii) Unirrigated. (viii) N.A. (ix) N.A. (x) N.A.

2. TREATMENTS :

1. Control.
  2. Lime sulphur (1 : 10).
  3. Lime sulphur (1 : 15).
  4. Bordeaux mixture (2 : 10 : 40).
  5. Perenox (0.125% with albolinium at 4 oz. per 100 gallons).
- Spraying was done on 20, 21.4.1949 Sp. gravity of lime sulphur=1.17.

3. DESIGN :

(i) and (ii) R. B.D. with 5 replications, one branch of tree as one unit *i.e.* plot. (iii) (a) and (b) N.A. (iv) N.A.

4. GENERAL :

(i) N.A. (ii) Control measures as per treatments. (iii) % infection on 100 leaves in each unit plot was recorded. (iv) (a) No. (b) and (c) N.A. (v) N.A. (vi) The data was converted into  $\sin^{-1}\sqrt{p}$  and then analysed, transformed back means have been presented after applying bias correction. (vii) The experiment was conducted by Myco (C) on cultivators' fields.

5. RESULTS :

(i)	34.90	$\sin^{-1}\sqrt{p}$ /plot.
(ii)	13.3007	$\sin^{-1}\sqrt{p}$ /plot.
(iii)	Treatment differences are highly significant.	
(iv)	Treatment	Mean value of $\sin^{-1}\sqrt{p}$ per plot
	1.	60.35
	2.	26.62
	3.	21.23
	4.	33.37
	5.	32.94
		S.E./mean =5.948
		% infection/plot (transformed back)
		75.27
		20.38
		13.37
		30.45
		29.77

Crop :- Citrus (Malta).  
Site :- Ranikhet (Almora).

Ref :- U.P. 50(265).  
Type :- 'D'.

Object :—To find out suitable fungicidal and insecticidal spray fluids against sooty mould disease of Citrus.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) Under orchard. (c) N.A. (ii) Clay loam. (iii) No. (iv) Improved. (v) (a) to (e) N.A. (vi) N.A. (vii) Unirrigated. (viii) N.A. (ix) N.A. (x) N.A.

2. TREATMENTS :

1. Perenox (0.2% with Albolinium at 4 oz. per 100 gallons).
2. Dithane Z-78 (0.2% with Triton at 4 oz. in 100 gallons).
3. Lime Sulphur (1 : 30, sp. gravity 1.25).
4. Fish oil rosin soap 1 lb. in 4 gallons of water.
5. D.D.T. emulsion (0.25%).
6. Control.

3. DESIGN :

(i) and (ii) R.B.D. with 6 replications and one tree as a unit of a plot. (iii) (a) and (b) Nil. (iv) N.A.

4. GENERAL :

(i) N.A. (ii) The disease was very severe during February, control measures as per treatments. (iii) Two hundred leaves were picked at random from each plant and the % infection was determined. (iv) (a)

## 5. RESULTS :

(i)	50.22	$\sin^{-1}\sqrt{p}$ plot.	
(ii)	6.140	$\sin^{-1}\sqrt{p}$ /plot.	
(iii)	Treatment differences are highly significant.		
(iv)	Treatment	Mean value of $\sin^{-1}\sqrt{p}$ per plot	% infection/plot (transformed back)
	1.	52.95	63.56
	2.	53.16	63.91
	3.	33.28	30.31
	4.	59.10	73.39
	5.	34.11	31.64
	6.	68.73	86.47
	S.E./mean	2.507	

Crop :- Citrus (Malta).

Ref :- U.P. 51(37).

Site :- Majkholi Almora.

Type :- 'D'.

Object :- To find out suitable insecticides and fungicides against Citrus sooty mould disease.

## 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) Loam. (iii) N.A. (iv) Mixed. (v) (a) to (e) N.A. (vi) N.A. (vii) Unirrigated. (viii) N.A. (ix) N.A. (x) N.A.

## 2. TREATMENTS :

- |   |   |
|---|---|
| 1. D.D.T. 0.25%.                                | 5. Spersul 0.5%.                          |
| 2. D.D.T. 0.5%.                                 | 6. Sandolin A 0.5% + Enphyton ton W-0.2%. |
| 3. Lime sulphur 1 : 10 (14° Banne).             | 7. Thiovit 0.5%.                          |
| 4. Home made oil rosin soap 1 lb. in 4 gallons. | 8. Thiovit 0.1%.                          |
|   | 9. Control.                               |

The experiment was laid out on 10.12.1951.

## 3. DESIGN :

(i), (ii) R.B.D. with 4 replications. (iii) (a) and (b) One tree of *malta*. (iv) N.A.

## 4. GENERAL :

(i) N.A. (ii) Control of citrus sooty mould disease as per treatments. (iii) Percentage of infection. (iv) (a) to (c) N.A. (v) N.A. (vi) Nil. (vii) The experiment was conducted by Myco (C) on cultivators' fields.

## 5. RESULTS :

- (i) 39.33 degree.  
(ii) 5.031 degree.  
(iii) Treatment differences are highly significant.

(iv) Treatment	Mean angle (in degree) corresponding to % infection	Transformed back mean % after applying bias correction
1.	42.25	45.25
2.	38.74	39.38
3.	41.24	43.52
4.	34.90	32.90
5.	47.05	53.55
6.	17.25	9.20
7.	38.14	38.26
8.	40.90	42.92
9.	53.48	64.44
	S.E./mean	=2.516



Crop :- Citrus (Malta).  
Site :- Majkholi (Almora).

Ref :- U.P. 52(72)  
Type :- 'D'.

Object :- To find out suitable control measures of sooty mould disease of Citrus.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) and (c) N.A. (ii) Sandy loam. (iii) N.A. (iv) Mixed. (v) (a) to (e) N.A. (vi) N.A. (vii) Unirrigated. (viii) N.A. (ix) N.A. (x) N.A.

2. TREATMENTS :

- |  |                             |
|--|-----------------------------|
| 1. D.D.T. 0.5%.                            | 5. Sandolin 0.5% + Enphyton |
| 2. D.D.T. 0.25%.                           | 6. Thiovit 0.25%.           |
| 3. Parathion 1 : 300.                      | 7. Lime Sulphur 1 : 25.     |
| 4. Fish oil rosin soap 1 lb. in 4 gallons. | 8. Control.                 |
- The treatments were on 17.12.1952.

3. DESIGN :

(i) and (ii) 5 replications in R.B.D. (iii) (a) and (b) One tree of *malta* orange. (iv) N.A.

4. GENERAL :

(i) N.A. (ii) Control of citrus sooty mould as per treatments. (iii) Percentage of infection as determined on 1st March, 1953. (iv) (a) and (b) N.A. (c) N.A. (v) N.A. (vi) Nil. (vii) The experiment was conducted by Myco (C) on cultivator's field.

5. RESULTS :

(i) 40.53 degree.

(ii) 5.901 degree.

(iii) Treatment differences are highly significant.

(iv) Treatment	Mean angle (in degree) corresponding to % infection	Transformed back mean percentage after applying bias correction
1.	26.50	20.21
2.	35.20	33.40
3.	48.60	56.21
4.	49.48	57.71
5.	12.45	5.10
6.	40.50	42.27
7.	40.92	42.97
8.	70.59	88.57

S.E./mean = 2.6391.

Crop :- Citrus (Malta).  
Site :- Majkholi (Almora).

Ref :- U.P. 53(190).  
Type :- 'D'.

Object :- To find out suitable control measures of sooty mould disease of Citrus.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) N.A. (c) N.A. (ii) Clay loam. (iii) N.A. (iv) N.A. (v) (a) to (e) N.A. (vi) N.A. (vii) Unirrigated. (viii) N.A. (ix) N.A. (x) N.A.

2. TREATMENTS :

1. D.D.T. 0.5%.
2. D.D.T. 0.25%.
3. Lime sulphur 1 : 20. Sp. gravity 1 : 33.
4. Parathion 0.5%.
5. Sandolin 0.50%.
6. Sandolin 0.25%.
7. Control.

Experiment was conducted on 13.12.53 and was laid out before onset of disease.

3. DESIGN :

(i) and (ii) R B.D. with 4 replications. (iii) 1 tree per plot. (iv) N.A.

## 4. GENERAL :

(i) N.A. (ii) Control of citrus sooty mould disease as per treatments. (iii) Percentage of infection on 14.1.54. (iv) (a) No. (b) N.A. (c) N.A. (v) N.A. (vi) Nil. (vii) The experiment was conducted by Myco (C) on cultivators' fields.

## 5. RESULTS :

(i) 43.85 degree.  
(ii) 2.2772 degree.  
(iii) Treatment differences are highly significant.

(iv) Treatment	Mean angle (in degrees) corresponding to % infection	Transformed back mean percentage after applying bias correction
1.	39.81	41.08
2.	47.30	53.97
3.	51.24	60.69
4.	20.76	12.94
5.	42.83	46.25
6.	36.55	35.62
7.	68.45	86.14
S.E./mean	1.1386 degree.	

Crop :- Guava.

Ref :- U.P. 53(122).

Site :- Minto Park, Allahabad.

Type :- 'D'.

Object :- To study the effect of soil amendment on the control of Guava wilt.

## 1. BASAL CONDITIONS

(i) 12-15 years old orchard having poor facilities of irrigation. (ii) pH. 7.9 (alkaline). (iii) Seed plants. (iv) Different varieties of guava. (v) N.A. (vi) N.A. (vii) Nil. (viii) Hoeing of basins done once. (ix) Nil. (x) Irrigated. (xi) N.A. (xii) Nil.

## 2. TREATMENTS :

1. Molases at 4 lb./tree.
2. Lime at 4 lb./tree.
3. Sulphur at 4 lb./tree.
4. Control—no chemical was applied.

The chemicals were applied after exposing the roots to a depth of six inches. Date of application November, 1953.

## 3. DESIGN :

(i) C.R.D. (ii) (a) 4 [Each treatment has been applied on 4 trees and there are 4 treatments/replication. Each tree is considered as a unit]. (b) N.A. (iii) 7. (iv) 4 (apparently healthy trees). (v) Nil. (vi) Yes.

## 4. GENERAL :

(i) Favourable. (ii) Incidence of the disease on the trees is under experiment and record of soil samples are collected periodically for each treatment. (iii) Soil reaction pH. at different intervals. (iv) (a) 1953 to 1956. (b) N.A. (v) N.A. (vi) Nil. (vii) The experiment was conducted by P.P.

## 5. RESULTS :

(i)  $1.334 \sqrt{x+0.5}$   
(ii)  $0.468 \sqrt{x+0.5}$ ,  
(iii) Treatment differences are not significant.

(iv) Treatment	Mean value of $\sqrt{x+0.5}$ where x is the number of trees killed	Transformed back no. of trees killed
1.	1.642	2.20
2.	1.021	0.54
3.	1.325	1.26
4.	1.348	1.32
S.E./mean	$=0.1768 \sqrt{x+0.5}$	

Crop :- Guava

Ref :- U.P. 53(188).

Site :- Govt. Horticulture Farm, Jeolikote .

Type :- 'D'.

Object :-To find out the efficacy of various fungicides for controlling leaf blight of Guava.

## 1. BASAL CONDITIONS :

(i) N.A. (ii) Clay loam. (iii) By seed. (iv) N.A. (v) N.A. (vi) 3 years. (vii) N.A. (viii) N.A. (ix) No. (x) Irrigated. (xi) N.A. (xii) N.A.

## 2. TREATMENTS :

1. Perenox 0.5%.
2. Dithane Z-78 0.3%.
3. Thiovit 0.5%.
4. Lime Sulphur 1 : 15. Sp. gravit/ 1:13.
5. Copper sandoz. 0.5%.
6. Control.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 5. (iv) One row of 16' accommodating 35 to 40 seedlings. (v) Two rows (3' distance per treatment). (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) Control of leaf blight disease of guava. (iii) Percentage infection. (iv) (a) No. (b) N.A. (v) N.A. (vi) Nil. (vii) The experiment was conducted by Myco (C).

## 5. RESULTS :

- (i) 39.93 degree.  
(ii) 2.740 degree.  
(iii) Treatment differences are highly significant.  
(iv) Treatment Mean angle (in degrees) corresponding to % infection Transformed back mean percentages
- |           |                |       |
|-----------|----------------|-------|
| 1.        | 38.62          | 39.06 |
| 2.        | 38.15          | 38.28 |
| 3.        | 36.00          | 34.70 |
| 4.        | 38.98          | 39.67 |
| 5.        | 38.76          | 39.11 |
| 6.        | 49.05          | 57.12 |
| S.E./mean | 1.225 degrees. |       |

Crop :- Guava.

Ref :- U.P. 53(123).

Site :- National Botanical Gardens, Lucknow.

Type :- 'D'.

Object :-To study the effect of soil amendment on the control of Guava wilt.

## 1. BASAL CONDITIONS :

(i) 10-12 years old orchard having good irrigation facilities. (ii) pH. 7.7 (alkaline). (iii) Seed plants. (iv) Different varieties of guava. (v) N.A. (vi) N.A. (vii) Nil. (viii) Hoeing of basins done once. (ix) Nil. (x) Irrigated. (xi) N.A. (xii) Nil.

## 2. TREATMENTS :

1. Molasses at 4 lb./tree.
2. Lime at 4 lb./tree.
3. Sulphur at 4 lb./tree.
4. Control—No chemical.

Chemicals were applied after exposing the roots to a depth of 6" in October 1953.

## 3. DESIGN :

(i) C.R.D. (ii) (a) 16 [Each treatment has been applied on 4 trees and there are 4 treatments/replication. Each tree has been considered as a unit]. (b) N.A. (iii) 6. (iv) 4. (v) Nil. (vi) Yes.

## 4. GENERAL:

(i) Favourable. (ii) Incidence of the disease on the trees is under expt. and record of soil samples are collected periodically for each treatment. (iii) Soil reaction (pH) at different intervals. (iv) (a) 1953 to

1956. (b) N.A. (v) N.A. (vi) Nil. (vii) The experiment was conducted by P.P. Guava trees were dying from year to year at a fairly rapid rate on the orchard selected for this experiment.

### 5. RESULTS :

(i)	0.984 $\sqrt{x+0.5}$ .	
(ii)	0.471 $\sqrt{x+0.5}$ .	
(iii)	Treatments differences are not significant.	
(iv)	Treatment	Mean value of $\sqrt{x+0.5}$ where x is number of trees killed
		Transformed back av. no. of trees killed
	1.	1.2016
	2.	0.8528
	3.	0.9428
	4.	0.9390
	S.E./Mean	0.192

Crop :- Guava.

Ref :- U.P. 51(251).

Site :- Nainital (Nainital).

Type :- 'D'.

Object :- To find out suitable control measures for fruit scab of Guava.

### 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) Sandy loam. (iii) N.A. (iv) Mixed (v) (a) to (c) N.A. (vi) N.A. (vii) N.A. (viii) N.A. (ix) N.A. (x) N.A.

### 2. TREATMENTS :

All combinations of (1) and (2)

(1) 2 sprays :  $S_1$  = Perenox 0.25% and  $S_2$  = Lime sulphur 1 : 20 (21° Baume).

(2) 6 spray schedules :  $D_1$  = Bud stage,  $D_2$  = Petal fall,  $D_3$  = Guaval fruit,  $D_4$  = Bud + petal fall,  $D_5$  = Bud + petal fall + green fruit and  $D_6$  = Control.

Dates of sprays : (1) Bud stage—on 30th April and 1st May, (2) Petal fall—on 6-7 June and (3) Green fruit—13 and 14 July.

### 3. DESIGN :

(i) and (ii) R.B.D. with 6 replications, one tree of guava/plot. (iii) (a) and (b) N.A. (iv) N.A.

### 4. GENERAL .

(i) N.A. (ii) Control measures—as per treatments. (iii) The no. of diseased and healthy fruits and the number of fruit spot per tree were recorded. (iv) (a) to (c) N.A. (v) N.A. (vi) The data has been converted into  $\sin^{-1}\sqrt{p}$  and then analysed. (vii) The experiment was conducted by Myco (C) on cultivators' fields.

### 5. RESULTS :

(i) 37.27  $\sin^{-1}\sqrt{p}$ /plot.

(ii) 10.642  $\sin^{-1}\sqrt{p}$ /plot.

(iii) Only treated vs control is highly significant.

(iv)

	Control = 56.65 (69.58)		
	$S_1$	$S_2$	Mean
$D_1$	28.41 (22.91)	29.21 (24.07)	28.81
$D_2$	42.68 (45.99)	26.29 (19.91)	34.48
$D_3$	35.02 (33.10)	31.27 (27.17)	33.14
$D_4$	38.03 (38.07)	29.69 (24.78)	33.86
$D_5$	29.28 (24.18)	32.01 (28.32)	30.64
Mean	34.68	29.69	32.19

(Figures in brackets are the average % of diseased fruits)

S.E. of marginal mean of sprays

= 1.943  $\sin^{-1}\sqrt{p}$ /plot.

S.E. of marginal mean of spray schedule

= 3.072  $\sin^{-1}\sqrt{p}$ /plot.

S.E. of body of table

= 4.344  $\sin^{-1}\sqrt{p}$ /plot.

S.E. of control mean

= 3.072  $\sin^{-1}\sqrt{p}$ /plot.

Crop :- Guava.  
Site :- Nainital (Nainital).

Ref :- U.P. 52(300).  
Type :- 'D'.

Object :- To find out suitable control measures for Guava fruit rot.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) Under orchard. (c) Nil. (ii) Sandy loam. (iii) No. (iv) N.A. (v) (a) to (e) N.A. (vi) N.A. (vii) Unirrigated. (viii) N.A. (ix) N.A. (x) N.A.

2. TREATMENTS :

All combinations of (1) and (2)

(1) 2 sprays :  $S_1$ =Perenox 0.3% and  $S_2$ =Lime sulphur 1 in 30.

(2) 4 times of spacing :  $T_1$ =Pre-blossom stage (25.3.1952),  $T_2$ =Pre-blossom stage+green fruit stage,  $T_3$ =Green fruit stage (5.7.1952) and  $T_4$ =Control—no spray.

3. DESIGN :

(i) and (ii) R.B.D. with 5 replications (iii) One tree of guava/plot. (iv) N.A.

4. GENERAL :

(i) N.A. (ii) Control measures—as per treatments. (iii) % infection. (iv) (a) No. (b) and (c) No. (v) N.A. (vi) The data has been converted into  $\sin^{-1}\sqrt{p}$  and then analysed. (vii) The experiment was conducted by Myco (C) on cultivators' fields.

5. RESULTS :

(i) 19.73  $\sin^{-1}\sqrt{p}$ /plot.

(ii) 2.733  $\sin^{-1}\sqrt{p}$ /plot.

(iii) Effect of T and interaction T×S are significant. Others are not significant.

(iv)

$$T_4 = 20.64 (12.80) \sin^{-1}\sqrt{p}/\text{plot.}$$

	$T_1$	$T_2$	$T_3$	Mean
$S_1$	17.07 ( 9.03)	20.64 (12.80)	22.01 (14.40)	19.91
$S_2$	19.60 (11.65)	16.20 ( 8.20)	21.08 (13.31)	18.96
Mean	18.34	18.42	21.54	19.43

(Figures in the brackets are the average % of diseased fruits)

S.E. of S marginal mean

$$= 0.706 \sin^{-1}\sqrt{p}/\text{plot.}$$

S.E. of T marginal mean

$$= 0.864 \sin^{-1}\sqrt{p}/\text{plot.}$$

S.E. of body of table

$$= 1.222 \sin^{-1}\sqrt{p}/\text{plot.}$$

S.E. of control mean

$$= 0.864 \sin^{-1}\sqrt{p}/\text{plot.}$$

Crop :- Guava.  
Site :- Jeolikote (Nainital).

Ref :- U.P. 52(298).  
Type :- 'D'.

Object :- To find out suitable control measures against Guava fruit spot.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) N.A. (c) N.A. (ii) Sandy Loam. (iii) N.A. (iv) Mixed. (v) (a) to (e) N.A. (vi) N.A. (vii) Unirrigated. (viii) N.A. (ix) N.A. (x) N.A.

2. TREATMENTS :

All combinations of (1) and (2)

(1) 2 sprays :  $S_1$ =Perenox. (0.3%) and  $S_2$ =Lime sulphur (1:15, sp.gr=1.13).

(2) 4 times of spraying :  $T_1$ =Pre-blossom stage (on 25.3.1952),  $T_2$ =Green fruit stage (on 5.7.1952)+pre-blossom stage (on 25.3.1952),  $T_3$ =Green fruit stage (on 5.7.1952) and  $T_4$ =Control.

## 3. DESIGN :

(i), (ii) R.B.D. with 5 replications ; one tree/plot. (iii) (a) and (b) N.A. (iv) N.A.

## 4. GENERAL :

(i) N.A. (ii) Control measures as per treatments. (iii) On 13th and 14th September the number of diseased and healthy fruits were counted. (iv) (a) No. (b) N.A. (c) N.A. (v) N.A. (vi) The data has been converted into  $\sin^{-1}\sqrt{p}$  and then analysed. (vii) The experiment was conducted by Myco (C) on cultivators' fields.

## 5. RESULTS :

- (i) 36.69  $\sin^{-1}\sqrt{p}$ /plot.  
 (ii) 4.399  $\sin^{-1}\sqrt{p}$ /plot.  
 (iii) Only treated vs control is highly significant.  
 (iv)

Control = 51.74 (61.53)  $\sin^{-1}\sqrt{p}$ /plot.

	T <sub>1</sub>	T <sub>2</sub>	T <sub>3</sub>	Mean
S <sub>1</sub>	31.86 (28.09)	31.34 (27.28)	34.20 (31.78)	32.47
S <sub>2</sub>	31.44 (27.43)	32.69 (29.38)	28.47 (23.00)	30.87
Mean	31.65	32.02	31.34	31.67

(The figures in the brackets are average % of diseased fruit)

S.E. of marginal mean of S = 1.136  $\sin^{-1}\sqrt{p}$ /plot.

S.E. of marginal mean of T = 1.391  $\sin^{-1}\sqrt{p}$ /plot.

S.E. of body of table = 1.967  $\sin^{-1}\sqrt{p}$ /plot.

S.E. of control mean = 1.391  $\sin^{-1}\sqrt{p}$ /plot.

Crop :- Guava.

Ref :- U.P. 53(186).

Site :- Jeolikote (Nainital).

Type :- 'D'.

Object :- To find out the efficacy of various fungicides for the control of Guava fruit scab disease.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) N.A. (c) N.A. (ii) Sandy Loam. (iii) N.A. (iv) N.A. (v) (a) to (e) N.A. (vi) N.A. (vii) Not required. (viii) N.A. (ix) N.A. (x) N.A.

## 2. TREATMENTS :

- |                  |                      |
|------------------|----------------------|
| 1. Coppesan 0.3% | 5. Lime sulphur 0.3% |
| 2. Dithane 2.78. | 6. Sandolin          |
| 3. Dithane 0.14. | 7. Thiovit           |
| 4. Perenox 0.3%  | 8. Control           |

## 3. DESIGN :

(i), (ii) R.B.D. with 4 replications. (iii) 2 trees/plot. (iv) N.A.

## 4. GENERAL :

(i) Damage of fruit. (vii) Control measures as per treatments. (iii) Percentage of spotted fruits determined during 18-23rd August 1953. (iv) (a) to (c) N.A. (v) N.A. (vi) Nil. (vii) The experiment was conducted by Myco (C) on cultivators' fields.

## 5. RESULTS :

- (i) 27.93 degrees.  
 (ii) 2.952 degrees.  
 (iii) Treatment differences are highly significant.

(iv) Treatment	Mean angle (in degrees) corresponding to % infection	Transformed back % after applying bias correction
1.	16.59	8.57
2.	22.04	14.44
3.	30.46	25.94
4.	28.18	22.58
5.	26.93	20.80
6.	28.46	22.98
7.	34.68	32.55
8.	36.07	34.82
S.E./mean	1.476 degrees.	

Crop :- Guava.

Ref :- U.P. 51(135).

Site :- Nainital (Nainital).

Type :- 'D'.

Object :- To find out suitable control measures against scale insect of Guava.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) N.A. (c) N.A. (ii) N.A. (iii) N.A. (iv) N.A. (v) N.A. (vi) N.A. (vii) N.A. (viii) N.A. (ix) N.A. (x) N.A.

2. TREATMENTS :

1. D.D.T. emulsion (0.25%).
  2. Lime sulphur (sp. gravity 1.25—One part in 20 parts of water).
  3. Rosin soap (1 lb. in 4 gallons of water).
  4. Control.
- Sprayed in January 1951.

2. DESIGN :

(i) and (ii) R.B.D. with 5 replications and 4 plots/block, (iii) (a) and (b) One tree/plot. (iv) N.A.

4. GENERAL :

(i) N.A. (ii) Control measures as per treatments. (iii) % of mortality of the scale insect recorded a week after spray. (iv) (a) and (b) N.A. (c) N.A. (v) N.A. (vi) The plot wise yield data is N.A. Results are taken from report. (vii) The experiment was conducted by Ento (C) on cultivators' fields.

5. RESULTS :

- (i) 65.90 % mortality.
  - (ii) 5.16 % mortality.
  - (iii) Treatment differences are significant.
  - (iv) Treatment            % of mortality/plot
- |    |      |
|----|------|
| 1. | 97.5 |
| 2. | 78.3 |
| 3. | 79.6 |
| 4. | 8.2  |

S.E./mean=2.31

Crop :- Guava.

Ref :- U.P. 53(302)

Site :- Varanasi (Varanasi).

Type :- 'D'.

Object :- To find suitable control measures against mealy bugs of Guava.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) N.A. (c) N.A. (ii) N.A. (iii) N.A. (iv) N.A. (v) (a) to (c) N.A. (vi) N.A. (vii) N.A. (viii) N.A. (ix) N.A. (x) N.A.

## 2. TREATMENTS :

1. Parathion emulsion 0.04% (2 ozs. Ekatox 20 in 6½ gallons of water).
2. Parathion emulsion 0.02% (1 oz. Ekatox 20 in 6½ gallons of water).
3. Fish oil rosin soap—4%.
4. Control (with water only).

## 3. DESIGN :

(i) and (ii) R.B.D. with 5 replication, 4 treatments/block. (iii) (a) and (b) 5 trees/plot. (iv) N.A.

## 4. GENERAL :

(i) N.A. (ii) Control measures as per treatments. (iii) Population of bugs. (iv) (a) No. (b) N.A. (c) N.A. (v) N.A. (vi) The data has been converted into  $\sin^{-1} \sqrt{p}$  and then analysed. Transformed back means have been presented after applying bias correction. (vii) The experiment was conducted by Ento (K).

## 5. RESULTS :

(i)	29.52 degree.		
(ii)	4.9240 degree.		
(iii)	Treatment differences are highly significant.		
(iv)	Treatment	Mean angle	Transformed back mean percentages of survivals 72 hours after spraying.
	1.	16.07	8.08
	2.	30.46	25.94
	3.	23.62	16.39
	4.	47.91	55.12
	S.E./mean	=2.202 degrees.	

Crop :- Kharbooza.

Ref :- U.P. 53(306).

Site :- Govt. Potato Res. Farm, Farukhabad.

Type :- 'D'.

Object :- To find out control measures against *Hulacophira Poveicollis* Lue pest of Kharbooza.

## 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) N.A. (iii) N.A. (iv) N.A. (v) (a) to (e) N.A. (vi) N.A. (vii) N.A. (viii) N.A. (ix) N.A. (x) N.A.

## 2. TREATMENTS :

1. Dusting with 3% D.D.T. dust at 15 lb./ac.
2. Spraying with 0.25% D.D.T. suspension at 30 to 50 gallons/ac.
3. Spraying with lead arsenate.
4. Spraying with .006% parathion emulsion at 30 to 50 gallon/ac.
5. No treatment (control).

## 3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 5. (iv) (a) N.A. (b) 16'×23'. (v) 2' around. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) *Hulacophira Poveicollis* Lue—control measures as per treatments. (iii) Number of adults before and after the application of treatments. (iv) (a) to (c) No. (v) No. (vi) The data has been converted in  $\sqrt{x+\frac{1}{2}}$  (where x=no. of adult survivor) and then analysed. (vii) The experiment was conducted by Ento (K).

## 5. RESULTS :

(i) to (iv) Number of adults 15 days after 2nd application of treatment.

Treatment	Mean of $\sqrt{x+0.5}$	Transformed back mean
1.	2.18	4.25
2.	3.08	8.99
3.	3.60	12.46
4.	3.44	11.33
5.	4.92	23.71
G.M.	3.44	
S.E./mean	0.1351	
Significance	Highly significant	



Crop :- Lokat.

Ref :- U.P. 53(185).

Site :- Govt. Valley Fruit Res. Stn., Jeolikote.

Type :- 'D'.

Object :- To study the effect of different control measures against die-back disease of *Lokat*.

## 1. BASAL CONDITIONS :

(i) Orchard. (ii) Sandy loam. (iii) N.A. (iv) N.A. (v) More than 15 year old trees. Experiment was conducted on 24.4.1953. (vi) N.A. (vii) Nil. (viii) Nil. (ix) No. (x) Irrigated. (xi) N.A. (xii) N.A.

## 2. TREATMENTS :

1. Chaubattia paste (Copper carbonate+red lead+lanolin 2 : 2 : 2½).
2. Copper oxychloride paste (prepared by mixing 2 oz. coppesan with 2½ oz. lanolin).
3. Chevastlon solution (prepared by mixing 6% solution of copper sulphate and potassium dichromate).
4. Control.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 12. (iv) 1. (v) Nil. (vi) Yes.

## 4. GENERAL :

(i) Nil. (ii) Incidence of *lokot* die-back disease—control measures as per treatments. (iii) Percentage of infection after the application of treatments. (iv) (a) No. (b) N.A. (v) N.A. (vi) Nil. (vii) The experiment was conducted by Myco (C) at Haldwani.

## 5. RESULTS :

(i) to (iv)

Treatment	Mean angle in degree	Mean percentage (transformed back)
1.	48.75	56.42
2.	63.59	79.91
3.	46.27	52.19
4.	69.09	86.89
G.M.	56.92	
S.E./mean	2.1688	
Significance	Highly significant	

Crop :- Lokat.

Ref :- U.P. 52(69).

Site :- Haldwani (Nainital).

Type :- 'D'.

Object :- To study the effect of different control measures against die-back disease of *Lokat*.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) Nil. (c) N.A. (ii) Sandy loam. (iii) N.A. (iv) Mixed. (v) (a) to (e) N.A. (vi) Nil. (vii) N.A. (viii) N.A. (ix) N.A. (x) N.A.

## 2. TREATMENTS :

1. Perenox paste (1 lb. in 220 c.c. of linseed oil).
2. Chaubattia paste (2 ozs. of copper carbonate, 2 ozs. of red lead in 2½ ozs. of lanolin).
3. Chevastlon solution (prepared by mixing cold solution of 6%  $K_2Cr_2O_7$ ).
4. Control.

## 3. DESIGN :

(i) and (ii) R.B.D. with 12 replication. (iii) 2 trees. (iv) N.A.

## 4. GENERAL :

(i) N.A. (ii) Attack of *lokot* die back disease—control measures as per treatments. (iii) Percentage of twigs showing callus formation as determined on 12.6.1952. (iv) (a) No. (b) and (c) — (v) N.A. (vi) Nil. (vii) The experiment was conducted by Myco (C) on cultivators' fields.

## 5. RESULTS :

(i) to (iv)

Treatment	Mean angle in degrees	Mean % (transformed back)
1.	46.43	52.47
2.	36.86	36.12
3.	28.48	23.01
4.	51.11	60.47
G.M.	40.70	
S.E./mean	2.7454	
Significance	Highly significant	

Crop :- Mango.

Ref :- U.P. 53(301).

Site :- Govt. Botanical Gardens, Kanpur.

Type :- 'D'.

Object :—To study the control measure of the Mango gall fly *Amradiplosis viridi galbcola* (Mani) by spraying the galled leaves with parathion and D.D.T. emulsions.

## 1. BASAL CONDITIONS:

(i) N.A. (ii) N.A. (iii) N.A. (iv) N.A. (v) N.A. (vi) N.A. (vii) N.A. (viii) N.A. (ix) N.A. (x) N.A. (xi) N.A. (xii) N.A.

## 2. TREATMENTS :

1. Spraying the galls with 0.1% parathion emulsion.
2. Spraying the galls with 0.25% D.D.T. emulsion.
3. Spraying the galls with 0.05% parathion emulsion.
4. Spraying the galls with 0.1% D.D.T. emulsion.
5. Control—no spraying.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 6. (iv) One bunch/plot. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) Under study. (iii) Total no. of galls and number of galls for which emergence of pest did not take place. (iv) (a) and (b) N.A. (v) N.A. (vi) The data has been converted into  $\sin^{-1}\sqrt{p}$  and then analysed. (vii) The experiment was conducted by Ento (K).

## 5. RESULTS :

(i) 63.04 degrees.

(ii) 12.12 degrees.

(iii) Treatment differences are highly significant.

(iv) Treatment	Mean angle	Transformed back mean percentages showing no emergence of pest
1.	78.91	95.84
2.	86.82	99.19
3.	74.66	92.57
4.	49.32	57.43
5.	25.51	18.84
S.E./mean	4.9467	

Crop :- Mango.

Ref :- U.P. 53(300)

Site :- Govt. Botanical Gardens, Kanpur.

Type :- 'D'.

Object :—A study on the control of the mango gall fly (*Procontarinia maticiana kieff*) by spraying the galled leaves with parathion and D.D.T. emulsions.

## 1. BASAL CONDITIONS :

(i) N.A. (ii) (a) N.A. (b) N.A. (iii) N.A. (iv) N.A. (v) N.A. (vi) N.A. (vii) N.A. (viii) N.A. (ix) N.A. (x) N.A. (xi) N.A. (xii) N.A.

## 2. TREATMENTS :

1. Spraying parathion emulsion 0.05%.
2. Spraying parathion emulsion 0.1%.
3. Spraying D.D.T. emulsion 0.25%.
4. Spraying D.D.T. emulsion 1.00%.
5. Control (no spraying).

## 3. DESIGN :

- (i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 5. (iv) N.A. (v) N.A. (vi) Yes.

## 4. GENERAL :

- (i) N.A. (ii) Under study. (iii) Total number of galls and number of galls for which emergence did not take place. (iv) (a) N.A. (b) N.A. (v) N.A. (vi) Nil. (vii) The experiment was conducted by Ento (K).

## 5. RESULTS :

- (i) 58.63 degree.  
 (ii) 15.15 degree.  
 (iii) Treatment differences are significant.  
 (iv) Treatment Mean Angle Transformed back mean percentages of galls for which emergence did not take place.
- |           |                 |       |
|-----------|-----------------|-------|
| 1.        | 65.34           | 82.27 |
| 2.        | 77.41           | 94.80 |
| 3.        | 56.24           | 68.92 |
| 4.        | 45.28           | 50.50 |
| 5.        | 48.90           | 56.73 |
| S.E. mean | 6.7746 degrees. |       |

Crop :- Mango.

Ref :- U.P. 53(305)

Site :- Govt. Botanical Gardens, Kanpur.

Type :- 'D'.

Object :- To test the efficacy of *Isopestox Capsticks* as a system of insecticide against mango bugs *Drosicha Stelbingi gree* on Mango trees.

## 1. BASAL CONDITIONS :

- (i) N.A. (ii) (a) N.A. (b) N.A. (ii) N.A. (iv) N.A. (v) N.A. (vi) N.A. (vii) N.A. (viii) N.A. (ix) N.A. (x) N.A. (xi) N.A. (xii) N.A.

## 2. TREATMENTS :

1. Applying 4 *Isopestox capsticks* on one tree.
2. Applying 2 *Isopestox capsticks* on one tree.
3. Control (No treatment).

Method and plan :- *Thalas*, round the mango trunk to be watered so as to make the soil completely wet. The *Isopestox capsticks* would then be inserted in the soil near the base of the stem before the mealy bugs start hatching and ascending the tree with the view that the insecticide after being taken by the roots may come in the plant sap and act on the mealy bug nymphs when they emerge and live on the trees in large number.

Observation :- Treatments to be applied when the bugs had not appeared. Regular observations taken when bugs started hatching. The number of mealy bugs surviving after one and two months after the application of treatments noted.

## 3. DESIGN :

- (i) R.B.D. (ii) (a) 3. (b) N.A. (iii) 3. (iv) 1. (v) N.A. (vi) Yes.

## 4. GENERAL :

- (i) N.A. (ii) N.A. (iii) No. of bugs connected on 10 inflorescence branches on twigs around mango tree after one month and also after two months. (iv) (a) and (b) N.A. (v) N.A. (vi) Nil. (vii) The experiment was conducted by Ento (K).

## 5. RESULTS :

- (i) 4.8588  $\sqrt{x}$ .  
 (ii) 0.8042  $\sqrt{x}$ .  
 (ii) Treatment differences are not significant.

(iv) Treatment	Mean value $\sqrt{x}$ where $x$ is number of bugs.	Transformed back mean number of bugs.
1.	5.2184	27.23
2.	4.4317	19.64
3.	4.9263	24.27
S.E. mean	0.4643 $\sqrt{x}$	

Crop :- Mango.

Ref :- U.P. 49(214).

Site :- National Botanical Gardens, Lucknow.

Type :- 'D'.

Object :- To find out suitable control measures for Mango hoppers.

1. BASAL CONDITIONS :

(i) N.A. (ii) (a) and (b) N.A. (iii) Grafted trees. (iv) N.A. (v) N.A. (vi) N.A. (vii) N.A. (viii) N.A. (ix) N.A. (x) N.A. (xi) N.A. (xii) N.A.

2. TREATMENTS :

1. 0.25% D.D.T. suspension (guesarol 550).
2. 0.25% D.D.T. emulsion (16% bugges D.D.T. emulsion).
3. 0.25% B.H.C. suspension.
4. 5% D.D.T. dust (guesarol 405).
5. Dusting with hexyclan (mango special).
6. No treatment (control).

3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 6. (iv) 1. (v) N.A. (vi) Yes.

4. GENERAL :

(i) N.A. (ii) Under study. (iii) Population of nymphs on inflorence (per 10 inflorence per tree) before and after application. (iv) (a) No. (b) N.A. (v) N.A. (vi) The data has been converted into  $\sin^{-1}\sqrt{p}$  and then analysed. (vii) The experiment was conducted by Ento (K).

5. RESULTS :

(i)	65.48	degree	
(ii)	9.9343	degree.	
(iii)	Treatment differences are highly significant.		
(iv)	Treatment	Mean angle	Transformed back mean percentages of reduction in population of Nymphs 24 hours after the application of treatment
	1.	77.78	95.05
	2.	88.66	99.45
	3.	69.34	87.17
	4.	85.05	98.77
	5.	68.15	85.79
	6.	3.92	0.97
	S.E./mean	4.0557 degrees.	

Crop :- Mango.

Ref :- U.P. 51(253).

Site :- Nainital (Nainital).

Type :- 'D'.

Object :- A study on the efficacy of various fungicides against powdery mildew of Mango.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) Under orchard. (c) Nil. (ii) Loam. (iii) No. (iv) Mixed variety. (v) (a) to (e) N.A. (vi) Nil. (vii) Unirrigated. (viii) N.A. (ix) N.A. (x) Nil.

## 2. TREATMENTS :

1. Perenox (0.25% with alboleum at 4 ozs. per 100 gallons).
2. Lime Sulphur (21° baume, 1 : 20).
3. Spersul (I.C.I.) 0.3%.
4. Control.

The spraying was conducted on 3.5.1951 and observations recorded on 4.7.1951.

## 3. DESIGN :

(i) and (ii) R.B.D. with 5 replications. (iii) (a) and (b) Nil. (iv) N.A.

## 4. GENERAL :

(i) N.A. (ii) Under study. (iii) Three hundred leaves were collected at random and % infection was determined. (iv) (a) No. (b) and (c) N.A. (v) N.A. (vi) Nil. (vii) The experiment was conducted by Myco (C), U.P. on cultivators' fields

## 5. RESULTS :

(i) 56.69  $\sin^{-1}\sqrt{p}$ /plot.

(ii) 5.8444  $\sin^{-1}\sqrt{p}$ /plot.

(iii) Treatment differences are highly significant.

(iv) Treatment	Mean value of $\sin^{-1}\sqrt{p}$ /plot	% infection (transformed back)
1.	64.70	81.42
2.	37.20	36.68
3.	53.26	64.08
4.	71.60	89.64
S.E./mean	2.6137	

Crop :- Mango.

Ref :- U.P. 52(73).

Site :- Jeolikote (Nainital).

Type :- 'D'.

Object :- To study the efficacy of various fungicides against powdery mildew of Mango.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) Under orchard. (c) Nil. (ii) Sandy loam. (iii) Nil. (iv) Mixed. (v) (a) to (e) N.A. (vi) Nil. (vii) Nil. (viii) N.A. (ix) Nil. (x) Nil.

## 2. TREATMENTS :

1. Lime Sulphur 1 : 15 (1.13 sp. gr.).
2. Spersul 0.3%.
3. Thiovit 0.3%.
4. Sandolin 0.3%.
5. No treatment (control).

The experiment was laid out at Jeolikote on 3.3.1952.

## 3. DESIGN :

(i) and (ii) R.B.D. with 5 replications. (iii) (a) and (b) One mango tree (8 year old) as unit of plot. (iv) N.A.

## 4. GENERAL :

(i) N.A. (ii) Control of powdery mildew of mango. (iii) Percentage of infection determined. (iv) (a) 1952-1954. (b) and (c) N.A. (v) N.A. (vi) Nil. (vii) The experiment was conducted by Myco (C) on cultivators' fields.

## 5. RESULTS :

(i) 39.64 degree.

(ii) 6.7401 degree.

(iii) Treatment differences are highly significant.

(iv) Treatment	Mean angle (in degree)	Transformed back mean %
1.	41.31	43.65
2.	41.14	43.36
3.	34.15	31.69
4.	29.04	23.83
5.	52.56	62.92
S.E./mean	3.0143 degrees.	

Crop :- Mango.

Ref :- U.P. 53(183).

Site :- Jeolikote (Nainital).

Type :- 'D'.

Object :- To study the efficacy of various fungicides for the control of Mango mildew.

**1. BASAL CONDITIONS :**

(i) (a) N.A. (b) Under orchard. (c) Nil. (ii) Loam. (iii) Nil. (iv) Improved and local mixed. (v) (a) to (e) N.A. (vi) Nil. (vii) Nil. (viii) N.A. (ix) N.A. (x) Nil.

**2. TREATMENTS:**

1. Lime Sulphur 1 : 50 (sp. gravity 1.13).

2. Thiovit 0.3%.

3. Sandolin 0.3%.

4. Ultra Sulphur 0.3%.

5. Dithane 2.78—0.3%.

6. Control.

The experiment was conducted during 1953 at Jeolikote.

**3. DESIGN :**

(i) and (ii) R.B.D. with 5 replications. (iii) (a) and (b) 1 mango tree/plot (6 years old). (iv) N.A.

**4. GENERAL :**

(i) N.A. (ii) Control of mango mildew disease. (iii) Percentage of infection on 26.3.1953. (iv) (a) 1952—1954. (b) and (c) N.A. (v) N.A. (vi) Nil. (vii) The experiment was conducted by Myco (C) on cultivators' fields.

**5. RESULTS :**

(i) 46.46 degree.

(ii) 3.660 degree.

(iii) Treatment differences are highly significant.

(iv)

Treatment	Mean angle (in degree) corresponding to percentage infection	Transformed back mean %
1.	42.03	44.96
2.	46.26	52.18
3.	41.53	44.02
4.	49.16	57.16
5.	43.73	47.81
6.	56.97	70.09
S.E./mean	=1.637 degrees.	

Crop :- Mango.

Ref :- U.P. 52(107).

Site :- Haldwani (Nainital).

Type :- 'D'.

Object :- To find out a suitable insecticidal control measure against the mango shoot cane psyllids.

**1. BASAL CONDITIONS :**

(i) (a) N.A. (b) Mango. (c) No manuring. (ii) Sandy Loam. (iii) N.A. (iv) Improved. (v) (a) to (e) N.A. (vi) Nil. (vii) Unirrigated. (viii) N.A. (ix) N.A. (x) Nil.

**2. TREATMENTS :**

1. D.D.T.

2. Lime Sulphur.

3. Fish oil rosin soap.

4. Control.

Date of spray 9.10.1952.

**3. DESIGN :**

(i), (a) R.B.D. with 5 replications ; 1 tree/plot. (iii) 40' x 40'. (iv) N.A.

**4. GENERAL :**

(i) Fair. (ii) Under study. (iii) No. of galls formed and number of psyllids before and after spraying was recorded. % reduction was noticed. (iv) (a) to (c) N.A. (v) N.A. (vi) Nil. (vii) The experiment was conducted by Ento (C) on cultivators' fields.

## 5. RESULTS :

- (i) 36.34 degree.  
 (ii) 7.984 degree.  
 (iii) Treatment differences are highly significant.  
 (iv)

Treatment	Mean angle (in degrees corresponding to % shoot canes)	Transformed back %
1.	52.62	63.02
2.	37.98	37.99
3.	31.75	27.91
4.	23.03	15.64
S.E./mean	=3.570	

Crop :- Peach.

Ref :- U.P. 52(100).

Site :- Govt. Hill fruit Res. Stn., Chaubattia.

Type :- 'D'.

Object :—To compare the effectiveness of an ovicide over that of a nymphicide against Peach leaf curling aphis.

## 1. BASAL CONDITIONS :

(i) N.A. (ii) Clay Loam. (iii) Budding and grafting, both and transplanting. (iv) Alexander. (v) December. 1952. (vi) 1 year. (vii) Nil. (viii) Rings around the trees. (ix) Nil. (x) Unirrigated. (xi) N.A. (xii) N.A.

## 2. TREATMENTS :

1. Diesel oil emulsion 4%.
2. Lime sulphur (sp. gr=1.3) 1 in 20 parts of water.
3. D.D.T. emulsion 0.5%.
4. Lindane wettable powder 0.02% 1 lb(6.5%) in 32.5 gallons of water.
5. D.D.T. emulsion 0.25%
6. Lindane wettable powder 0.01% 1 lb (6.5%) in 32.5 gallons water.
7. Parathion emulsifiable concentrat 0.25—I.C.C. Ekatox+800 C.C. water.
8. Soft soap 2.5. chk.+Nicotine sulphate (4%) 1 oz.
9. Control

Treatments 1 to 4 sprayed on 20,21.1952 and 5 to 8 on 7, 8.3.1953.

## 3. DESIGN :

(i) R.B.D. (ii) (a) and (b) N.A. (iii) 5 (iv) One peach tree. (v) Nil. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Attacked by peach leaf curling aphis. (iii) Percentage of infection on 18,19.5.1962. (iv) (a) No. (b) N.A. (v) N.A. (vi) Nil. (vii) The experiment was conducted by Ento(C).

## 5. RESULTS :

- (i) 24.74 degrees.  
 (ii) 5.123 degrees.  
 (iii) Treatment differences are highly significant.  
 (iv)

Treatments	Mean angle in degrees corresponding to % curled leaves	Transformed back mean percentages after applying bias correction
1.	35.52	33.91
2.	30.64	26.31
3.	3.03	0.78
4.	18.69	10.67
5.	13.89	6.21
6.	14.16	6.43
7.	14.16	6.43
8.	29.81	24.96
9.	62.74	79.74
S.E./mean	= 2.291 degrees.	

Crop :-Peach,  
Site :-Govt. Hill Fruit Res. Stn., Chaubattia.

Ref :-U.P. 52(99).  
Type :-'D'.

Object :—To compare the efficiency of an ovicide over a nymphicide against Peach leaf curling aphid.

### 1. BASAL CONDITIONS :

(i) N.A. (ii) (a) Clay loam. (b) N.A. (iii) Budding, grafting and transplanting. (iv) Alexander. (v) Dec. 1952. (vi) 1 year. (vii) Nil. (viii) Ring around the trees. (ix) Nil. (x) Unirrigated. (xi) N.A. (xii) Nil.

### 2. TREATMENTS :

All combinations of (1) and (2)

(1) 5 ovicide sprays : C<sub>0</sub>=No spray, C<sub>1</sub>=Diesel oil emulsion 4%, C<sub>2</sub>=Lime sulphur, C<sub>3</sub>=D.D.T. 0.5% and C<sub>4</sub>=D.D.T. 0.25%.

(2) 4 nymphicide sprays : D<sub>0</sub>=No spray, D<sub>1</sub>=Soft soap nicotine, D<sub>2</sub>=D.D.T. emulsion 0.5% and D<sub>3</sub>=D.D.T. emulsion 0.25%.

Ovicides applied on 2.1.1952 and nymphicides on 18, 19.3.1952.

### 3. DESIGN :

(i) R.B.D. (ii) (a) 20. (b) N.A. (iii) 3. (iv) One peach tree. (v) Nil. (vi) Yes.

### 4. GENERAL :

(i) Good. (ii) Attacked by leaf curling aphid. (iii) Percentage of infection on 18, 19.5.1952. (iv) (a) No. (b) N.A. (v) N.A. (vi) Nil. (vii) The experiment was conducted by Ento (C) at Ramgarh (Nainital).

### 5. RESULTS :

(i) 21.53 degrees.

(ii) 12.82 degrees.

(iii) Main affect of C and interaction C × D are highly significant while D effect is significant.

(iv) (a) Mean angle (in degrees) corresponding to % of curled leaves.

	C <sub>0</sub>	C <sub>1</sub>	C <sub>2</sub>	C <sub>3</sub>	C <sub>4</sub>	Mean
D <sub>0</sub>	67.59	46.39	29.03	2.35	11.89	31.53
D <sub>1</sub>	31.71	52.77	43.08	0.00	6.60	26.83
D <sub>2</sub>	4.69	20.19	17.80	4.55	0.00	9.45
D <sub>3</sub>	10.39	30.04	35.65	9.66	5.88	18.32
Mean	28.70	37.35	31.39	4.14	6.09	21.53

S.E. of marginal mean of C = 3.70 degrees.

S.E. of marginal mean of D = 3.31 degrees.

S.E. of body of table = 7.40 degrees.

(b) Transformed back mean % after applying bias correction.

	C <sub>0</sub>	C <sub>1</sub>	C <sub>2</sub>	C <sub>3</sub>	C <sub>4</sub>	Mean
D <sub>0</sub>	85.60	52.39	23.81	0.67	4.70	33.43
D <sub>1</sub>	27.85	63.27	46.68	0.50	1.81	28.02
D <sub>2</sub>	1.16	12.29	9.75	1.12	0.50	4.96
D <sub>3</sub>	3.72	25.31	34.13	3.29	1.54	13.60
Mean	29.58	38.32	28.59	1.40	2.14	20.00



Crop :- Peach.

Ref :- U.P. 51(134).

Site :- Nainital (Nainital).

Type :- 'D'.

Object :- To compare the effectiveness of an ovicide over that of a nymphicide against Peach leaf curling aphid.

## 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) N.A. (iii) N.A. (iv) N.A. (v) (a) to (e) N.A. (vi) N.A. (vii) N.A. (viii) N.A. (ix) N.A. (x) N.A.

## 2. TREATMENTS :

All combinations of (1) and (2)

- (1) 5 ovicide sprays in early January 1951 : C<sub>0</sub>=No spray, C<sub>1</sub>=Diesel oil emulsion 4%, C<sub>2</sub>=Lime sulphur (sp. gr=1.25) one in 20 parts of water, C<sub>3</sub>=D.D.T. emulsion 0.25% and C<sub>4</sub>=D.D.T. emulsion 0.5%.
- (2) 4 nymphicide sprays in mid-March 1951 : D<sub>0</sub>=No spray, D<sub>1</sub>=Soft soap 5% + nicotine sulphate (4%) 1 oz. in 5 gallons of water, D<sub>2</sub>=D.D.T. emulsion 0.25% and D<sub>3</sub>=D.D.T. emulsion 0.5%.

## 3. DESIGN :

(i) and (ii) R.B.D. with 2 replications. (iii) (a) and (b) One tree/plot. (iv) N.A.

## 4. GENERAL :

(i) N.A. (ii) Under study. (iii) % of curled leaves. (iv) (a) No. (b) and (c) N.A. (v) N.A. (vi) Plot wise yield—N.A. (vii) The experiment was conducted by Ent. (C).

## 5. RESULTS :

- (i) 2.38% curled leaves/plot.  
 (ii) 3.83% curled leaves/plot.  
 (iii) Main effect of C is highly significant and interaction C×D is significant.  
 (iv) Mean % of curled leaves/plot.

	C <sub>0</sub>	C <sub>1</sub>	C <sub>2</sub>	C <sub>3</sub>	C <sub>4</sub>	Mean
D <sub>0</sub>	19.7	0.0	0.0	0.0	0.0	3.9
D <sub>1</sub>	13.5	0.0	4.1	0.0	0.0	3.5
D <sub>2</sub>	0.0	0.0	6.3	0.0	0.0	1.3
D <sub>3</sub>	2.9	1.1	0.0	0.0	0.0	0.8
Mean	9.0	0.3	2.6	0.0	0.0	2.4

S.E. of marginal mean of C = 1.35 % curled leaves/plot.  
 S.E. of marginal mean of D = 1.21 % curled leaves/plot.  
 S.E. of body of table = 2.71 % curled leaves/plot.

Crop :- Peach.

Ref :- U.P. 48(97).

Site :- Ranikhet (Almora).

Type :- 'D'.

Object: To compare the effectiveness of an ovicide over that of a nymphicide against Peach leaf curling aphid.

## 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) N.A. (iii) N.A. (iv) N.A. (v) (a) to (e) N.A. (vi) N.A. (vii) N.A. (viii) N.A. (ix) N.A. (x) N.A.

## 2. TREATMENTS :

1. Diesel oil emulsion as ovicide sprayed in January.
2. Soft soap Nicotine emulsion as nymphicide sprayed in the middle of March.
3. 1+2 above.
4. Control.

## 3. DESIGN :

(i) and (ii) R.B.D. with 7 replications. (iii) (a) and (b) One tree served as a block having all the treatments applied to the four different branches of a tree. (iv) N.A.

## 4. GENERAL :

(i) N.A. (ii) Under study. (iii) % of curled leaves. (iv) (a) N.A. (b) and (c) N.A. (v) N.A. (vi) Nil. (vii) Transforming back has been done after applying bias correction. The experiment was conducted by Ento (C).

## 5. RESULTS :

- (i) 27.78  $\sin^{-1}\sqrt{p/plot}$ .  
 (ii) 4.040  $\sin^{-1}\sqrt{p/plot}$ .  
 (iii) Treatment differences are highly significant.  
 (iv)

Treatment	Mean value of $\sin^{-1}\sqrt{p/plot}$	% of curled leaves transformed back
1.	24.79	17.91
2.	27.44	21.52
3.	25.48	18.81
4.	33.39	30.48
S.E./mean	= 1.527 $\sin^{-1}\sqrt{p/plot}$ .	

Crop :- Peach.

Site :- Ranikhet (Almora).

Ref :- U.P. 48(98).

Type :- 'D'.

Object :—To compare the effectiveness of an ovicide and nymphicide against Peach leaf curling aphid.

## 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) N.A. (iii) N.A. (iv) N.A. (v) (a) to (c) N.A. (vi) N.A. (vii) N.A. (viii) N.A. (ix) N.A. (x) N.A.

## 2. TREATMENTS :

1. Diesel oil emulsion (2%).
2. Lime Sulphur solution (sp. gr. 1.10, diluted ten times in water).
3. Soft soap Nicotine emulsion.
4. 1 and 3 above.
5. 2 and 3 above.
6. Control.

Ovicides sprayed in December and nymphicides in 3rd week of February 1949.

## 3. DESIGN :

(i) and (ii) R.B.D. with 5 replications. (iii) (a) and (b) One tree as a unit of plot. (iv) N.A.

## 4. GENERAL :

(i) N.A. (ii) Under study. (iii) % of curled leaves (1000 leaves were picked up at random from 10 different branches in a tree). (iv) (a) No. (b) and (c) N.A. (v) N.A. (vi) Nil. (vii) The experiment was conducted by Ento (C).

## 5. RESULTS:

- (i) 32.73  $\sin^{-1}\sqrt{p/plot}$ .  
 (ii) 4.643  $\sin^{-1}\sqrt{p/plot}$ .  
 (iii) Treatment differences are highly significant.  
 (iv)

Treatment	Mean value of $\sin^{-1}\sqrt{p/plot}$	% of curled leaves transformed back
1.	31.03	26.80
2.	26.67	20.44
3.	27.93	22.22
4.	25.58	18.95
5.	21.57	13.88
6.	63.58	79.90
S.E./mean	= 2.076 $\sin^{-1}\sqrt{p/plot}$ .	

Crop :- Peach.  
Site :- Ranikhet (Almora).

Ref :- U.P. 50(123).  
Type :- 'D'.

Object :- To compare the effectiveness of an ovicide over that of a nymphicide against Peach leaf curling aphid.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) N.A. (iii) N.A. (iv) N.A. (v) (a) to (c) N.A. (vi) N.A. (vii) N.A. (viii) N.A. (ix) N.A. (x) N.A.

2. TREATMENTS :

All combinations of (1) and (2)

(1) 6 ovicide sprays in first week of January 1950 : C<sub>0</sub>=No spray, C<sub>1</sub>=Diesel oil emulsion 2%, C<sub>2</sub>=Diesel oil emulsion 4%, C<sub>3</sub>=Creosote oil emulsion 2.5%, C<sub>4</sub>=Lime sulphur (sp. gr. 1.25) 1 in 20 parts of water and C<sub>5</sub>=D.D.T. emulsion.

(2) 3 nymphicide sprays in March 1950 : D<sub>0</sub>=No spray, D<sub>1</sub>=Soft soap+nicotine emulsion 4% 1 in 800 parts of water.

3. DESIGN :

(i) and (ii) R.B.D. with 3 replications scattered over several orchards. (iii) (a) and (b) One tree/plot. (iv) N.A.

4. GENERAL :

(i) N.A. (ii) Under study. (iii) % of curled leaves. (iv) (a) 1950—N.A. This experiment is conducted every year with altogether different treatments. (b) and (c) N.A. (v) N.A. (vi) The plot wise yield data is N.A. (vii) The experiment was conducted by Ento (C).

5. RESULTS :

- (i) 27.12 % curled leaves/plot.  
(ii) 13.30 % curled leaves/plot.  
(iii) Main effects of C and D are significant while interaction C×D is highly significant.  
(iv) Mean % of curled leaves/plot.

	C <sub>0</sub>	C <sub>1</sub>	C <sub>2</sub>	C <sub>3</sub>	C <sub>4</sub>	C <sub>5</sub>	Mean
D <sub>0</sub>	87.3	40.7	37.0	51.8	17.1	2.9	39.5
D <sub>1</sub>	74.8	41.9	49.3	19.3	13.3	5.7	34.0
D <sub>2</sub>	2.7	14.9	4.8	10.8	11.3	2.6	7.8
Mean	54.9	32.5	30.4	27.3	13.9	3.7	27.1

S.E. of marginal mean of C = 4.43 % curled leaves/plot.  
S.E. of marginal mean of D = 3.13 % curled leaves/plot.  
S.E. of body of table = 7.68 % curled leaves/plot.

Crop :- Strawberry.  
Site :- Govt. Horticulture Farm, Jeolikote.

Ref :- U.P. 51(36).  
Type :- 'D'.

Object :- To study the effect of various fungicides against leaf spot disease of Strawberry.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) Soyabean. (c) N.A. (ii) (a) Loam. (b) N.A. (iii) N.A. (iv) N.A. (v) Nil. (vi) N.A. (vii) Irrigated. (viii) N.A. (ix) N.A. (x) N.A.

2. TREATMENTS :

1. Perenox 0.25 %.
2. Lime sulphure 1 : 20 (21° Baume).
3. Dithane 278—0.25%.
4. Control (no treatment).

Treatments sprayed on 4.7.1951.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 6. (iv) (a) and (b) 4 rows of 10' each at equal distance. (v) No. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) Leaf spot disease—as per treatments. (iii) Percentage of infection on 17.8.1951. (iv) (a) 1951—1953. (b) and (c) No. (v) (a) and (b) Nil. (vi) Nil. (vii) The experiment was conducted by Myco (C).

## 5. RESULTS :

(i) to (iv)

Treatment	Mean angle in degrees corresponding to % infection	Transformed back mean percentage after applying bias correction
1.	38.35	38.62
2.	37.35	36.93
3.	38.33	38.59
4.	46.43	52.48
G.M.	40.12	
S.E./mean	= 0.7896	
Significance	highly significant.	

Crop :- Strawberry.

Ref :- U.P. 52(68).

Site :- Govt. Horticulture Farm, Jeolikote.

Type :- 'D'.

Object :—To study the effect of various fungicides against leaf spot disease of Strawberry.

## 1. BASAL CONDITIONS :

(i) (a) and (b) Soyabean. (c) N.A. (ii) (a) Clay loam. (b) N.A. (iii) N.A. (iv) N.A. (v) N.A. (vi) Mixed medium. (vii) Irrigated. (viii) N.A. (ix) N.A. (x) N.A.

## 2. TREATMENTS :

1. Lime Sulphur 1 : 15 (sp. gr. 1.13).
  2. Dithane 7.78, 0.5%.
  3. Perenox 0.5%.
  4. Yellow cuprocides 0.5%.
  5. Copper Sandoz 0.5%.
  6. Control (no treatment).
- Applied on 19.3.1952.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 6. (iv) (a) and (b) 4 rows of 9'. (v) Adequate buffer rows between randomised plot were left. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) Control of leaf spot disease of strawberry. (iii) Percentage of infection on 14.7.1952. (iv) (a) 1951—1953. (b) No. (v) (a) and (b) No. (vi) At the time of spraying the initial infection was negligible. (vii) Experiment conducted by Myco (C).

## 5. RESULTS :

(i) to (iv)

Treatment	Mean angle in degrees corresponding to percentage infection	Transformed back mean percentage after applying bias correction
1.	35.26	33.50
2.	35.44	33.78
3.	35.60	34.04
4.	33.26	30.28
5.	34.11	31.64
6.	40.87	42.89
G.M.	35.76	
S.E./mean	= 2.006 degree.	
Significance	Highly significant	

Crop :- Strawberry.

Ref :- U.P. 53(184).

Site :- Valley Fruit Res. Stn., Jeolikote.

Type :- 'D'.

Object :- To study different control measures against leaf spot fungi of Strawberry.

## 1. BASAL CONDITIONS:

(i) (a) Strawberry leguminous crop. (b) and (c) N.A. (ii) (a) Clay loam. (b) N.A. (iii) 10.4.1953.  
(iv) N.A. (v) N.A. (vi) N.A. (vii) Irrigated. (viii) N.A. (ix) N.A. (x) N.A.

## 2. TREATMENTS:

- |  |   |
|--|---|
| 1. Coppesan 0.3%.                          | 5. Dithane D.14, 0.45% with Zinc Sulphate |
| 2. Copper Sandoz.                          | 6. Thiovit 0.3%                           |
| 3. Lime Sulphur 1 : 50, sp. gravity 33.13. | 7. Sandolin 0.3%                          |
| 4. Dithane 7.78, 0.3%.                     | 8. No treatment (control)                 |

## 3. DESIGN:

(i) R.B.D. (ii) (a) 8. (b) N.A. (iii) 5. (iv) (a) and (b) 80—100 plants/plot. (v) 4 rows. (vi) Yes.

## 4. GENERAL:

(i) N.A. (ii) Leaf spot disease—as per treatments. (iii) Percentage of infection/plot on 3/4.8.1953. (iv)  
(a) 1951—1953. (b) and (c) No. (v) (a) and (b) No. (vi) Nil. (vii) Experiment conducted by Myco (C).

## 5. RESULTS:

(i) to (iv)

Treatment	Mean angle in degrees corresponding to % infection	Transformed back mean percentage
1.	34.42	32.13
2.	32.53	29.27
3.	35.39	33.69
4.	36.36	35.30
5.	36.34	35.27
6.	36.38	35.33
7.	34.02	31.49
8.	39.57	40.67
G.M.	35.63	
S.E./mean	= 1.139 degree.	
Significance	Highly significant	

Crop :- Temperate Fruit.

Ref :- U.P. 53(182).

Site :- Govt. Garden, Chaubattia.

Type :- 'D'.

Object :- To find suitable control measures for Linchen on temperate fruit plants.

## 1. BASAL CONDITIONS:

(i) N.A. (ii) N.A. (iii) N.A. (iv) N.A. (v) N.A. (vi) N.A. (vii) N.A. (viii) N.A. (ix) N.A. (x)  
N.A. (xi) N.A. (xii) N.A.

## 2. TREATMENTS:

1. Fernoxone 0.2%.
2. Fernoxone 0.1%.
3. Fernoxone 0.5%.
4. Dicotax 50 c.c. in 5000 c.c. of water.
5. Dicotax 25 c.c. in 5000 c.c. of water.
6. Dicotax 12.5 c.c. in 5000 c.c. of water.
7. Control.

## 3. DESIGN:

(i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 4. (iv) 1. (v) Nil (distance between trees 15' to 18'). (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) Attack of Linchen. Control measures—as per treatments. (iii) Percentage infection. (iv) (a) No. (b) N.A. (v) N.A. (vi) Nil. (vii) The experiment was conducted by Myco (C).

## 5. RESULTS :

- (i) 50.33 degrees,  
 (ii) 6.088 degrees.  
 (iii) Treatment differences are highly significant.  
 (iv)

Treatment	Mean angle in degrees corresponding to % infection	Transformed back mean percentage after applying bias correction
1.	45.72	51.04
2.	43.98	48.23
3.	41.61	44.16
4.	48.92	56.74
5.	49.98	58.56
6.	47.16	53.73
7.	74.91	92.79
S.E./mean	= 3.044 degree.	

Crop :- Pomegranate.

Site :- Ranikhet (Almora).

Ref :- U.P. 50(263).

Type :- 'D'.

Object :—To find out a suitable control measure against *Anar* borer.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) Pomegranate. (c) N.A. (ii) Clay loam. (iii) Nil. (iv) Improved. (v) (a) Ringing around the trees. (b) to (e) N.A. (vi) N.A. (vii) Unirrigated. (viii) N.A. (ix) N.A. (x) N.A.

## 2. TREATMENTS :

1. Lead Chromate at 6 lb. in 100 gallons of water.
2. Lead Arsenate at 6 lb. in 100 gallons of water.
3. Paris green at 6 lb. in 100 gallons of water.
4. D.D.T. emulsion 0.5%.
5. Control.

Only one spray during summer at the time of fruit formation could be applied.

## 3. DESIGN :

(i) and (ii) R.B.D. with 4 replications, unit of block one pomegranate tree. (iii) (a) and (b) N.A. (iv) N.A.

## 4. GENERAL :

(i) Good. (ii) Control measures—as per treatments. (iii) % of bored fruits during rainy season. (iv) (a) 1952—No. (b) and (c) N.A. (v) N.A. (vi) Nil. (vii) The experiment was consulted by Ento (C). No original plotwise data available.

## 5. RESULTS :

- (i) 40.00 % of bored fruits.  
 (ii) 14.06 % of bored fruits.  
 (iii) N.A.  
 (iv)

Treatment	% of bored fruits
1.	42.1
2.	39.5
3.	38.8
4.	22.9
5.	56.6
G.M.	40.00
S.E./mean	= 7.029 % of bored fruits.

Crop :- Pomegranate.  
Site :- Ranikhet (Almora).

Ref :- U.P. 50(264).  
Type :- 'D'.

Object :- Field trial of various insecticides and fungicides separately and in combination against fruit rot of *Anar*.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) Under orchard. (c) No. (ii) Clay loam. (iii) No. (iv) Local (called *darim*).  
(v) (a) to (e) N.A. (vi) N.A. (vii) No. (viii) N.A. (ix) and (x) N.A.

2. TREATMENTS :

1. Lead chromate (lead chromate 6 lb., Potassium bichromate 2 lb. and water 100 gallons).
2. Lead Arsenate (lead arsenate 6 lb., quick lime 9 lb. and water 100 gallons).
3. Paris green (Paris green 6 lb., quick lime 9 lb. and water 100 gallons).
4. D.D.T. 0.5% emulsion.
5. Perenox 0.25%.
6. Bordeaux mixture 4 : 4 : 50.
7. 1+5.
8. 2+5.
9. 3+5.
10. 4+5.
11. 4+6.
12. 2+6.
13. 3+6.
14. 4+6.
15. Control.

Treatments applied on 25, 26.7.1950.

3. DESIGN :

(i) and (ii) R.B.D. with 4 replications. (iii) (a) and (b) N.A. (iv) N.A.

4. GENERAL :

(i) N.A. (ii) Control measures as per treatments. (iii) % of rotted, bored and sound fruits were determined after two months of spray. (iv) (a) No. (b) and (c) N.A. (v) N.A. (vi) Nil. (vii) The experiment was conducted by Myco (C). No original plot-wise data is available. The summary of results are taken from the records. 8 values have been estimated, but it is not given which one are estimated.

5. RESULTS :

- (i) 37.5 % of bored fruits/tree. (ii) 12.41 % of bored fruits/tree.  
(iii) Treatment differences are significant. (iv) Av. % of bored fruits/tree.
- (i) 54.5 % of sound fruits/tree. (ii) 14.06 % of sound fruits/tree.  
(iii) Treatment differences are significant. (iv) Av. % of sound fruits/tree.

Treatments	Av. %	Treatments	Av. %	Treatments	Av. %	Treatments	Av. %
1.	53.7	8.	38.5	1.	39.9	8.	54.7
2.	38.3	9.	39.0	2.	41.9	9.	43.6
3.	39.4	10.	23.1	3.	58.9	10.	71.1
4.	22.3	11.	40.7	4.	71.7	11.	48.8
5.	35.4	12.	41.7	5.	59.5	12.	52.3
6.	40.2	13.	38.0	6.	56.9	13.	56.2
7.	31.9	14.	23.3	7.	59.4	14.	68.1
		15.	56.6			15.	34.6
S.E./mean = 6.20				S.E./mean = 7.03			

Crop :- Pomegranate.  
Site :- Bulandshahr.

Ref :- U.P. 50(273).  
Type :- 'D'.

Object :- Control of Pomegranate butterfly *Iraehola isocrate fab.* by spraying the fruits with D.D.T. sodium fluosilicate, lead arsenate and B.H.C suspension (Agroicide).

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) N.A. (iii) N.A. (iv) N.A. (v) (a) to (e) N.A. (vi) N.A. (vii) N.A. (viii) N.A. (ix) N.A. (x) N.A.

2. TREATMENTS :

1. Spraying with 0.25% D.D.T. water suspension.
2. Spraying with 0.25% B.H.C. water suspension.
3. Spraying with lead Arsenate suspension.
4. Spraying with 1.4% sodium fluosilicate suspension.
5. Control (no spraying).

**3. DESIGN :**

(i) and (ii) R.B.D. with 4 replications. (iii) (a) and (b) 1 tree/plot. (iv) N.A.

**4. GENERAL :**

(i) N.A. (ii) Control measures as per treatment. (iii) Number of bored and sound or otherwise damaged fruits. (iv) (a) No. (b) and (c) N.A. (v) N.A. (vi) The data has been converted into  $\sin^{-1}\sqrt{p}$  and then analysed ; transformed back means have been presented after applying bias correction. (vii) The experiment was conducted by Ento (K).

**5. RESULTS :**

(i) 9.43 degree.

(ii) 4.702 degree.

(iii) Treatment differences are not significant.

(iv) Treatment	Mean angle	Transformed back mean % of bored fruits
1.	5.73	1.48
2.	10.47	3.77
3.	5.89	1.54
4.	10.30	3.67
5.	14.76	6.93
S.E./mean	=2.351 degree.	

**Crop :-Pomegranate.**

**Ref :-U.P. 52(102).**

**Site :-Govt. Valley Fruit Res. Stn., Jeolikote (Nainital). Type :-'D'.**

**Object :-To test the efficacy of different insecticides against *Anar* butterfly.**

**1. BASAL CONDITIONS :**

(i) N.A. (ii) Clay. (iii) Planting suckers. (iv) Improved. (v) Rainy season, transplanted. (vi) 2 years. (vii) Nil. (viii) Nil. (ix) Nil. (x) Unirrigated. (xi) N.A. (xii) Nil.

**2. TREATMENTS :**

1. Lead chromate 6 lb. in 100 gallons of water.
2. D.D.T. emulsion 0.5%.
3. Gammalin (a B.H.C. product containing 10% Gammexane B.H.C.  $\frac{1}{4}$  pt. in 100 gallons as recommended by the Plant Protection Ltd., England.
4. Lime sulphur (sp. gravity 1.3).
5. Lead arsenate 2 lb. in 100 gallons of water.
6. Calcium arsenate (2 lb. in 100 gallons of water with 6 lb. lime to prevent burning due to high acid contents).
7. Control.

Dates of spray : (i) 26.4.1952 to 2.5.1952. (ii) 3 to 10.6.1952 and (iii) 9 to 15.7.1952.

**3. DESIGN :**

(i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 5. (iv) 3 trees/plot. (v) Nil. (vi) Yes.

**4. GENERAL :**

(i) Good. (ii) Control measures as per treatments. (iii) % of bored fruits was recorded before and after each application of treatment ; efficacy of insecticides is based on % of bored fruit 3 months after treatment. (iv) (a) No. (b) N.A. (v) N.A. (vi) Nil. (vii) The experiment was conducted by Ento (C).

**5. RESULTS :**

(i) 30.84 degree.

(ii) 2.69 degree.

(iii) Treatment differences are highly significant.



(iv)

Treatment	Mean angle in degrees corresponding to % bored fruits after final spray.	Transformed back mean percentage after applying bias correction
1.	32.18	28.59
2.	26.47	20.17
3.	27.22	21.21
4.	31.39	27.36
5.	30.07	25.35
6.	29.70	24.80
7.	38.82	39.41
S.E./mean	=1.205 degree.	

Crop :- Pomegranate.

Ref :- U.P. 49(207).

Site :- Kanpur (Kanpur).

Type :- 'D'.

Object :- To find out suitable control measure for pomegranate butterfly by spraying the fruits with D.D.T and sodium fluosilicate.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) N.A. (iii) N.A. (iv) N.A. (v) (a) to (e) N.A. (vi) N.A. (vii) N.A. (viii) N.A. (ix) N.A. (x) N.A.

2. TREATMENTS :

1. Spraying with D.D.T. emulsion 0.5%.
2. Spraying with D.D.T. emulsion 0.25%.
3. Spraying with sodium fluosilicate.
4. Control.

Spraying started on 27.4.1949 and continued up to 28.6.1949.

3. DESIGN :

(i), (ii) R.B.D. with 2 replications. (iii) (a) and (b) 2 trees/plot. (iv) N.A.

4. GENERAL :

(i) N.A. (ii) Control measures as per treatments. (iii) The number of bored and sound or otherwise damaged fruits recorded before each spraying and finally at the time of plucking. (iv) (a) No. (b) N.A. (c) N.A. (v) N.A. (vi) The data has been converted into  $\sin^{-1}\sqrt{p}$  and then analysed. Transformed back means have been presented after applying bias correction. (vii) The experiment was conducted by Ento (K) on cultivators' fields.

5. RESULTS :

- (i) 38.76 degree.
- (ii) 4.243 degree.
- (iii) Treatment differences are highly significant.
- (iv)

Treatment	Mean angle in degrees.	Transformed back mean percentage of sound fruits
1.	43.96	48.22
2.	56.00	68.51
3.	38.99	39.70
4.	16.10	8.12
S.E./mean	= 3.0	

Crop :- Pomegranate.

Ref :- U.P. 49(206).

Site :- Kanpur (Kanpur).

Type :- 'D'.

Object :- The control of Pomegranate butterfly by removal of eggs from the fruit surface.

**1. BASAL CONDITIONS :**

(i) (a) to (c) N.A. (ii) N.A. (iii) N.A. (iv) N.A. (v) (a) to (e) N.A. (vi) N.A. (vii) N.A. (viii) N.A. (ix) N.A. (x) N.A.

**2. TREATMENTS :**

1. Removal of eggs from the fruits by hand.
2. No removal (control).

Every 5th day from the middle of April to the beginning of July, the eggs have been removed.

**3. DESIGN :**

(i), (ii) R.B.D. ; each of the treatments tried on one tree each at 3 places. Three replications. Replication III was rejected as many of the fruits found were not bored. (iii) (a) and (b) N.A. (iv) N.A.

**4. GENERAL :**(i) N.A. (ii) Control measures as per treatments. (iii) Number of bored and sound fruits recorded at the time of each operation and finally at the picking time. (iv) (a) No. (b) N.A. (c) N.A. (v) N.A. (vi) The data has been converted into  $\sin^{-1}\sqrt{p}$  and then analysed. Transformed back means have been presented after applying bias correction. (vii) The experiment was conducted by Ento (K) on cultivators' fields.**5. RESULTS :**

- (i) 24.53 degrees.
- (ii) 8.855 degrees.
- (iii) Treatment difference is highly significant.
- (iv)

Treatment	Mean angle in degrees	Transformed back percentages of bored fruits
1.	23.10	15.75
2.	25.96	19.51
S.E./mean	=6.261 degrees	

Crop :- Pomegranate.

Ref :- U.P. 49(208).

Site :- Meerut (Meerut).

Type :- 'D'.

Object :- To find out the suitable measure for control of the Pomegranate butterfly.

**1. BASAL CONDITIONS :**

(i) (a) to (c) N.A. (ii) N.A. (iii) N.A. (iv) N.A. (v) (a) to (e) N.A. (vi) N.A. (vii) N.A. (viii) N.A. (ix) N.A. (x) N.A.

**2. TREATMENTS :**

1. Spraying with D.D.T. emulsion 0.50%.
2. Spraying with D.D.T. emulsion 0.25%.
3. Spraying with Sodium fluosilicate 0.7%.
4. Control (no treatment).

**3. DESIGN :**

(i) and (ii) R.B.D. with 5 replications. (iii) (a) and (b) One tree/plot. (iv) N.A.

**4. GENERAL :**(i) N.A. (ii) Control measures as per treatments. (iii) Percentages of bored and sound fruits. (iv) (a) No. (b) and (c) N.A. (v) N.A. (vi) The data has been converted into  $\sin^{-1}\sqrt{p}$  and then analysed. Transformed back means have been presented after applying bias correction. (vii) The experiment was conducted by Ento (K) on cultivators' fields.

## 5. RESULTS :

- (i) 38.00 degrees.  
 (ii) 10.52 degrees.  
 (iii) Treatment differences are not significant.  
 (iv)

Treatment	Mean angle	Transformed back mean percentages of sound fruits
1.	37.41	37.03
2.	42.30	45.35
3.	35.63	34.06
4.	36.66	35.79
S.E./mean	= 4.70 degrees.	

Crop :- Pomegranate.

Ref :- U.P. 50(274).

Site :- Meerut (Meerut).

Type :- 'D'.

Object : To find suitable control measures of the Pomegranate butterfly.

## 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) N.A. (iii) N.A. (iv) N.A. (v) (a) to (e) N.A. (vi) N.A. (vii) N.A. (viii) N.A. (ix) N.A. (x) N.A.

## 2. TREATMENTS :

1. Spraying the fruits with D.D.T. emulsion 0.25%.
2. Spraying the fruits with Agrocide suspension 0.5%.
3. Spraying the fruits with Lead Arsenate 0.4%.
4. Spraying the fruits with Sodium fluosilicate 1.4%.
5. Control (no spraying).

## 3. DESIGN :

(i) and (ii) R.B.D. with 6 replications. (iii) (a) and (b) 1 tree/plot. (iv) N.A.

## 4. GENERAL :

(i) N.A. (ii) Control measures as per treatments. (iii) Total number of fruits and number of sound fruits. (iv) (a) No. (b) and (c) N.A. (v) N.A. (vi) The data has been converted into  $\sin^{-1}\sqrt{p}$  and then analysed. Transformed back means have been presented after applying bias correction. (vii) The experiment was conducted by Ento (K) on cultivators' fields.

## 5. RESULTS :

- (i) 26.65 degrees.  
 (ii) 5.714 degrees.  
 (iii) Treatment differences are not significant.  
 (iv)

Treatment	Mean angle	Transformed back mean percentage of bored fruits.
1.	27.55	21.69
2.	25.20	18.42
3.	26.49	20.19
4.	28.49	23.07
5.	25.51	18.81
S.E./mean	= 2.333 degrees.	

Crop :- Pomegranate.

Ref :- U.P. 51(256).

Site :- Meerut (Meerut).

Type :- 'D'.

Object :- To find suitable control measure of the *Anar* butterfly.

## 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) N.A. (iii) N.A. (iv) N.A. (v) (a) to (e) N.A. (vi) N.A. (vii) N.A. (viii) N.A. (ix) N.A. (x) N.A.

## 2. TREATMENTS :

1. Spraying the fruits with Ekatox (parathion 0.02%).
  2. Spraying the fruits with Hexyclan miscible oil (B.H.C. 0.25%).
  3. Spraying the fruits with Lime Sulphur (Lime 1 lb., Sulphur—2 lb., water 1 gallon).
  4. Spraying the fruits with 0.25% D.D.T. water suspension.
  5. Control (no spraying).
- Spraying at fortnightly interval from beginning of May to the end of July.

## 3. DESIGN :

- (i) and (ii) R.B.D. with 5 replications. (iii) (a) and (b) 1 tree/plot (iv) N.A.

## 4. GENERAL :

- (i) N.A. (ii) Control measures as per treatments. (iii) Percentage of bored and sound fruits. (iv) (a) No. (b) and (c) N.A. (v) N.A. (vi) The data has been converted into  $\sin^{-1}\sqrt{p}$  and analysed. Transformed back means have been presented after applying bias correction. (vii) The experiment was conducted by Ento (K) on cultivators' fields.

## 5. RESULTS :

- (i) 38.65 degrees.  
 (ii) 8.385 degrees.  
 (iii) Treatment differences are not significant.
- | (iv) Treatment | Mean angle | Transformed back mean percentage of bored fruits |
|----------------|------------|--|
| 1.             | 37.68      | 57.53  |
| 2.             | 46.24      | 52.18  |
| 3.             | 31.44      | 27.43  |
| 4.             | 35.34      | 33.61  |
| 5.             | 42.56      | 45.79  |
- S.E./mean = 3.75 degrees.

Crop :- Pomegranate.

Ref :- U.P. 52(304).

Site :- Meerut (Meerut).

Type :- 'D'.

Object :—To find out suitable control measures of *Anar* butterfly.

## 1. BASAL CONDITIONS :

- (i) (a) to (c) N.A. (ii) N.A. (iii) N.A. (iv) N.A. (v) (a) to (e) N.A. (vi) N.A. (vii) N.A. (viii) N.A. (ix) N.A. (x) N.A.

## 2. TREATMENTS :

1. Spraying the fruits with 2.5% ovicide (strength reduced to 1.5% from 3rd spraying).
2. Spraying the fruits with Lime Sulphur (Lime 1 lb., Sulphur 2 lb., water 1 gallon then diluted with fifteen gallons of water).
3. Spraying the fruits with 1% parathion (Ekatox 20').
4. Spraying the fruits 0.25% D.D.T. wettable powder.
5. Control (no treatment).

## 3. DESIGN :

- (i) and (ii) R.B.D. with 5 replications ; 5 plots/replication. (iii) (a) and (b) N.A. (iv) N.A.

## 4. GENERAL :

- (i) N.A. (ii) Control measures—as per treatments. (iii) % of bored fruits. (iv) (a) No. (b) and (c) N.A. (v) N.A. (vi) The data has been converted into  $\sin^{-1}\sqrt{p}$  and then analysed. Transformed back means have been presented after applying bias correction. (vii) The experiment was conducted by Ento (K) on cultivators' fields.

## 5. RESULTS :

- (i) 22.93 degree.  
 (ii) 6.494 degree.  
 (iii) Treatment differences are not significant.

(iv)

Treatment	Mean angle	Transformed back mean percentage of bored fruits
1.	19.41	11.43
2.	25.65	19.05
3.	20.15	12.25
4.	23.62	16.39
5.	25.83	19.31
S.E./mean	= 2.904 degrees.	

Crop :- Pomegranate.  
Site :- Hapur (Meerut).

Ref :- U.P. 48(108).  
Type :- 'D'.

Object :—To find out suitable control measures against Pomegranate butterfly.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) N.A. (iii) N.A. (iv) N.A. (v) (a) to (e) N.A. (vi) N.A. (vii) N.A. (viii) N.A.  
(ix) N.A. (x) N.A.

2. TREATMENTS :

1. Bagging the fruits with cloth bags.
2. Spraying with D.D.T. 0.5% emulsion.
3. Spraying with sodium fluosilicate.
4. Control (no treatment).

Treatment No. 2 : 10% ready made D.D.T. emulsion (Jopeos) diluted to make 0.5% spray. Treatment No. 3 : Sodium fluosilicate spray was used as follows :—Sodium fluosilicate : 125 grams, Lime : 140 grams, Flour : 25 grams, Tale : 400 grams and Water : 4 gallons.

3. DESIGN :

(i), (ii) R.B.D. with 3 replications (iii) (a) and (b) N.A. (iv) N.A.

4. GENERAL :

(i) N.A. (ii) Control measures as per treatments. (iii) Total number of bored or otherwise damaged and sound fruits will be noticed before each application of treatments. The total number of bored and sound fruits at the time of plucking of fruits. (iv) (a) No. (b) N.A. (c) N.A. (v) N.A. (vi) The data has been converted into  $\sin^{-1}\sqrt{p}$  and then analysed. (vii) 0.50 percent corresponds to 0.00 angle. The experiment was conducted by Ento (K). on cultivators' fields.

5. RESULTS :

- (i) 4.56 degrees.  
(ii) 5.16 degrees.  
(iii) Treatment differences are not significant.

(iv) Treatment	Mean angle in degrees	Transformed back mean percentage of bored fruits
1.	0.00	0.50
2.	7.48	2.18
3.	3.82	0.94
4.	6.95	2.00
S.E /mean	= 2.979 degrees	

Crop :- Pomegranate.  
Site :- Nainital (Nainital).

Ref :- U.P. 51(252).  
Type :- 'D'.

Object :- To find suitable control measure for *Anar* fruit rot.

**1. BASAL CONDITIONS :**

(i) (a) N.A. (b) *Anar*. (c) Nil. (ii) Sandy loam. (iii) Nil. (iv) Local *Darimi*. (v) N.A. (vi) N.A. (vii) Unirrigated. (viii) N.A. (ix) N.A. (x) N.A.

**2. TREATMENTS :**

1. D.D.T. emulsion 0.5%.
2. Lime sulphur 1.15 (21° *Baume*).
3. Lead chromate 6 lbs. in 100 gallons.
4. Perenox 0.50%.
5. Control.

**3. DESIGN :**

(i), (ii) R.B.D. with 4 replications, ; site selected by surveying method. (iii) (a) and (b) 4 trees/plot (iv) N.A.

**4. GENERAL :**

(i) Stunted. (ii) Control of *Anar* fruit rot - as per treatments. (iii) The % of affected and sound fruits. (iv) (a) No. (b) N.A. (c) N.A. (v) N.A. (vi) The data has been converted into  $\sin^{-1}\sqrt{p}$  and then analysed. Transformed back means have been presented after applying bias correction. (vii) The experiment was conducted by Myco (C) on cultivators' field.

**5. RESULTS :**

- (i) 46.72  $\sin^{-1}\sqrt{p}$ /plot.  
(ii) 4.358  $\sin^{-1}\sqrt{p}$ /plot.  
(iii) Treatment differences are highly significant.

(iv) Treatment	Mean value in $\sin^{-1}\sqrt{p}$ /plot	No. of healthy fruits
1.	58.64	72.69
2.	51.55	61.22
3.	48.20	55.51
4.	40.09	41.55
5.	35.10	33.24

S.E./mean = 2.179  $\sin^{-1}\sqrt{p}$ /plot.

Crop :- Pomegranate.  
Site :- Nainital (Nainital).

Ref :- U.P. 52(299).  
Type :- 'D'.

Object : - To find out suitable control measure for *Anar* fruit rot.

**1. BASAL CONDITIONS :**

(i) (a) to (c) N.A. (ii) N.A. (iii) N.A. (iv) Local *Darimi*. (v) (a) to (e) N.A. (vi) N.A. (vii) Unirrigated. (viii) N.A. (ix) N.A. (x) N.A.

**2. TREATMENTS :**

1. D.D.T. 0.5%.
  2. Lime Sulphur 1 : 30.
  3. Gammalin 1%.
  4. Lead Arsenate at 2 lb. in 100 gallons.
  5. Lead Chormate.
  6. Calcium Arsenate at 2 lb. in 100 gallons.
  7. Control (no spray).
- Sprayings on 26.4.1252 and 5.5.1952.

**3. DESIGN :**

(i) and (ii) R.B.D. with 5 replications. (iii) (a) and (b) N.A. (iv) N.A.

## 4. GENERAL :

(i) Stunted. (ii) Control measures as per treatments. (iii) On 9.7.1952 the number of healthy and infected fruits were counted. (iv) (a) No. (b) and (c) N.A. (v) N.A. (vi) The data has been converted into  $\sin^{-1}\sqrt{p}$  and then analysed. Transformed back means have been presented after applying bias correction. (vii) The experiment was conducted by Myco (C) on cultivators' fields.

## 5. RESULTS:

(i) 59.73  $\sin^{-1}\sqrt{p}$ /plot.  
(ii) 1.9606  $\sin^{-1}\sqrt{p}$ /plot.  
(iii) Treatment differences are highly significant.

(iv) Treatment	Mean value of $\sin^{-1}\sqrt{p}$ /plot	% of healthy fruits (transformed back)
1.	66.00	83.13
2.	60.91	76.10
3.	64.11	80.63
4.	56.34	69.09
5.	57.47	70.87
6.	59.88	74.57
7.	53.40	64.31

S.E./mean = 0.877  $\sin^{-1}\sqrt{p}$ /plot.

Crop :- Pomegranate.

Ref :- U.P. 51(39).

Site :- Jeolikote (Nainital).

Type :- 'D'.

Object :- To find out a suitable insecticidal control measure against Pomegranate borer.

## .. BASAL CONDITIONS :

(i) (a) N.A. (b) Pomegranate. (c) N.A. (ii) Clay. (iii) Nil. (iv) Improved. (v) (a) Ringing around the tree. (b) to (e) N.A. (vi) Not required. (vii) Unirrigated. (viii) N.A. (ix) N.A. (x) Not required.

## 2. TREATMENTS :

1. D.D.T. emulsion 0.5%.
2. Lime Sulphur (sp. gravity 1.1) 1 : 10.
3. Lead Chromate at 6 lb. in 100 gallons water.
4. Perenox 0.5%.
5. Control.

Spraying during April 1951.

## 3. DESIGN :

(i) and (ii) R.B.D. with 4 replications. (iii) (a) 20' x 20' (3 trees/plot). (b) N.A. (iv) N.A.

## 4. GENERAL :

(i) Good. (ii) Control measures as per treatments. (iii) % bored fruits. (iv) (a) No. (b) and (c) N.A. (v) N.A. (vi) Nil. (vii) The experiment was conducted by Ento (C) on cultivators' fields.

## 5. RESULTS :

(i) 42.89 degrees.  
(ii) 4.797 degrees.  
(iii) Treatment differences are highly significant.

(iv) Treatment	Mean Angle	Transformed back mean%
1.	29.36	24.30
2.	38.32	38.57
3.	41.81	44.51
4.	50.08	58.72
5.	54.90	66.76

S.E./mean 2.398

Crop :- Pomegranate.

Ref :- U.P. 53(72).

Site :- Jeolikote (Nainital).

Type :- 'D'.

Object :- To find out suitable control measures for eggs and newly hatched cater pillers.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) N.A. (iii) N.A. (iv) N.A. (v) (a) to (e) N.A. (vi) N.A. (vii) N.A. (viii) N.A. (ix) N.A. (x) N.A.

2. TREATMENTS :

1. D.D.T. emulsion 0.5% (To be diluted 1 : 50 water).
2. B.H.C. W.P 0.01% (Sindan 6.5% W.P., 1 oz. in 4 gallons of water with 2oz. soap).
3. Toxaphene emulsion 0.25% (to be diluted. 1 : 100 water).
4. Chlordane emulsion 0.25% (to be diluted. 1 : 360 water).
5. Parathion emulsion 0.1% (to be diluted. 1 : 20 water).
6. Lime sulphur 1.20 (Sp. gr. 1.3) (To be dil 1 : 20 water).
7. Calcium arsenate 4% (4 lb. in 100 gallons of water).
8. Lead arsenate 0.4% (4 lb. in 100 gallons of water).
9. Lead chromate 0.6% (4 lb. in 100 gallons of water).
10. No treatment (control).

Date of treatment 21.4.1953 and 1.7.1953.

3. DESIGN :

(i), (ii) R.B.D. with 4 replications. (iii) (a) and (b) 2 trees/plot. (iv) N.A.

4. GENERAL :

(i) N.A. (ii) Control measures as per treatments. (iii) % of bored fruits has been recorded after each spray. (iv) (a) No. (b) N.A. (c) N.A. (v) N.A. (vi) % data converted to  $\sin^{-1}\sqrt{p}$  where p is % of bored fruits. (vii) The experiment was conducted by Ento (C) on cultivators' fields.

5. RESULTS :

(i) 51.31 per plot.

(ii) 11.04 per plot.

(iii) Treatment differences are not significant.

(iv) Treatment	Mean % of bored fruits in terms of $\sin^{-1}\sqrt{p}$	Treatment	Mean % of bored fruits in terms of $\sin^{-1}\sqrt{p}$
1.	39.60	6.	57.75
2.	47.18	7.	50.48
3.	47.55	8.	42.90
4.	58.35	9.	50.45
5.	57.72	10.	61.10
	S.E./mean		=5.52 per plot