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**EXPERIMENTS**

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**MAHARASHTRA**

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## 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.

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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) (POONA)	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 Supervisors during different periods from 1955 to 1962.

(iv)

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

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 cultivators' 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.

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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.

GLOSSARY OF VERNACULAR NAMES OF CROPS

S. No.	Name of Crop	Botanical name	Assamese	Bengali	Oriya	Telugu	Tamil	Malayalam	Kannada	Marathi	Gujarati	Hindi	Punjabi & Kashmiri
1.	Paddy	<i>Oryza sativa L.</i>	Dhan	Dhan	Dhano	Vadlu, Biyyamu	Nel	Nellu	Bhatta	Bhat	Dangar	Dhan ; Chawal	Chaul ; Dhan
2.	Wheat	<i>Triticum Sativum Lamk ; Triticum aestivum L.</i>	Gaum ; Ghehu	Gam	Gaham	Godumalu	Kothumai	Gothambu	Godhi	Gahu	Ghahu	Gehun	Kanak
3.	Jowar	<i>Andropogon sorghum Brot ; Sorghum vulgare Pers.</i>	—	Jowar	Juara	Jonna	Cholam	Cholam	Jola	Jowari ; Jondhla	Jowari ; Juar	Jowar ; Juar	Jowar
4.	Bajra	<i>Pennisetum typhoides stapf Ex Hubbard</i>	—	Bajra	Bajra	Sajja	Kambu	Kambu	Sajje	Bajri	Bajri	Bajra	Bajra
5.	Nagli	<i>Eleusine caracana Gaertn.</i>	—	Marwa	Mandia	Ragi, chodi	Keppai ; ragi	Muthari ; Ragi	Ragi	Nagli ; achni	Nagli ; Bavto	Ragi ; Mandika ; Marwah	Mandhuka ; Mandhal
6.	Gram	<i>Cicer arietinum L.</i>	Butmah	Chola	Boot	Sanagalu	Kadalai ; Sundal	Kadala	Kadale	Harbara	Chana	Chana	Chhole ; Chana
7.	Chinamug (Green Gram)	<i>Phascolus aureus Roxb.</i>	Magumah	Sonamug	Mung	Pachapetsalu	Pachaipayaru ; Pasipayaru	Cerupayaru ; Payaru	Hesaru	Mug ; Chinamug	Mag	Moong	Moong ; Mug
8.	Wal (Indian bean)	<i>Dolichos lablab L.</i>	Desi Urahi	Deshi shim	Jhata Simba	Anapa	Mochchai	Ramacha	Avare	Wal	Wal	Sem	Lobia desi
9.	Tur (Pigeon Pea)	<i>Cajanus cajan Milsp ; Cajanus indicus sprengl.</i>	Arhar	Arhar	Harad	Kandulu	Thuvarai	Thuvaran payaru	Thogari	Tur	Tuvar	Arhar	Harhar ; Arhar
10.	Lentil	<i>Lens esculenta Moench.</i>	Masurmah	Masuri	Masur	Chiruse-naga	Masur paruppu	—	Masooru bele	Masur	Masur	Masur	Massar
11.	Pea	<i>Pisum arvense L.</i>	Motor	Chota ; Pyaramatar	Bada-china	Desaval Batni	Pattaani	—	Holada bataani	Vatana ; Matar	Vatana	Muttar	Muttar
12.	Sweet Potato	<i>Ipomoea batatas Lam.</i>	Mitha Alu	Mishti Alu	Kandamula	Chilagadadumpa	Seeni kilangu	Cheeni kizangu	Genasu'	Ratalu	Shakaria	Shakar-kandi	Shakar-kandi
13.	Tapioca	<i>Manihot utilissima ; Manihot esculenta Crantz.</i>	Simolu Alu	Simul Alu	—	Karra Penda-lamu	Maravalli Kizhangu ; Kuchi Kizhangu	Mara cheeni	Mara genasu	Tapioca	—	Tapioca	Tapioca

GLOSSARY OF VERNACULAR NAMES OF CROPS (Contd)

S. No.	Name of Crop	Botanical name	Assamese	Bengali	Oriya	Telugu	Tamil	Malayam	Kannada	Marathi	Gujarati	Hindi	Punjabi & Kashmiri
14.	Onion	<i>Allium Capa L.</i>	Piyaz	Piaj	Peas ; Ulli	Ulli	Vengayam	Ulli	Eerulli	Kanda	Dungli ; Kando	Piaz	Ganda ; Payaz
15.	Tomato	<i>Lycopersicum esculentum</i> Mill.	Belahi	Belati begun	Bilati baigan	Tomato	Thakkali	Thakkali	Tomato	Welwangi ; Tambata	Vilaiti wagan ; Tomato	Tamatter	Tamatar
16.	Sugarcane	<i>Saccharum officinarum L.</i>	Kuhiar	Akh	—	Cheruku	Karumbu	Karimbu	Kabbu	Oos	Sherdi	Ganna ; Kamad ; Naishakar	Kamad ; Ganna ; Eakh
17.	Cotton	<i>Gossypium spp.</i>	Kapah	Karpas ; Tula	Kapa	Pratti	Paruthi	Paruthi	Hatti	Kapus	Kapas	Kapas	Kapah
18.	Groundnut	<i>Arachis hypogaea L.</i>	China Badam	Cheena badam	China badam	Nelash- anga	Nilkadalai	Nilakk- adla	Kadale kayi	Bhuimug	Magafali	Mung- phali	Mungfali
19.	Chillies	<i>Capsicum frutescens L.</i>	Jalakiya	Lanka ; Marich	Lanka	Mirapak- aya	Milakai	Mulaku	Menasina kayi	Mirchi	Marcha	Lalmirch	Lalmirch
20.	Garlic	<i>Allium sativum L.</i>	Nohoyu	Rashun	Rasun	Vellulli	Poodu ; Vella podu Tinji	Vellu- thuli	Bellulli	Lasun	Lasan	Lehsoon	Thom ; Lassan
21.	Ginger	<i>Zingiber officinale</i> Rosc.	Ada	Ada	Ada	Allam		Inchi	Shunti ; Alla	Ale	Adu	Adrakh	Adrak
22.	Turmeric	<i>Curcuma longa ; Curcuma domestica</i> Val.	Halodhi	Halud ; Haldi	Haldi	Pasupu	Manjal	Manjal	Arisina	Halad	Halдар	Haldi	Haldi
23.	Guar (Cluster bean)	<i>Cyamopsis psoraloides</i> Dc.	Thupi Urahi	Guar	Gunar ; chhuin	Goruchi- kkudu	Kotha- varnkai	Kothavara	Gori kayi	Guwar	Gavar	Guar	Guara
24.	Lucerne	<i>Medicago sativa L.</i>	Lucerne ghah	Lucern	Lusarna	Garam Masal	Kuthirai- masal	Lucerne	Kudure masale	Lasun ghas ; Vilaiti ghavat Barsim gavat	Gadab Rajko	—	Lustan
25.	Barseem	<i>Trifolium alexandrinum L.</i>	—	Barseem	Gini ghasa	—	—	—	—	—	Barsim	Barseem	Barseem

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# MAHARASHTRA STATE

## 1. GENERAL DESCRIPTION

The present Maharashtra State came into existence on 1st May 1960 as a result of bifurcation of the former bilingual Bombay State into two states of Maharashtra and Gujerat. It comprises of 26 districts (enumerated under physical features). The state is bound by Gujerat and Madhya Pradesh on North, by Mysore on South, by Andhra-Pradesh on South-east and part of Madhya Pradesh on East. On West, lies the vast Arabian Sea. The State has a coast running nearly 350 miles. The State occupies an area of 118,608 square miles (or 75.9 million acres). Area according to village records (*i.e.* reporting area) is 76.0 million acres. The distribution of area under different categories is as follows. (Figures for reporting area for 1956—57).

	(000 Acres)
1. Land not available for cultivation. (Barren and Un Cultivable +land put to non-agricultural uses).	6,303
2. Forests.	13,377
3. Permanent pastures and other grazing land.	3,729
4. Area under misc. tree crops not included in net area sown.	535
5. Culturable waste.	2,302
6. Fallow land other than current fallows.	3,525
7. Current fallows.	2,407
8. Net area sown.	44,295
9. Total cropped area.	46,382
10. Area sown more than once.	2,087

## 2. PHYSICAL FEATURES

Physiographically, the State lies in two main natural regions (i) peninsular hills and plateau region and (ii) Western ghats and coastal regions. The sub-regions of these main regions and the ultimate divisions of each sub-region are given below.

Natural-Region	Sub-Region	Natural Divisions.
1. Peninsular Hills and Plateau region.	1.1 North Deccan Sub-region.	1.11 Vidarbha division
		1.12 Marathwada division
		1.13 Bombay Deccan Northern Division.
2. Western Ghats and coastal region.	2.1 Konkan sub-region	2.11 Greater Bombay Division
		2.12 Bombay Konkan Division

The North-Deccan sub region includes the northern districts of Bombay Deccan, parts of north Hyderabad *i.e.* the present districts of the Marathwada and the Vidarbha region. The area forms the north western part of the peninsular plateau and is bound on the north by the Satpuras and on the west by Western Ghats. The area generally slopes from west to east except in the north where river Tapti flowing West-wards enters into the Arabian sea. The major portion of this sub region lies in the rain shadow of the Ghats and except a narrow strip along the Ghats, the area is dry and the rainfall is low.

The Konkan sub-region includes the west coast of the Indian Peninsula consisting of Greater Bombay division and Bombay Konkan division. The principal feature is that the Western Ghats runs north to south roughly parallel to the coast. The sub-region thus comprises of area of very varied topography with consequent wide variations in the climatic features.

The districts in the different divisions are as below :—

Division	Districts
(i) Vidarbha Division.	Amravati, Akola, Yeotmal, Wardha, Nagpur, Bhandara, Chanda and Buldhana.
(ii) Marathwada.	Parbhani, Nanded, Aurangabad, Osmanabad, and Bhir.
(iii) Bombay-Deccan Northern Division.	East Khandesh, West Khandesh, Ahmednagar, Poona, North Satara, South Satara, Kolhapur and Sholapur.
(iv) Greater Bombay Division.	Greater Bombay.
(v) Bombay-Konkan Division.	Thana, Kolaba, and Ratnagiri.

### 3. Soils.

The soils of different regions are described as below :—

(i) Vidarbha division :—In the plain tracts of this division, the *regur* or the black cotton soils of the first quality or heavy type are found. They occupy central plains of Berar, Purna valley, the Wardha valley and stretching to just east of Nagpur. These soils are largely deep black loam which bake into a solid mass in the beginning of dry weather. The depth of soil varies from place to place upto a stratum of unknown depth. They reach their greatest depth in the valleys into which they have been washed as a fine silt from the higher lands. This soil is locally known as '*awal kali*'. It is of very fine structure.

The soils of the plains rest on a layer of *karl* of light yellow colour. Black soil containing small percentage of lime in this tract in a finely powdered state is known as '*Kali*'. If there is still higher percentage of lime present in the form of nodules as large as peas, the soil is known as '*Morandi*'. These soils are comparatively lighter in texture and less fertile, and found particularly in places by the sides of Wardha river and in some parts of Akola and Amravti districts.

Bordering this central plain to the north and south, lie second quality of medium *regur* soils. Not so black in colour, often brown, less deep in character, carrying more stones and lime and occupying rather higher areas, these constitute soils of less mature type intermediate between the immature thin red and brown soils on the trap high lands and full *regur* of the plain. Wuntalug is predominately hilly, the soils here are locally known as follows :—

(i) The shallow stony soils found on high lying places are called '*bardi*'. (ii) The layer of red soil overlying trap rock of *murrum* on the plateau is known as "*Murmati*". (iii) A shallow hilly soil interspersed with stones and boulder is known as '*gotar*'. (iv) The patches of greyish coloured marly soils which occur in sub soil being impervious to water are known as '*chopan*' and (v) Land lying high or on slopes liable to dry up quickly is known as "*pashar*".

(ii) Marathawada division :—Deep black soils, medium black soil, and laterite are the predominating types of soils in the tract. Only a portion of Bidar district is covered by laterite, a tract of deep black soil runs west covering the Aurangabad and Parbhani districts on the north and Bin in the south. Remaining portion of the division is occupied by medium black soils.

(iii) **Bombay Deccan Northern division** :— Medium black soil on trap (*Kali*) characterises much of the area. The soils of East and West Khandesh are similar to these of Broach and Surat. Strips of rich deep black alluvial soil are found (10 to 20 miles wide) on both sides of Tapti and Girna rivers. In addition red soils (*mal*), reddish black soil and a light brown soil called *bared* are found on hilly slopes.

The districts of Nasik, Poona, Ahmednagar, North and South Satara, and North-east portion of Kolhapur comprise the Deccan Plateau and are covered by soils derived from Deccan trap and derived *in situ*. Broadly three types of soils can be distinguished. They are : (i) Coarse and grey as light brown soil (*Tandi*), (ii) Medium black soils (*Kali*), (iii) Coarse and gravelly soil along the ghats. The soils in the valley and along river banks are black and of medium depth and rich in fertility. With the approach of hills, the soils are grey or light brown. The red soils are usually found on hill tops.

The coarse, shallow *murmad* soils are found scattered throughout the Deccan, more specially in Mawal tract, the high lying strip of land running along the Western Ghats. The medium black soils, found in the east of the Mawal tracts, are loamy to clay loam in texture. The lime reserve in these soils is high, and frequently occurs in the form of nodules of Kankars. Red or reddish black soils are found on hill tops, along the ridges and down the slopes, particularly where there is heavy rainfall and a moist hot climate. The soils are laterite in Mahabaleshwar where the red soils are formed from a trap. They are fertile and grow good garden crops, such as vegetables and potato.

(iv) **Bombay Konkan Division** :— The soils of Thana and Kolaba are mainly of trap origin and are of three main types. The black coloured soils are loamy and fairly deep. Soils on the hill slopes are light red, shallow coarse and poor, and are locally known as *varkas* soils. There is also a type of sticky, clayey deep soil known as *menat* which is inaccessible during the rains and cracks heavily in summer. Along the coast lies a strip of coastal alluvium. The soils of Ratnagiri are derived from laterite in the north and gneiss in the south. Both are red in colour. Poorer coarse *varkas* soils are found along the hill slopes.

#### 4. RAINFALL AND CLIMATE

The rainfall of the State is chiefly derived from the South-west monsoon between June and October. The amount of rainfall varies widely from 20" to about 250".

**North-Deccan Sub-Region.** In the North-Deccan sub-region, the cold weather commences in December and continues till the end of February. December is the coldest month of the year when the mean minimum temperature varies from 52°F to 61°F. The season is practically without rain.

From March, the temperature begins to rise, and the hot weather continues till the on-set of the monsoon. The month of May (in some places April) is the hottest when the mean maximum temperature ranges between 101° to 109°F. At Mahabaleshwar, a station in the Ghats at a height of 4500. ft above sea level the mean maximum temperature during April is only 85°F. The north eastern part of this sub-region *i.e.*, Vidarbha division is one of the hottest areas in India during summer. During the day the heat is severe but after sunset the temperature drops considerably. The hot weather is generally dry except for occasional thunder-storms.

The area comes under the influence of the south west monsoon by the middle of June. June to September are the months of heavy rains when most of the annual rainfall occurs. The monsoon rain is not continuous but occurs in spells of wet days broken by days of fair weather. The rainfall is heavier and more regular in the mountainous areas of the west and is scanty and less regular farther east in the rain shadow area. Mahabaleshwar in the Ghats receives a rainfall of 261 inches per year but Dahiwadi at a distance of a few miles from Mahabaleshwar receives only 19" per year.

TABLE 1

Season wise Normal Rainfall in inches for regions of Maharashtra State

Region	Monsoon (June to September)	Post Monsoon (Oct. to December)	Winter. (Jan. to Feb.)	Pre-Monsoon (March to May)	Total for the year
(1) Bombay-Deccan.	22.01	4.65	—	1.86	28.52
(2) Vidarbha and Marthwada	34.58	3.30	0.18	1.72	39.78
(3) Konkan	76.15	3.77	—	0.42	80.34
State (Simple average)	44.25	3.91	—	1.33	49.49

By about first week of October, the monsoon withdraws from the area. A few post-monsoon thunder storms occur in October. There after the weather gradually clears up and dry weather prevails.

**Konkan sub-region :—**The climate of this sub-region becomes severely oppressive during the hot season. The south west monsoon rainfall is heaviest here for the whole of India outside the sub-mountainous regions of Bengal and Assam. The annual rainfall is over 100" along the west coast from Alibag near Bombay to Cochin in the south.

## 5. IRRIGATION

Maharashtra state has an independent Irrigation and Power sector comprising of (i) Multi-purpose projects, (ii) Major and Medium Irrigation projects and (iii) Power projects. The Koyna Hydro-electric project, and the Purna Hydro-electric project comprise the multi-purpose projects. In the state there is provision under the Second Five Year Plan for 3 multi-purpose projects ; 15 major 81 medium and 22 minor projects, to provide irrigation to several lakhs of acres of land in the State.

The major spill-over works at Gangapin and Ranad are already benefiting vast areas of land in the State. In addition a number of major irrigation schemes are being taken up. Vir, Khadakawasa, Mula, Girna, Varna, Kurnoor, Ghod, Bor and Nalganga works are few among the major irrigation scheme. These are spread all over the state and on completion, will irrigate several lakhs of acres.

Nearly 5.6% of the total cultivated area is irrigated. The area irrigated by different sources is given in table below :—

TABLE 2

Area irrigated by sources (figures for 1956—1957).

Source	Area 000 acres.	% over net area irrigated
(1) Government Canals.	494	21.84
(2) Private Canals	64	2.83
(3) Tanks	450	19.89
(4) Wells.	1,171	51.77
(5) Other sources	83	3.67
Net irrigated area (Total)	2,262	100.00

## 6. AGRICULTURAL PRODUCTION AND NORMAL CROPPING PATTERN

The important food crops of the State are *Jowar*, *Bajra*, Paddy, Wheat, Pulses and Groundnut. Cash crop cotton occupies considerable area in the State. The area, production and yield per acre (lbs.) of different crops is given in the table below.

TABLE 3

Crop	Area, production and yield/ac for (1958—1959)		
	Area (000 acres)	Production (000 tons)	Yield/ac. (lb.)
(1) Paddy	3,003	1,267	947
(2) Jowar	14,183	3,256	514
(3) Bajra	4,366	453	232
(4) Maize	69	14	454
(5) Others	3,269	669	458
(6) Pulses	5,696	855	336
(7) Sugarcane	263	716	6098
(8) Cotton	6,352	1,184 'a'	73
(9) Groundnut	2,809	637	508
(10) Other oilseeds	940	90	214

'a' in availables of 395 lb. each

In Bombay Deccan region *Jowar*, *Bajra*, and Groundnut are main field crops grown. Sugarcane is an important cash crop grown in this area wherever the area is extensively irrigated. Sugarcane is taken in rotation with *Jowar*, wheat, onion and Banana. Cotton and groundnut are main crops in Vidarbha and Marathawada region. Paddy is the main crop in Bombay—Konkan area.

## 7. AGRICULTURAL EXPERIMENTATION AND RESEARCH FARMS

Research in field crops is directed towards genetic improvement leading to evolution of high yielding, disease resistant strains of superior quality. At the same time, agronomic aspects are studied and standard agriculture practices evolved leading to higher yield.

There were 42 experimental farms which reported experiments for the period 1948—1953. These farms are almost distributed evenly among the districts. The majority of farms are situated in black cotton soil region. The farms in the coastal region represent the loamy soil derived from gneiss and laterite. The main farms are at Jalgaon, Karjat, Akola, Mohol, Kopergaon etc. The experiments on Paddy crop is concentrated at the farms situated in coastal area viz. Igatpuri, Karjat, Ratnagiri farms. The experiments on other cereal crops like *Jowar*, *Bajra* etc. are conducted at other farms located in Deccan region of the state. Jalgaon, Mohol, Parbani etc. are main farms carrying out experiments on these crops. Experiments on cash crop-sugarcane are carried out mainly at Deolali, Kolhapur and Padegaon farms. The farms at Akola and Nanded carry out experiments on cotton crop. In the farms located at Deccan area the cereal crop is usually rotated with either a leguminous crop or cotton. In Sugarcane growing areas, the crops like *Jowar* and *Groundnut* are rotated with Sugarcane. The paddy crop is rotated with leguminous crops like *wal* or *chinamug* in the farms of the coastal area. Paddy after paddy is also a common practice in this area. The experiments on fruit crops are carried out at Aurangabad, Ganeshkhind, Poona and Tharsa farms. The experiments on pulses and oilseeds are carried at all the farms situated in Deccan area.

## 8. EXPERIMENTS

There were 975 experiments reported for the period 1948—1953 in the State. The root stock trials at Tharsa and Aurangabad are excluded from the compendium. The distribution of 975 experiments according to crops and types of treatments studied is given below.

TABLE 4  
Statement showing distribution of experiments according to crops and treatments tried.

Crop	M	MV	C	CV	CM	CM	IM+MV	D+DV	Total
Paddy	124	—	28	3	24	—	—	1	180
Wheat	75	2	25	—	—	—	—	7	109
Jowar	114	—	52	9	15	—	—	20	210
Bajra	32	—	4	—	—	—	—	—	36
Nagli	8	—	12	—	—	—	—	—	20
Pulses	66	—	5	—	—	—	—	4	75
Vegetables	6	—	2	—	—	—	—	—	8
Sugarcane	77	—	—	7	20	—	12	—	116
Cotton	61	5	8	2	30	3	—	9	118
Groundnut	39	—	19	—	—	—	—	5	63
Spices	10	—	—	—	—	—	—	—	10
Fodder crops	2	—	—	—	2	—	—	—	4
Mixed Cropping	—	—	—	—	—	—	—	—	10
Rotational	—	—	—	—	—	—	—	—	19
Fruit Crops	2	—	4	—	—	—	—	—	6
Total	616	7	159	21	91	3	12	46	975

From the table above it is seen that experimentation on Paddy and Jowar the two principal crops of the State received considerable importance. About 22 and 20% of total experiments are carried out on these two crops. Cash crops like Cotton and Sugarcane also have almost equal number of experiments, the order being 11% on each of them. It is also seen that nearly 70% of the experiments had manurial treatments.

The experiments commonly found were to study the effect of  $P_2O_5$  applied to the leguminous crop on the succeeding cereal crop. The leguminous crops for this purpose were *Wal*, *Chinamug*, Gram and Groundnut. The cereal crops were Paddy, Jowar, Bajra and Wheat. The doses of  $P_2O_5$  varied from 50 lb./ac. to 150 lb./ac. besides control. The other type of treatments tried were combinations of different levels of N and  $P_2O_5$ . The source for N was either Ammonium Sulphate or Groundnut cake. The source for  $P_2O_5$  was invariably super-phosphate. The levels of N and  $P_2O_5$  varied from 20 lb./ac. to 96 lb./ac. Sometimes Farmyard manure was also included along with N and  $P_2O_5$ . The amount of F.Y.M. applied varied from 2 to 5 cart loads per acre.

The organic manures tried to compare their efficiency with other organic manures and fertilizers were town compost and farm yard manure. Chilean nitrate was also used as source of N in a few experiments. The amount of bulky manures varied from 5 C.L. per acre to 10 C.L. per acre.

The design adopted usually was randomised blocks. The number of plots per block varied from 3 to as many as 32. System of confounding was a practice seldom found in factorial experiments, although few experiments are available of the type  $2^3$  and  $3^3$  with confounding. The split-plot design was the next popular design adopted for

cultural and cultural-cum-manurial type of experiments and also for purely manurial experiments in a few cases, and wherever irrigation formed one of the treatments this design was adopted. The number of main-plots varied from 2 to 8 and number of sub-plots per main-plot varied from 2 to 9, and in few cases the number of main-plots was as high as 16 and number of sub-plots per main-plot as high as 12. The net plot size usually varied from 1/80th of an acre to 1/40th of an acre, although in a few experiments it was as big as 1/20th of an acre and as small as 1/640th of an acre. The number of replications varied from 4 to 6 usually.

The results of the experiments conducted under Stewart's scheme of the I.C.A.R. on cultivator's fields during the period 1948—1953 and under the Fertilizer Use Project (T.C.M. trials) are also included in the compendium. The experiments under Stewart's scheme in this State were conducted in Nasik district on wheat crop during the year 1953-1954.

The details of Fertilizer Use Project are given in the two reports published by I.C.A.R. (1955) on Paddy and Wheat crops. Results for different centres are presented here.

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**STATEMENT SHOWING DETAILS OF EXPERIMENTAL STATIONS**  
(MAHARASHTRA STATE)

Sr. No.	Name of the experimental Stn. with location-year of establishment and tract it represents and major crops.	Soil type and soil analysis.	Normal Rainfall (in inches)	Irrigation facilities	No. of experiments.	General description of the topo-graphy of experimental area.																														
1	2	3	4	5	6	7																														
1.	Achalpur, Seed and Demon. Farm. Distt. Amravati, Vidarbha, 2 miles from Achalpur Rly. Stn. Year of est. = 1928.	1. The soil of the farm is black cotton type ranging from light to medium type of soil. 2. Depth :—3'. 3. Colour :—Black. 4. Structure :—Fine. 5. Soil analysis not available.	<table style="margin-left: auto; margin-right: auto;"> <tr><td>June</td><td>5.73</td></tr> <tr><td>July</td><td>7.50</td></tr> <tr><td>Aug.</td><td>6.23</td></tr> <tr><td>Sept.</td><td>7.90</td></tr> <tr><td>Oct.</td><td>2.49</td></tr> <tr><td>Nov.</td><td>1.31</td></tr> <tr><td>Dec.</td><td>—</td></tr> <tr><td>Jan.</td><td>0.51</td></tr> <tr><td>Feb.</td><td>0.08</td></tr> <tr><td>March</td><td>0.50</td></tr> <tr><td>April</td><td>0.55</td></tr> <tr><td>May</td><td>0.53</td></tr> <tr><td colspan="2"><hr/></td></tr> <tr><td>Total</td><td>33.33</td></tr> <tr><td>Av. of 5 years 1955-56 to 59-60</td><td></td></tr> </table>	June	5.73	July	7.50	Aug.	6.23	Sept.	7.90	Oct.	2.49	Nov.	1.31	Dec.	—	Jan.	0.51	Feb.	0.08	March	0.50	April	0.55	May	0.53	<hr/>		Total	33.33	Av. of 5 years 1955-56 to 59-60		Partly available to cover 12 acres. Drainage system is not necessary as the soils are well drained.	11—Jowar. 7—Cotton. 1—Wheat. <hr/> 19—Total	Well levelled fertile soil.
June	5.73																																			
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STATEMENT SHOWING DETAILS OF EXPERIMENTAL STATIONS.

MAHARASHTRA (Contd.)

1	2	3	4	5	6	7
2.	Akluj: Agri. Res. Stn. Distt. Sholapur, June 1940. It represents the tract comprising of left bank and right bank of Nira canal covered by districts of Poona, North Satara Sholapur. It is dry tract. Major crops: Sugarcane and Jowar.	<p>1. The soils are derived from trap rock, are medium, deep, blackish in colour, possess well developed crumb structure, exhibit 2-3 well marked horizons, highly base salinated calcareous in nature, alkaline in reaction, good in Potash but poor in P<sub>2</sub>O<sub>5</sub> and N.</p> <p>2. Depth:—6"—4'.</p> <p>3. Colour:—Blakish grey.</p> <p>4. Structure:—clay.</p> <p>5. Soil analysis:— (%)</p> <p>(i) Chemical analysis:—                      Avl. P<sub>2</sub>O<sub>5</sub> 0.005 (Major portion) Avl. K<sub>2</sub>O 0.02 to 0.06; Lime reserve 1.0 to 5.0 (50% area) 5.0 to 10.0 (other half); pH 8.5 to 9.0; Total 0.05 to 1.0</p> <p>(ii) Mechanical analysis:—                      N.A.</p>	<p>June 2.56</p> <p>July 1.60</p> <p>Aug. 6.19</p> <p>Sept. 0.53</p> <p>Oct. —</p> <p>Nov. 5.19</p> <p>Dec. 0.67</p> <p>Jan. to March Nil.</p> <p>April 0.43</p> <p>May 1.63</p> <hr/> <p>Total 18.60                      (Figures for 1958-59)</p>	<p>Canal irrigation from Nira Right Bank Canal, since 1940. Drainage system is natural as the soil has got slope and there is 'nala' at a distance of 1 furlong.</p>	<p>16—Sugarcane.                      1—Wheat.                      1—Jowar                      1—Bajra.                      1—Paddy.  <hr/>                     20—Total.</p>	<p>It has got general slope from West to East and secondary slopes on Southern and Northern sides, i.e. it has ridge at the centre.</p>

**STATEMENT SHOWING DETAILS OF EXPERIMENTAL STATIONS  
MAHARASHTRA (Contd.)**

1.	2.	3.	4.	5.	6.	7.
✓ 3.	Akola : Govt. Exptl. Farm. Distt. Akola. 4 miles from Ako'a Rly. Stn. Year of establishment 1907. It represents cotton tract. Major crops : Cotton, <i>Jowar</i> and Groundnut.	1. Broad soil types : Deep black cotton soil, 2. Depth : 5'. 3. Colour-Black. 4. Structure-N.A. 5. Soil analysis : (i) Chemical analysis (%) pH. 8.6 ; Org. matter-0.627 ; N-0.0075 P <sub>2</sub> O <sub>5</sub> Total 0.188 ; Avl. 0.0036 ; Total 0.474 ; K <sub>2</sub> O Avl. 0.032. (ii) Mechanical analysis (%). Clay 49.25 ; Silt 24.75 ; Fine sand 14.92 ; Coarse sand 2.12 ; CaCO <sub>3</sub> 5.20 ; Moisture 3.39.	June 6.11 July 7.84 Aug. 4.70 Sept. 4.28 Oct. 1.03 Nov. 0.50 Dec. 0.15 Jan. 0.11 Feb. 0.03 Mar. 0.20 April 0.29 May 0.59 <hr/> Total 126.83 Figures for the period 1950-51 to 1958-59	Well irrigation for 1.5 ac. for vegetables only since 1926. There is proper drainage with drain between fields.	23—Cotton. 13—Jowar, 8—Groundnut. 6—Mixed-cropping. +1 Rotational experiments. <hr/> 51—Total.	Information not avail- able.
✓ 4.	Aurangabad :—Fruit Res. Sta- tion. Dist. Aurangabad. 1½ miles away from Aurangabad Rly. Stn. Year of establishment 1940-41. It lies in Marathwada region. Research on Grape and Citrus fruits.	1. Broad soil types :—Medium black soil. 2. Depth :—1' to 3½', 3. Colour :— Medium black to deep black. 4. Structure :—N.A. 5. Soil analysis :— (i) Chemical analysis :— pH 7.9 ; Soluble salts 0.32% ; Org. matter 0.65. (ii) Mech. analysis :—N.A.	June 3.93 July 6.52 Aug. 6.42 Sept. 8.59 Oct. 5.97 Nov. to May Nil. <hr/> Total 31.43 (Figures for June 1959 to May 1960).	Irrigation facilities from 3 wells and sul- lage water from city. Facilities are available since 1940-41.	Nil	Information not avail- able.

**STATEMENT SHOWING DETAILS OF EXPERIMENTAL STATIONS.**  
**MAHARASHTRA (Contd.)**

1	2	3	4	5	6	7																																									
5.	<p><b>Badnapur : Crop Res. Stn.,</b> <b>Distt. Aurangabad. 2 miles</b> <b>from Badnapur Rly. Stn.</b> <b>Year of establishment 1951.</b> <b>It represents dry cultivation</b> <b>tract. Research on Wheat and</b> <b>Cotton.</b></p>	<p><b>1. Black cotton soil (light calcareous to heavy)</b></p> <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left;">Depth</th> <th style="text-align: left;">Colour</th> <th style="text-align: left;">Structure</th> </tr> </thead> <tbody> <tr> <td>(i) 6"—18"</td> <td>Reddish brown to chocolate brown.</td> <td>N.A.</td> </tr> <tr> <td>(ii) 19"—36"</td> <td>Chocolate brown to dark brown.</td> <td>N.A.</td> </tr> <tr> <td>(iii) Over 36"</td> <td>Dark brown to black deep clays.</td> <td>N.A.</td> </tr> </tbody> </table> <p><b>2. Soil analysis : (i) Chemical analysis :—</b> pH 7.1 to 7.5, N 0.0439 to 0.0748% P<sub>2</sub>O<sub>5</sub> 0.0434 to 0.0997%.</p> <p><b>(ii) Mechanical analysis : Coarse sand 0.17 to 9.47% ; Fine sand 6.94 to 24.09% ; Silt 12.05 to 25.78% and Clay 33.25 to 68.73%.</b></p> <p><b>This analysis is done for the depth from 0" to 48"</b></p>	Depth	Colour	Structure	(i) 6"—18"	Reddish brown to chocolate brown.	N.A.	(ii) 19"—36"	Chocolate brown to dark brown.	N.A.	(iii) Over 36"	Dark brown to black deep clays.	N.A.	<table style="width: 100%; border-collapse: collapse;"> <tbody> <tr><td>June</td><td style="text-align: right;">5.75</td></tr> <tr><td>July</td><td style="text-align: right;">6.64</td></tr> <tr><td>Aug.</td><td style="text-align: right;">11.21</td></tr> <tr><td>Sept.</td><td style="text-align: right;">6.61</td></tr> <tr><td>Oct.</td><td style="text-align: right;">1.88</td></tr> <tr><td>Nov.</td><td style="text-align: right;">0.84</td></tr> <tr><td>Dec.</td><td style="text-align: right;">—</td></tr> <tr><td>Jan.</td><td style="text-align: right;">0.03</td></tr> <tr><td>Feb.</td><td style="text-align: right;">—</td></tr> <tr><td>March</td><td style="text-align: right;">0.27</td></tr> <tr><td>April</td><td style="text-align: right;">0.63</td></tr> <tr><td>May</td><td style="text-align: right;">1.20</td></tr> <tr style="border-top: 1px solid black;"><td><b>Total</b></td><td style="text-align: right;"><b>34.06</b></td></tr> </tbody> </table>	June	5.75	July	6.64	Aug.	11.21	Sept.	6.61	Oct.	1.88	Nov.	0.84	Dec.	—	Jan.	0.03	Feb.	—	March	0.27	April	0.63	May	1.20	<b>Total</b>	<b>34.06</b>	<p>Lift irrigation by pump since inception, <math>\frac{1}{2}</math> acre is of not good drainage due to low lying area. <math>\frac{1}{2}</math> of area of the farm is of well drained soils.</p>	<table style="width: 100%; border-collapse: collapse;"> <tbody> <tr><td>1—Wheat</td></tr> <tr><td>1—Cotton</td></tr> <tr style="border-top: 1px solid black;"><td>2—Total</td></tr> </tbody> </table>	1—Wheat	1—Cotton	2—Total	<p>The area is in general a rolling plane, with a general slope from north-west to south-east.</p>
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**STATEMENT SHOWING DETAILS OF EXPERIMENTAL STATIONS  
MAHARASHTRA (Contd.)**

1	2	3	4	5	6	7																																																																
6.	<p>Buldana: Cotton Breeding Scheme trial Sub-Centre. Dist. Buldana. 28 miles from Malkapur Rly. Stn. Year of est. 1947-48. Represents cotton tract. Research on Cotton, Jowar and Groundnut.</p>	<p>1. Broad soil type : Black cotton Morand II. 2. Depth : 4" to 9". 3. Colour : Black to yellowish. 4. Structure: Gramular. 5. Soil analysis :— (ii) Chemical Analysis : (%).</p> <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left;">S. No.</th> <th style="text-align: left;">Location of field</th> <th style="text-align: left;">Org. matter</th> <th style="text-align: left;">Avl. N</th> <th style="text-align: left;">Avl. P<sub>2</sub>O<sub>5</sub></th> <th style="text-align: left;">(Contd.)</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>No. 3</td> <td>Low</td> <td>Low</td> <td>Low</td> <td></td> </tr> <tr> <td>2</td> <td>No. 15</td> <td>Medium</td> <td>Medium</td> <td>Low</td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> <td>Avl. K<sub>2</sub>O</td> <td>pH</td> <td>Salts</td> </tr> <tr> <td></td> <td></td> <td></td> <td>—</td> <td>7.0</td> <td>Useful</td> </tr> <tr> <td></td> <td></td> <td></td> <td>Medium</td> <td>7.35</td> <td>Useful</td> </tr> </tbody> </table> <p>(ii) Mechanical Analysis : N.A.</p>	S. No.	Location of field	Org. matter	Avl. N	Avl. P <sub>2</sub> O <sub>5</sub>	(Contd.)	1	No. 3	Low	Low	Low		2	No. 15	Medium	Medium	Low					Avl. K <sub>2</sub> O	pH	Salts				—	7.0	Useful				Medium	7.35	Useful	<table style="width: 100%; border-collapse: collapse;"> <tbody> <tr><td>June</td><td style="text-align: right;">6.74</td></tr> <tr><td>July</td><td style="text-align: right;">9.46</td></tr> <tr><td>Aug.</td><td style="text-align: right;">7.87</td></tr> <tr><td>Sept.</td><td style="text-align: right;">8.19</td></tr> <tr><td>Oct.</td><td style="text-align: right;">1.57</td></tr> <tr><td>Nov.</td><td style="text-align: right;">0.47</td></tr> <tr><td>Dec.</td><td style="text-align: right;">0.30</td></tr> <tr><td>Jan.</td><td style="text-align: right;">0.23</td></tr> <tr><td>Feb.</td><td style="text-align: right;">0.20</td></tr> <tr><td>March</td><td style="text-align: right;">0.24</td></tr> <tr><td>April</td><td style="text-align: right;">0.32</td></tr> <tr><td>May</td><td style="text-align: right;">0.82</td></tr> <tr><td colspan="2"><hr/></td></tr> <tr><td>Total</td><td style="text-align: right;">36.23</td></tr> </tbody> </table> <p>Average of 10 years data from 1948-1949 to 1958 1959.</p>	June	6.74	July	9.46	Aug.	7.87	Sept.	8.19	Oct.	1.57	Nov.	0.47	Dec.	0.30	Jan.	0.23	Feb.	0.20	March	0.24	April	0.32	May	0.82	<hr/>		Total	36.23	<p>Nil. No proper drainage system.</p>	<p>2—Groundnut 5—Jowar 5—Cotton ————— 12—Total</p>	<p>Farm is situated on a hilly tract. Therefore the Land is some what slopy on all sides. The soil varies from medium to light.</p>
S. No.	Location of field	Org. matter	Avl. N	Avl. P <sub>2</sub> O <sub>5</sub>	(Contd.)																																																																	
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STATEMENT SHOWING DETAILS OF EXPERIMENTAL STATIONS  
MAHARASHTRA (Condt.)

1	2	3	4	5	6	7
7.	Chas : Agri. Res. Stn. Dist. Ahmednagar. 7 miles from Ahmednagar Rly. Station. year of est. 1941. Represents the tract having less rainfall and medium to light soils. Research on Kharif Groundnut Bajra, Tur, Gram and Jowar.	<p>1. Broad soil type :—                   Deep    medium    Light</p> <p>2. Depth :—18" and above 9" to 18"    0"—9"</p> <p>3. Colours :—Deep brown   Brown   Light brown</p> <p>4. Structures :—Cloddy   Nutty   Granular</p> <p>5. Soil analysis :     (i) Chemical analysis :N.A.     (ii) Mechanical analysis : N.A.</p>	<p>June    4.37</p> <p>July     3.14</p> <p>Aug.    3.69</p> <p>Sept.   6.72</p> <p>Oct.     3.29</p> <p>Nov.    1.42</p> <p>Dec.     0.30</p> <p>Jan.     0.06</p> <p>Feb.     0.01</p> <p>Mar.     0.13</p> <p>April    0.46</p> <p>May     1.12</p> <hr/> <p style="text-align: center;">Total    24.71</p> <p style="text-align: center;">Average of 17 years from 1941—1942 and 1958-1959.</p>	No irrigation facilities. There is adequate natural drainage.	<p>5—Jowar</p> <p>6—Groundnut</p> <p>3—Bajra</p> <p>1—Gram</p> <p>1—Wheat</p> <p>2—Rotational</p> <hr/> <p>18—Total</p>	The farm is situated in an undulating tract and it is surrounded by hills.
8.	Chiplun : Rice Breeding Stn. Dist. Ratangiri. Research on Paddy.	No information available.	N.A.	N.A.	11—Paddy	N.A.

**STATEMENT SHOWING DETAILS OF EXPERIMENTAL STATIONS.**  
**MAHARASHTRA (Contd.)**

1	2	3	4	5	6	7																																			
9.	Deolali : Agri. Res. Stn. Distt. Ahmednagar. Year of est. 1940. It represents Deccan canal tract. Major crops : Sugarcane, Jowar, Groundnut and cotton.	1. Soil type and colour medium black. 2. Depth : 1' to 2'. 3. Structure : Sandy loam to clay. 4. Soil analysis not available.	<table style="width: 100%; border-collapse: collapse;"> <tr><td>June</td><td style="text-align: right;">3.39</td></tr> <tr><td>July</td><td style="text-align: right;">2.12</td></tr> <tr><td>Aug.</td><td style="text-align: right;">3.97</td></tr> <tr><td>Sept.</td><td style="text-align: right;">1.55</td></tr> <tr><td>Oct.</td><td style="text-align: right;">1.56</td></tr> <tr><td>Nov.</td><td style="text-align: right;">1.96</td></tr> <tr><td>Dec. to</td><td></td></tr> <tr><td>March</td><td style="text-align: right;">Nil</td></tr> <tr><td>April</td><td style="text-align: right;">0.27</td></tr> <tr><td>May</td><td style="text-align: right;">1.35</td></tr> <tr><td colspan="2"><hr/></td></tr> <tr><td>Total</td><td style="text-align: right;">16.18</td></tr> </table> <p>Figures for the year 1959.</p>	June	3.39	July	2.12	Aug.	3.97	Sept.	1.55	Oct.	1.56	Nov.	1.96	Dec. to		March	Nil	April	0.27	May	1.35	<hr/>		Total	16.18	Canal irrigation since inception. Land has good natural drainage.	19—Sugarcane	Farm is situated on a level ground.											
June	3.39																																								
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10.	Dhulia :—Agri. Res. Stn. Dist. West Khandesh. 2 miles from Dhulia Rly. Stn. Year of est. 1947. It represents Cotton, Jowar and Groundnut growing tract.	1. Broad soil type :—Medium black. 2. Depth :—4' to 12'. 3. Colour :—Medium black. 4. Structure :—Clay loam. 5. Soil analysis :— (i) Chemical analysis :—N.A. (ii) Mechanical analysis :—N.A.	<table style="width: 100%; border-collapse: collapse;"> <tr><td>June</td><td style="text-align: right;">6.02</td></tr> <tr><td>July</td><td style="text-align: right;">4.99</td></tr> <tr><td>Aug.</td><td style="text-align: right;">6.30</td></tr> <tr><td>Sept.</td><td style="text-align: right;">4.67</td></tr> <tr><td>Oct.</td><td style="text-align: right;">2.70</td></tr> <tr><td>Nov.</td><td style="text-align: right;">1.70</td></tr> <tr><td>Dec.</td><td style="text-align: right;">—</td></tr> <tr><td>Jan.</td><td style="text-align: right;">0.12</td></tr> <tr><td>Feb.</td><td style="text-align: right;">—</td></tr> <tr><td>March</td><td style="text-align: right;">—</td></tr> <tr><td>April</td><td style="text-align: right;">0.07</td></tr> <tr><td>May</td><td style="text-align: right;">0.62</td></tr> <tr><td colspan="2"><hr/></td></tr> <tr><td>Total</td><td style="text-align: right;">27.72</td></tr> </table> <p>The average based on 1957, 58 and 59 data.</p>	June	6.02	July	4.99	Aug.	6.30	Sept.	4.67	Oct.	2.70	Nov.	1.70	Dec.	—	Jan.	0.12	Feb.	—	March	—	April	0.07	May	0.62	<hr/>		Total	27.72	Well irrigation. Only 4 acres under irrigation. Facilities available from 1953. Generally the soils are well drained.	<table style="width: 100%; border-collapse: collapse;"> <tr><td>2—Wheat</td></tr> <tr><td>3—Jowar</td></tr> <tr><td>2—Groundnut</td></tr> <tr><td>1—Mixed cropping</td></tr> <tr><td colspan="2"><hr/></td></tr> <tr><td>8—Total.</td></tr> </table>	2—Wheat	3—Jowar	2—Groundnut	1—Mixed cropping	<hr/>		8—Total.	The Res. Stn., in general is situated on a level ground.
June	6.02																																								
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STATEMENT SHOWING DETAILS OF EXPERIMENTAL STATIONS

MAHARASHTRA (Contd.)

1	2	3	4	5	6	7
11.	Hatkumbha :—Agri. Res. Station. Dist. Ratnagiri. 72 miles from Kohlapur Rly. Stn. Year of est :—1921. It represents <i>warkar</i> land (heavy rainfall area). Major crops :— <i>Nagli</i> , <i>Vari</i> and <i>Kodra</i> .	1. Soil type :—Laterite, rocky and poor in fertility. 2. Depth :—6" an average. 3. Colour : - Reddish brown. 4. Structure :—Rocky. 5. Soil analysis :—Not available.	June 38.60 July 62.13 Aug. 50.58 Sept. 14.55 Oct. 7.58 Nov. 1.04 Dec. 0.16 Jan. to March Nil April 0.12 May 3.26 <hr/> Total 178.02	Nil and no drainage system.	13— <i>Nagli</i>	---
12.	Igatpuri :—Agri. Res. Stn. Dist. Nasik. Year of est. 1941. It represents medium black soil from trap rock, Research on Paddy, Lentils and Peas, and <i>Nagli</i> .	1. Broad soil type :—Medium black. 2. Depth :—1½' to 3'. 3. Colour :—grey. 4. Structure :—fairly loose. 5. Soil analysis :—Not available.	June 9.54 July 75.84 Aug. 34.25 Sept. 38.01 Oct. 0.14 Nov. 3.97 Dec. to May Nil <hr/> Total 161.75 Based on 1958 rainfall data.	Nil.	36—Paddy 12—Lentils and Peas. 7— <i>Nagli</i> . <hr/> 55—Total	Paddy fields with favourable topography and less ups and downs, does not require terracing.

STATEMENT SHOWING DETAILS OF RESEARCH STATIONS

MAHARASHTRA (Contd.)

1	2	3	4	5	6	7																														
13.	Jalagaon :—Agri. Res. Stn. Dist. East Khandesh. 2 miles from Jalagaon Rly. Stn. Year of est :—1913. Research on Wheat, Jowar, Cotton, Oil-seed and Pulses. It represents 'Deep black cotton' tract of East Khandesh dist.	<p>1. Deep black cotton soil.</p> <p>2. Depth :—10'—13'.</p> <p>3. Colour—Deep black with yellowish sub-soil strata.</p> <p>4. Structure :—N.A.</p> <p>5. Soil analysis :—</p> <p>(i) Chemical analysis :—(% over dry sample).</p> <table border="1"> <thead> <tr> <th>Total carbonate</th> <th>Org. carbon</th> <th>Total N</th> <th>C/N ratio</th> </tr> </thead> <tbody> <tr> <td>4.85</td> <td>0.74</td> <td>0.0455</td> <td>1 : 16.36</td> </tr> </tbody> </table> <p>Exchangeable basis (m. eg./100 gm. over dry sample).</p> <table border="1"> <thead> <tr> <th>Calcium</th> <th>Magnesium</th> <th>Sodium</th> <th>Base and exchange potassium capacity</th> <th>pH.</th> </tr> </thead> <tbody> <tr> <td>55.62</td> <td>4.85</td> <td>3.07</td> <td>70.50</td> <td>7.4</td> </tr> </tbody> </table> <p>(ii) Mech. Analysis :—(% over dry sample).</p> <table border="1"> <thead> <tr> <th>Org. matter</th> <th>Sand</th> <th>Silt</th> <th>Clay</th> <th>Moisture</th> </tr> </thead> <tbody> <tr> <td>1.27</td> <td>8.23</td> <td>16.05</td> <td>69.60</td> <td>14.08</td> </tr> </tbody> </table> <p>Max. water retentive capacity Sticky pt. moisture</p> <table border="1"> <tbody> <tr> <td>71.73</td> <td>52.14</td> </tr> </tbody> </table>	Total carbonate	Org. carbon	Total N	C/N ratio	4.85	0.74	0.0455	1 : 16.36	Calcium	Magnesium	Sodium	Base and exchange potassium capacity	pH.	55.62	4.85	3.07	70.50	7.4	Org. matter	Sand	Silt	Clay	Moisture	1.27	8.23	16.05	69.60	14.08	71.73	52.14	<p>June 5.01</p> <p>July 9.14</p> <p>Aug. 6.24</p> <p>Sep. 5.70</p> <p>Oct. 1.71</p> <p>Nov. 0.79</p> <p>Dec. 0.37</p> <p>Jan. 0.28</p> <p>Feb. 0.20</p> <p>March 0.21</p> <p>April 0.08</p> <p>May 0.37</p> <hr/> <p>Total 30.10</p> <p>Av. of 40 years data (1951—54)</p>	Nil.	<p>24—Jowar</p> <p>14—Wheat</p> <p>10—Cotton</p> <p>5—China mug.</p> <p>9—Groundnut.</p> <p>4—Udid</p> <p>1—Rotational expt.</p> <hr/> <p>67—Total</p>	In general the area is plain with some of the fields slightly sloping
Total carbonate	Org. carbon	Total N	C/N ratio																																	
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**STATEMENT SHOWING DETAILS OF EXPERIMENTAL STATIONS  
MAHARASHTRA (Contd.)**

1	2	3	4	5	6	7																																																												
14.	Jeuri : Agri. Res. Stn. Dist : Sholapur. 2½ miles from Jeuri Rly. Stn. Year of est. 1942. It is situated in Bombay Deccan. Research on Wheat, Jowar, Bajra, Gram and Groundnut.	(1) Medium and Deep black soil (2) Depth- 18" to 36". (3) Colour—Black (4) Structure— N.A. (5) Soil analysis -N.A.	<table style="width: 100%; border-collapse: collapse;"> <tr><td>June</td><td style="text-align: right;">3.02</td></tr> <tr><td>July</td><td style="text-align: right;">4.98</td></tr> <tr><td>Aug.</td><td style="text-align: right;">3.02</td></tr> <tr><td>Sept.</td><td style="text-align: right;">4.51</td></tr> <tr><td>Oct.</td><td style="text-align: right;">3.52</td></tr> <tr><td>Nov.</td><td style="text-align: right;">0.40</td></tr> <tr><td>Dec.</td><td style="text-align: right;">0.23</td></tr> <tr><td>Jan.</td><td style="text-align: right;">0.01</td></tr> <tr><td>Feb.</td><td style="text-align: right;">—</td></tr> <tr><td>March</td><td style="text-align: right;">0.18</td></tr> <tr><td>April</td><td style="text-align: right;">0.55</td></tr> <tr><td>May</td><td style="text-align: right;">1.40</td></tr> <tr><td colspan="2" style="text-align: center;">Total 21.82</td></tr> <tr><td colspan="2" style="text-align: center;">Av. for 1951 to 1959 (9 years).</td></tr> </table>	June	3.02	July	4.98	Aug.	3.02	Sept.	4.51	Oct.	3.52	Nov.	0.40	Dec.	0.23	Jan.	0.01	Feb.	—	March	0.18	April	0.55	May	1.40	Total 21.82		Av. for 1951 to 1959 (9 years).		Nil	<table style="width: 100%; border-collapse: collapse;"> <tr><td>4—Jowar</td></tr> <tr><td>3—Wheat</td></tr> <tr><td>2—Bajra</td></tr> <tr><td>4—Groundnut</td></tr> <tr><td colspan="2" style="text-align: center;">-----</td></tr> <tr><td>13—Total</td></tr> <tr><td>+2 Rotational expts.</td></tr> <tr><td>(both from 1949 to</td></tr> <tr><td>1950 on wards).</td></tr> </table>	4—Jowar	3—Wheat	2—Bajra	4—Groundnut	-----		13—Total	+2 Rotational expts.	(both from 1949 to	1950 on wards).	Information not supplied.																						
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STATEMENT SHOWING DETAILS OF EXPERIMENTAL STATIONS.

MAHARASHTRA (Contd.)

1	2	3	4	5	6	7
16.	Karjat : Agri. Res. Stn. Dist. Kolaba, Near Karjat Rly. Stn. (Bombay—Poona line). Year of est. 1919. It represents North Konkan tract of Maha- rashtra State.	1. Soil type : Sandy loam to clayey loam. 2. Depth : Varying from 6" to 2'. 3. Colour : Gray with black when dry and dark grey when wet. 4. Structure : Cloddy. 5. Soil analysis : Refer Page (36)	June 24.76 July 59.22 Aug. 35.50 Sept. 18.99 Oct. 5.42 Nov. 1.39 Dec. 0.04 Jan. 0.04 Feb. 0.01 March 0.02 April 0.14 May 0.85 <hr/> Total 146.38 Av. of 23 years. (1936 to 1958).	No irrigation facilities. The soil has good natural drainage	32—Paddy 4—Wal <hr/> 36—Total	Situated in a valley at the foot of Western Ghats.
17.	Khopoll : Agri. Res. Stn. Dist. Kolaba.	---	---	---	4—Paddy	---
18.	Kirkee : Ganeshkhind, Fruit Res. Stn. Dist. Poona, 1 mile from Kirkee. Year of est. 1921. Research on vegetables and fruits viz. Mango, Chickoo, guava, banana etc.	Soil type : Medium black about 3" to 4" only in depth. Other details : Not available.	Annual : about 2" to 30". rainfall	Canal irrigation.	Root stock trials. (excluded).	Information not avail- able.

**STATEMENT SHOWING DETAILS OF EXPERIMENTAL STATIONS**  
**MAHARASHTRA (Contd.)**

1	2	3	4	5	6	
19.	Kolhapur : Agri. Res. Stn. Dist. Kolhapur, 2 miles from Kolhapur Rly. Stn. Year of est. 1947. Major crops : Irrigated sugarcane, and Paddy.	Soil type: Black clayey soil. Other details-not available.	N.A.	Lift irrigation. No drainage system.	1 Paddy 10—Sugarcane ----- 11—Total	N.A.
20.	Kopergaon : Agri. Res. Stn. Dist : Ahmednagar. 3½ miles from Kopergaon Rly. Stn. Year of est. 1915. It represents Deccan canal irrigated tract. Major crops : Paddy, Jowar Wheat Gram etc.	Sr. Soil type N <sub>2</sub> % P <sub>2</sub> O <sub>5</sub> % K <sub>2</sub> O% M.H.P.% No. 1. A—type Varies Varies Varies Varies. from from from from 5 to 0.005 20 to 20 to 30 to 40. 40. 0.01  Remarks (i) Medium black to sandy loam. (ii) Depth ranges from 1' to 3'. (iii) pH scale varies from 7.00 to 9.00.	June 3.17 July 2.24 Aug. 2.78 Sept. 2.42 Oct. 5.60 Nov. — Dec. — Jan. 0.12 Feb. — Mar. 0.12 April 0.71 May. — Total 17.16 Figures for 1953 to 1954	irrigation. No drainage system.	13—Paddy 10—Wheat 8—Jowar 16—Sugarcane 4—Bajra 3—Groundnut 8—Gram 1—Cotton 3—Sweet potato ----- 66—Total	The area of this farm is 98 acres.





**STATEMENT SHOWING DETAILS OF EXPERIMENTAL STATIONS**  
**MAHARASHTRA (Contd.)**

1	2	3	4	5	6	7																																																		
23.	<p>Mohol: Agri. Res. Stn. Dist. : Sholapur, 4 miles from Mohol Rly. Stn. Year of est. 1948. It represents the scarcity zone of the Bombay Deccan. Major crops : <i>Jowar</i>, Groundnut, Gram (pulses) etc.</p>	<p>1. Soil type :— 2. Depth : Soil 10" to 1' and varies from heavy to light. 3. Colour : Deep black to Raddish brown. 4. Structure : Fine to coarse according to the plot. 5. Soil analysis :</p> <p>(i) Chemical analysis : (%) Available.</p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 10%;">Total soluble salts</td> <td style="width: 10%;">N</td> <td style="width: 10%;">P<sub>2</sub>O<sub>5</sub></td> <td style="width: 10%;">K<sub>2</sub>O</td> <td style="width: 10%;">Available.</td> </tr> <tr> <td>(mill/c.c.)</td> <td></td> <td>varies from</td> <td>—</td> <td></td> </tr> <tr> <td>0.200 to 0.550</td> <td>3.50 to</td> <td>9.6 to</td> <td>310</td> <td></td> </tr> <tr> <td></td> <td>8.26</td> <td>140.0</td> <td>860</td> <td></td> </tr> </table> <p>(ii) Mechanical analysis : Not available.</p>	Total soluble salts	N	P <sub>2</sub> O <sub>5</sub>	K <sub>2</sub> O	Available.	(mill/c.c.)		varies from	—		0.200 to 0.550	3.50 to	9.6 to	310			8.26	140.0	860		<table style="width: 100%; border-collapse: collapse;"> <tr><td>June</td><td style="text-align: right;">4.63</td></tr> <tr><td>July</td><td style="text-align: right;">4.50</td></tr> <tr><td>Aug.</td><td style="text-align: right;">3.78</td></tr> <tr><td>Sept.</td><td style="text-align: right;">6.10</td></tr> <tr><td>Oct.</td><td style="text-align: right;">3.55</td></tr> <tr><td>Nov.</td><td style="text-align: right;">0.39</td></tr> <tr><td>Dec.</td><td style="text-align: right;">0.22</td></tr> <tr><td>Jan.</td><td style="text-align: right;">0.17</td></tr> <tr><td>Feb.</td><td style="text-align: right;">0.15</td></tr> <tr><td>March</td><td style="text-align: right;">0.26</td></tr> <tr><td>April</td><td style="text-align: right;">0.67</td></tr> <tr><td>May</td><td style="text-align: right;">1.20</td></tr> <tr><td colspan="2" style="border-top: 1px solid black;">Total</td><td style="text-align: right;">26.59</td></tr> <tr><td colspan="2">Av. of 26 years 1931 to 1956.</td><td></td></tr> </table>	June	4.63	July	4.50	Aug.	3.78	Sept.	6.10	Oct.	3.55	Nov.	0.39	Dec.	0.22	Jan.	0.17	Feb.	0.15	March	0.26	April	0.67	May	1.20	Total		26.59	Av. of 26 years 1931 to 1956.			<p>There are two wells irrigating about 8 acres of land. Facilities available from 1950 for 4 acres and from 1955 for another 4 acres. The question of drainage is not a problem since it is a dry area. Hume pipes are laid-out here and there to drain the excessive rain water.</p>	<p>33—Jowar 11—Wheat 15—Gram 5—<i>Chinamug</i> 4—Groundnut ----- 68—Total. 1—Rotational expt. from 1946—47 to 1955—56.</p>	<p>The earlier owned land is fairly levelled and fields are block banded while the recently owned land is contour banded. The soils in the fields of the earlier owned land are relatively deep while soils in the new area are of lighter type. The general slope of the fields is more or less in one direction.</p>
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STATEMENT SHOWING DETAILS OF EXPERIMENTAL STATIONS  
MAHARASHTRA (Contd.)

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24.	Nagpur :—Agri. College Farm, (Govt. Exptl. Farm) 1½ miles from Nagpur Rly. Stn. Year of est. 1871—72. It represents cotton tract. Major crops :—Jowar, Wheat, Cotton, Groundnut.	<p>1. Soil type :—Heavy black cotton soil.</p> <p>2. Depth :—Few feet to about 10' (varies from field to field).</p> <p>3. Structure :—Contains Morand No. 1 (clay loam) and Morand No. 2 (lighter type than 1.) and is representative of the tract. Soil contains good percentage of limestone and pebbles.</p> <p>4. Soil analysis :—</p> <p>(i) Chemical analysis :—</p> <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left;">Depth</th> <th style="text-align: center;">CaCO<sub>3</sub></th> <th style="text-align: center;">P<sub>2</sub>O<sub>5</sub></th> <th style="text-align: center;">N</th> </tr> </thead> <tbody> <tr> <td>(a) 0. 6"</td> <td style="text-align: center;">6.73</td> <td style="text-align: center;">0.045</td> <td style="text-align: center;">0.051</td> </tr> <tr> <td>(b) 0.12"</td> <td style="text-align: center;">7.61</td> <td style="text-align: center;">0.051</td> <td style="text-align: center;">0.046</td> </tr> </tbody> </table> <p>(ii) Mechanical analysis :—</p> <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left;">Coarse sand</th> <th style="text-align: center;">Fine sand</th> <th style="text-align: center;">Silt</th> <th style="text-align: center;">Clay</th> </tr> </thead> <tbody> <tr> <td>(a) 2.69</td> <td style="text-align: center;">9.73</td> <td style="text-align: center;">21.70</td> <td style="text-align: center;">54.96</td> </tr> <tr> <td>(b) 3.22</td> <td style="text-align: center;">9.02</td> <td style="text-align: center;">22.40</td> <td style="text-align: center;">54.59</td> </tr> </tbody> </table>	Depth	CaCO <sub>3</sub>	P <sub>2</sub> O <sub>5</sub>	N	(a) 0. 6"	6.73	0.045	0.051	(b) 0.12"	7.61	0.051	0.046	Coarse sand	Fine sand	Silt	Clay	(a) 2.69	9.73	21.70	54.96	(b) 3.22	9.02	22.40	54.59	<p>June 6.04</p> <p>July 13.32</p> <p>Aug. 9.98</p> <p>Sept. 6.15</p> <p>Oct. 2.27</p> <p>Nov. 0.58</p> <p>Dec. 0.12</p> <p>Jan. 0.66</p> <p>Feb. 0.27</p> <p>Mar. 0.72</p> <p>April 0.73</p> <p>May 0.74</p> <p style="text-align: right;">Total 41.48</p> <p>Av. 10 years 1948 to 1950.</p>	Irrigation facilities available from 1953. There is proper drainage system in some fields.	<p>16—Wheat. ✓</p> <p>15—Jowar. ✓</p> <p>9—Cotton. ✓</p> <p>2—Groundnut. ✓</p> <p>1—Tur.</p> <p>1—Gram.</p> <p>1—Mixed cropping.</p> <hr style="width: 50%; margin-left: 0;"/> <p>45—Total.</p>	<p>The farm land is at present divided into 4 blocks.</p> <p>(i) Main block 94.98 ac.</p> <p>(ii) Dairy block 78.25 ac.</p> <p>(iii) Kactu block 43.83 ac.</p> <p>(iv) Shankar Nagar 27.70 ac.</p> <hr style="width: 50%; margin-left: 0;"/> <p>Total 244.76 ac.</p> <p>Out of this area, 203.47 acres are under cultivation. The area of main block is fairly levelled.</p>
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STATEMENT SHOWING DETAILS OF EXPERIMENTAL STATIONS.

MAHARASHTRA (Contd.)

1	2	3	4	5	6	7
25.	<p>Nanded :—Cotton Res. Stn. Dist. Nanded. Nanded Central Rly. Year of est. 1941 —42. It represents cotton growing tract of Marathawada region. Major crop :— Cotton.</p>	<p>1. Soil type :— 2. Depth :—Soil depth is more than 45". 3. Colour :—Dark grey brown. 4. Structure :—0"—6"—Cloddy—Clods break- ing to crumbs. 5. Soil analysis :— (i) Chemical analysis :— pH Soluble salts Org. carbon N(lb./ac.) Avl. P<sub>2</sub>O<sub>5</sub> 7.75 0.175 0.42 159.6 6.4 (ii) Mechanical analysis :—(%) Clay Silt CaCo<sub>3</sub> Total sand 56.10 24.91 3.00 1.5—9.9.</p>	<p>June 5.04 July 12.19 Aug. 10.18 Sept. 8.84 Oct. 2.37 Nov. 0.34 Dec. 0.01 Jan. 0.07 Feb. 0.44 Mar. 0.22 Apr. 0.70 May 0.57 <hr/>Total 41.47</p>	<p>There is a well fitted with an electrical motor and pump which can hardly irrigate <math>\frac{1}{2}</math> acre in summer. There is no proper drainage system. Only minor drains are pro- vided which do not fully serve the purpose.</p>	<p>2—Jowar 20 - Cotton <hr/>22—Total</p>	<p>The farm is situated at a lower level com- pared with the adjoin- ing cultivators' fields. There is a P.W.D. road on one side of the farm and a railway line on the other, which are at a higher level than that of the farm. Excess rain water from the railway line and from some of the cultivators' fields rushes into the farm area. Though drains are provided, yet in some plots crops are affected by water logging. How- ever, only those plots which are less affect- ed are selected for experimental purpose.</p>



STATEMENT SHOWING DETAILS OF EXPERIMENTAL STATIONS  
MAHARASHTRA (Contd.)

1.	2.	3.	4.	5.	6.	7.																										
				Canal																												
26.	Niphad :—Agri. Res. Stn. Dist. Nasik. $\frac{1}{4}$ mile from Niphad Rly. Stn. It represents Deccan tract. Major crops :—Bajra, Tur, Wheat, Gram etc.	<p>1. Soil type :—Clayey loam.</p> <p>2. Soil analysis :—</p> <p>(i) Chemical analysis :—</p> <table style="width: 100%; border: none;"> <tr> <td style="width: 15%;">Moisture</td> <td style="width: 10%;">N</td> <td style="width: 15%;">Soluble salts</td> <td style="width: 10%;"><math>\text{CaCO}_3</math></td> </tr> <tr> <td>8.6%</td> <td>0.06%</td> <td>0.102</td> <td>8.054</td> </tr> <tr> <td></td> <td></td> <td style="text-align: center;">Available</td> <td></td> </tr> <tr> <td></td> <td style="text-align: center;"><math>\text{P}_2\text{O}_5</math></td> <td></td> <td style="text-align: center;"><math>\text{K}_2\text{O}</math></td> </tr> <tr> <td></td> <td style="text-align: center;">0.004</td> <td></td> <td style="text-align: center;">0.014</td> </tr> </table> <p>(ii) Mechanical analysis :—</p> <table style="width: 100%; border: none;"> <tr> <td style="width: 30%;">Coarse sand</td> <td style="width: 30%;">Fine sand</td> <td style="width: 40%;">Silt+clay</td> </tr> <tr> <td>6.07%</td> <td>43.86%</td> <td>50.07%</td> </tr> </table>	Moisture	N	Soluble salts	$\text{CaCO}_3$	8.6%	0.06%	0.102	8.054			Available			$\text{P}_2\text{O}_5$		$\text{K}_2\text{O}$		0.004		0.014	Coarse sand	Fine sand	Silt+clay	6.07%	43.86%	50.07%	24.12" Range : 14.17" to 41.03" received in 62 days.	Irrigation facilities available since 1947. There is no proper drainage system.	<p>15—Wheat</p> <p>18—<i>Bajra</i></p> <p>4—<i>Chinamug</i></p> <p>6—Gram</p> <p>2—Mixed cropping</p> <hr style="width: 100%;"/> <p>45—Total.</p>	—
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MAHARASHTRA (Contd.)**

1	2	3	4	5	6	7																																																				
27.	Padegaon :—Agr. Res. Stn. Dist. N. Satara, 4 miles from Nira Rly. Stn. Year of est. 1932. It represents Deccan canal tract. Main crops :— Sugarcane.	<p>1. Soil type :—B type i.e. Deep black soil, tropical tchernosem.</p> <p>2. Depth :—Invariably more than 48".</p> <p>3. Colour :—Greyish brown colour of surface soil. Sub soil colour is reddish brown.</p> <p>4. Structure :—Clods breaking in crumbs.</p> <p>5. Soil analysis :—</p> <p>(i) Chemical analysis :—TOTAL</p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="text-align: left;">pH</td> <td style="text-align: left;">Total salts</td> <td style="text-align: left;">Humus</td> <td style="text-align: left;">P<sub>2</sub>O<sub>5</sub></td> <td style="text-align: left;">K<sub>2</sub>O</td> </tr> <tr> <td>8.5 to 8.8</td> <td>0.3 to 2.0</td> <td>1%</td> <td>0.042</td> <td>0.3 to 0.4</td> </tr> <tr> <td style="text-align: center;">N</td> <td style="text-align: center;">Ex. Ca</td> <td colspan="3" style="text-align: center;">Ca saturation</td> </tr> <tr> <td>0.05</td> <td>26—45 m.e.</td> <td colspan="3">50 to 70%</td> </tr> </table> <p>(ii) Mechanical analysis.</p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="text-align: left;">Clay</td> <td style="text-align: left;">Silt</td> <td style="text-align: left;">Sand</td> <td style="text-align: left;">Free CaCO<sub>3</sub></td> </tr> <tr> <td>56—62%</td> <td>10—20%</td> <td>6—10%</td> <td>8—15%</td> </tr> </table> <p style="text-align: center;"><b>'F' TYPE SOIL</b></p> <p>1. Soil type :—F type. High level, low lime brown loamy soil.</p> <p>2. Depth :—Shallow, 12" to 15".</p> <p>3. Colour :—Light brown to brown.</p> <p>4. Structure :—Loose granular.</p> <p>5. Soil analysis :—</p> <p>(i) Chemical analysis.</p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="text-align: left;">Free lime</td> <td style="text-align: left;">Humus</td> <td style="text-align: left;">Ex. Ca</td> <td style="text-align: left;">pH</td> <td style="text-align: left;">Total K<sub>2</sub>O</td> </tr> <tr> <td>5%</td> <td>0.59%</td> <td>45 m.e.%</td> <td>8.1</td> <td>0.087%</td> </tr> <tr> <td style="text-align: left;">Avl. K<sub>2</sub>O</td> <td colspan="2" style="text-align: left;">Total P<sub>2</sub>O<sub>5</sub></td> <td colspan="2" style="text-align: left;">Avl. K<sub>2</sub>O</td> </tr> <tr> <td>0.021%</td> <td colspan="2">0.360</td> <td colspan="2">0.01%</td> </tr> </table> <p>(ii) Mechanical analysis:</p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="text-align: left;">Clay</td> <td style="text-align: left;">Silt</td> </tr> <tr> <td>46—56%</td> <td>15—20%</td> </tr> </table>	pH	Total salts	Humus	P <sub>2</sub> O <sub>5</sub>	K <sub>2</sub> O	8.5 to 8.8	0.3 to 2.0	1%	0.042	0.3 to 0.4	N	Ex. Ca	Ca saturation			0.05	26—45 m.e.	50 to 70%			Clay	Silt	Sand	Free CaCO <sub>3</sub>	56—62%	10—20%	6—10%	8—15%	Free lime	Humus	Ex. Ca	pH	Total K <sub>2</sub> O	5%	0.59%	45 m.e.%	8.1	0.087%	Avl. K <sub>2</sub> O	Total P <sub>2</sub> O <sub>5</sub>		Avl. K <sub>2</sub> O		0.021%	0.360		0.01%		Clay	Silt	46—56%	15—20%	<p>June 2.61</p> <p>July 2.95</p> <p>Aug. 1.80</p> <p>Sept. 4.03</p> <p>Oct. 3.05</p> <p>Nov. 0.75</p> <p>Dec. 0.05</p> <p>Jan. 0.16</p> <p>Feb. 0.03</p> <p>Mar. 0.22</p> <p>April 0.31</p> <p>May 0.93</p> <hr style="width: 50%; margin-left: auto; margin-right: 0;"/> <p>Total 17.00</p> <p>Average of 24 years.</p>	<p>Irrigation from Nira Right Bank canal, facilities available from 1932. Drainage capacity fairly good. In some plots drains are also dug for drainage.</p>	<p>10—Paddy</p> <p>5—Jowar</p> <p>12—Wheat</p> <p>6—Cotton</p> <p>3—Groundnut</p> <p>40—Sugarcane</p> <hr style="width: 50%; margin-left: auto; margin-right: 0;"/> <p>76—Total.</p>	—
pH	Total salts	Humus	P <sub>2</sub> O <sub>5</sub>	K <sub>2</sub> O																																																						
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STATEMENT SHOWING DETAILS OF EXPERIMENTAL STATIONS  
MAHARASHTRA (Contd.)

1	2	3	4	5	6
28.	Panvel: Agri. Res. Stn. Dist. Kolaba; Karjat Rly. Stn. Year of est. 1943. It represents salt land regions of Thana, Kolaba and Ratnagiri. Major crop: Paddy.	1. Soil type and Colour: Dark grey to medium black. 2. Structure: Poor and non-retentive. 3. Soil analysis: Highly Saline    Moderately saline Total sol. salts    1.5                    0.61 Carbonates            —                    — Bi-carb                0.01                — Chlorides             0.74                — pH.                     7.5                  7.3 (ii) Mechanical analysis: Not available.	June    28.43 July     49.02 Aug.    39.23 Sept.   17.21 Oct.    3.82 Nov.    0.61 Dec. to May     Nil <hr/> Total    138.32 Av. of 7 years 1952 to 1958.	Nil	2—Paddy
29.	Parbhani: M. Agri. College Farm, 1 furlong from Parbhani Rly. Stn. Year of est. 1952. It represents cotton tract. Main crops: Jowar, Groundnut, Pulse and Wheat.	1. Soil type: Medium black cotton soil. 2. Depth: 3' to 4'. 3. Colour—Black. 4. Structure: Coarse crup and plasty. 5. Soil analysis: (i) Chemical analysis: N: 0.05 to 0.09%; Avl. P <sub>2</sub> O <sub>5</sub> : 6.40 to 8.00; Lime Reserve: 2.24 to 5.68; Total sol. salts: 0.10 to 0.20; pH: 8.1 to 8.2. (ii) Mechanical analysis: Coarse sand: 2.19 to 6.60; Fine sand: 20.71 to 41.50; Silt and clay: 56.50 to 81.60.	June    5.74 July     8.70 Aug.    4.65 Sept.   7.33 Oct.    3.66 Nov.    1.53 Dec. to April   Nil May     0.48 <hr/> Total    32.09 Av. of 6 years 1948 to 1953.	Well irrigation since 1929. There are 7 wells on the farm. No proper drainage system. Excess water passes through trenches,	12—Jowar 3—Wheat 5—Cotton 2—Groundnut. <hr/> 22—Total  The natural slope on the farm is east to west. On the West and south of the from, a nalla runs.

**STATEMENT SHOWING DETAILS OF EXPERIMENTAL STATIONS**  
**MAHARASHTRA (Contd.)**

1	2	3	4	5	6	7																																
30.	Phondaghat : Agri. Res. Stn. Dist : Ratnagiri. 57 miles from Kolhapur Rly. Stn. Year of est. 1947. It represents heavy rainfall tract. Major crop : Paddy.	1. Soil type : Loams derived from gneiss and laterite. 2. Depth : 6" to 2½". 3. Colour : Medium black to medium red. 4. Structure : Loams of laterites and gneiss and sand stones. 5. Soil analysis : Not available.	<table style="width: 100%; border-collapse: collapse;"> <tr><td style="width: 50%;">June</td><td style="width: 50%; text-align: right;">46.72</td></tr> <tr><td>July</td><td style="text-align: right;">69.45</td></tr> <tr><td>Aug.</td><td style="text-align: right;">63.62</td></tr> <tr><td>Sept.</td><td style="text-align: right;">19.03</td></tr> <tr><td>Oct.</td><td style="text-align: right;">13.59</td></tr> <tr><td>Nov.</td><td style="text-align: right;">3.87</td></tr> <tr><td>Dec. to Feb.</td><td style="text-align: right;">Nil</td></tr> <tr><td>March</td><td style="text-align: right;">0.40</td></tr> <tr><td>April</td><td style="text-align: right;">0.80</td></tr> <tr><td>May</td><td style="text-align: right;">4.65</td></tr> <tr><td colspan="2" style="border-top: 1px solid black;">Total</td></tr> <tr><td colspan="2" style="text-align: right;">222.13</td></tr> <tr><td colspan="2">Av. of 3 years 1956 to 1958.</td></tr> </table>	June	46.72	July	69.45	Aug.	63.62	Sept.	19.03	Oct.	13.59	Nov.	3.87	Dec. to Feb.	Nil	March	0.40	April	0.80	May	4.65	Total		222.13		Av. of 3 years 1956 to 1958.		Nil. No proper drainage system.	<table style="width: 100%; border-collapse: collapse;"> <tr><td style="width: 50%;">9—Paddy</td><td style="width: 50%;"></td></tr> <tr><td>1—Tapioca</td><td></td></tr> <tr><td colspan="2" style="border-top: 1px solid black;">10—Total</td></tr> </table>	9—Paddy		1—Tapioca		10—Total		Low lying area ; situat- ed at the foot of the Western Ghats.
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STATEMENT SHOWING DETAILS OF EXPERIMENTAL STATIONS  
MAHARASHTRA (Contd.)

1	2	3	4	5	6	7
31.	<p>Poona : Agri. College Farm, Poona. Year of est. 1906. It represents Deccan tract. Major crops : Sugarcane, Turmeric, Cotton and various vegetable crops.</p>	<p>1. Soil type : Medium black soil, originated from Deccan trap. 2. Depth : 3' to 4'. 3. Colour : Medium black. 4. Structure : Grumb. 5. Soil analysis : (i) Chemical analysis : Loss on ignition Silica and insoluble silicates 10.17%                      66.07% Lime                              Lime 3.74%                              0.14 Potash                              P<sub>2</sub>O<sub>5</sub>                              N 0.14                              1.18%                              0.07% (ii) Mechanical analysis : Coarse sand    Fine sand    Coarse silt 6.96%            25.91%    25.39% Med. silt        Fine silt     Clay and fine silt 7.90%            8.11%        25.73%</p>	<p>June      4.10 July       6.26 Aug.       4.34 Sept.      4.41 Oct.       4.70 Nov.       0.75 Dec.       0.03 Jan.       Nil Feb.       Nil March     0.76 April      1.60 May       0.68 <hr/>Total      27.63</p>	<p>Wells and Mutha left bank canal. Facilities available since inception. No drainage system.</p>	<p>9—Jowar 1—Wheat 1—Bajra 7—Cotton 1—Groundnut 2—Guara 3—Garlic 2—Ginger 2—Onion 2—Tomato 3—Turmeric 2—Chillies 2—Lucerne and                     Berseem <hr/>37—Total 4—Mixed cropping</p>	<p>Mostly levelled with slightly natural slope facilitating the drainage.</p>
32.	<p>Ratnagiri : Agri. Res. Stn., 82 miles from Kolhapur Rly. Stn. year of est. 1953. Major crop :—Paddy.</p>	<p>1. Soil type :—Red loam. No other information,</p>	<p>Normal annual rainfall 105".</p>		<p>22 Paddy. 6—Wal. <hr/>28—Total</p>	
33.	<p>Shahada :—Crop Breeding Stn.</p>				<p>2—Wheat. 2—Groundnut <hr/>4—Total</p>	

**STATEMENT SHOWING DETAILS OF EXPERIMENTAL STATIONS  
MAHARASHTRA (Contd.)**

1.	2	3	4	5	6	7
34.	Shirgaon Farm, Ratnagiri : Year of est ; 1953. It represents Konkan tract. Major crops : Paddy. Address : A.R.S. Ratnagiri (Shirgaon).	1. Soil type : 2. Depth : About 10". 3. Colour: Brown. 4. Structure : 5. Soil analysis : (i) Chemical analysis : N % stone on Lime requirements   pH original   in ton/ac of   values. matter.    CaCO <sub>3</sub>	June 36.68 July 26.98 Aug. 51.70 Sept. 7.93 Oct. 3.45 Nov. 0.20 Dec. to April Nil May 0.82 ----- Total 127.76 Figures for 1958-59.	Irrigation facilities available since 1957.	21—Paddy. 4—Wal. ----- 25—Total.	The farm is well levelled with good approach roads to the experimental plots. It is a typical korkan type area surrounded by hills and it is about 2 miles from the sea shore.
	Mala or low lying.	12.65      4.4      5.0				
	Kurjat or high lying 0.10" (analysis for plot No. 15—1)	8.13      3.75      5.0				
		(ii) Mechanical analysis :—Not available.				

**STATEMENT SHOWING DETAILS OF EXPERIMENTAL STATIONS**  
**MAHARASHTRA (Contd.)**

1	2	3	4	5	6	7
35.	<p><b>Sholapur : Agri. Res. Stn.</b> Address :— Agri. Officer I/c. A.R.S. Sholapur. Established in 1933. It represents scarcity or dry tract. Major crops :— <i>Bajra</i>, Pulses and Jowar. 5 miles east of Sholapur town.</p>	<p>1. Soil type :—Black soil (regun) formed from basaltic trap rock. 2. Depth :—Shallow (0-9"). Moderately deep (18"-36"). Deep (more than 36"). 3. Colour :—Brown to dark brown. Black in deeper phases. 4. Structure :—Brumb to blocky. 5. Soil analysis :— (i) Chemical analysis :— pH      Total soluble salts      CaCO<sub>3</sub> 8.2 to 8.5      0.2 to 0.4%      2% to 5% N      Org. Carbon      Avl. P<sub>2</sub>O<sub>5</sub> 0.04 to 0.05%      0.5 to 0.7%      0.015 to 0.035% Avl. K<sub>2</sub>O      Ex. Ca      Ex. Mg 0.025 to 0.035 ; 45 to 55 m.e. % ; 3 to 8 m.e. % Ex. Na+K 0.5 to 1.5 m.e. % (ii) Mechanical analysis :— Coarse sand      Fine sand      Silt      Clay 1% to 3%      3% to 5%      10% to 18%      45% to 65%</p>	<p>June      4.03 July      4.85 Aug.      5.79 Sept.      7.00 Oct.      3.30 Nov.      0.62 Dec.      0.23 Jan.      0.18 Feb.      0.07 Mar.      0.34 April      0.53 May      1.14 <hr/>Total      28.08 Av. of 25 years 1934-35 to 1958-59.</p>	<p>No irrigation facilities and no drainage system.</p>	<p>43—Jowar. 7—Bajra. 7—Groundnut. 4—Gram. <hr/>61—Total. +2—Rotational experiments. 1. 1949-50 to 1959-60 2. 1949-50 contd.</p>	<p>Undulating tract.</p>

STATEMENT SHOWING DETAILS OF EXPERIMENTAL STATIONS  
MAHARASHTRA (Contd)

1	2	3	4	5	6	7																																						
36.	Sindewahi : Govt. Seed and Dem. farm. Distt. Chanda. 2 miles from Sindewahi Rly. Stn. Year of est. 1912-13. It represents paddy growing tract. Major crop :—Paddy.	1. Soil type :—Sandy loam to sandy. 2. Depth : 6"-2'. 3. Colour :—Brown to black. 4. Soil analysis :—Not available.	<table style="width: 100%; border-collapse: collapse;"> <tr><td style="width: 50%;">June</td><td style="width: 50%; text-align: right;">10.01</td></tr> <tr><td>July</td><td style="text-align: right;">19.69</td></tr> <tr><td>Aug.</td><td style="text-align: right;">12.71</td></tr> <tr><td>Sept.</td><td style="text-align: right;">14.59</td></tr> <tr><td>Oct.</td><td style="text-align: right;">2.96</td></tr> <tr><td>Nov.</td><td style="text-align: right;">0.58</td></tr> <tr><td>Dec.</td><td style="text-align: right;">0.01</td></tr> <tr><td>Jan.</td><td style="text-align: right;">0.44</td></tr> <tr><td>Feb.</td><td style="text-align: right;">0.18</td></tr> <tr><td>Mar.</td><td style="text-align: right;">0.60</td></tr> <tr><td>April</td><td style="text-align: right;">0.55</td></tr> <tr><td>May</td><td style="text-align: right;">0.67</td></tr> <tr><td colspan="2"><hr/></td></tr> <tr><td>Total</td><td style="text-align: right;">62.69</td></tr> <tr><td colspan="2">Av. of five years from 1954-55 to 1958-59,</td></tr> </table>	June	10.01	July	19.69	Aug.	12.71	Sept.	14.59	Oct.	2.96	Nov.	0.58	Dec.	0.01	Jan.	0.44	Feb.	0.18	Mar.	0.60	April	0.55	May	0.67	<hr/>		Total	62.69	Av. of five years from 1954-55 to 1958-59,		Tank irrigation since inception. No drainage system.	<table style="width: 100%; border-collapse: collapse;"> <tr><td style="width: 50%;">15—Paddy.</td><td style="width: 50%;"></td></tr> <tr><td>2—Wheat.</td><td></td></tr> <tr><td colspan="2"><hr/></td></tr> <tr><td>17—Total.</td><td></td></tr> </table>	15—Paddy.		2—Wheat.		<hr/>		17—Total.		Area sufficiently levelled.
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STATEMENT SHOWING DETAILS OF EXPERIMENTAL STATIONS  
MAHARASHTRA (Contd.)

1.	2.	3.	4.	5.	6.	7.																																																						
37.	Tharsa : Govt. Exptl. Farm. Distt. Nagpur, 1 mile from Tharsa Rly. Stn. Year of est. 1910-11. It represents both paddy and wheat tract. Main crops : Jowar, Wheat and Paddy.	<p>1. Soil type : Second class black (heavy) soil known as Morand II.</p> <p>2. Depth : 3' to 4'.</p> <p>3. Colour : Black.</p> <p>4. Soil analysis :</p> <p>(i) Chemical analysis :</p> <table style="margin-left: 20px;"> <tr> <td>Field No.</td> <td>Org. Carbon</td> <td>N</td> </tr> <tr> <td>1</td> <td>0.54%</td> <td>162 lb./ac.</td> </tr> <tr> <td>5</td> <td>0.57%</td> <td>392 lb./ac.</td> </tr> <tr> <td>4</td> <td>0.51%</td> <td>168 lb./ac.</td> </tr> </table> <table style="margin-left: 20px;"> <tr> <td>Field No.</td> <td>Avl. P<sub>2</sub>O<sub>5</sub></td> <td>Avl. K<sub>2</sub>O</td> </tr> <tr> <td>1</td> <td>30.8 lb./ac.</td> <td>—</td> </tr> <tr> <td>5</td> <td>36.8 lb./ac.</td> <td>—</td> </tr> <tr> <td>4</td> <td>8.8 lb./ac.</td> <td>—</td> </tr> </table> <table style="margin-left: 20px;"> <tr> <td>Field No.</td> <td>pH value</td> <td>Salts</td> <td>CaCO<sub>3</sub></td> </tr> <tr> <td>1</td> <td>7.8</td> <td>0.75%</td> <td>1.18%</td> </tr> <tr> <td>5</td> <td>7.85</td> <td>1.60%</td> <td></td> </tr> <tr> <td>4</td> <td>7.8</td> <td>0.40%</td> <td></td> </tr> </table> <p>(ii) Mechanical analysis :</p> <table style="margin-left: 20px;"> <tr> <td>Stones above 3 mm.</td> <td>Fine gravel 3 to 1 mm.</td> <td>Coarse sand</td> <td>Fine sand</td> </tr> <tr> <td>—</td> <td>4.76%</td> <td>16.45%</td> <td>11.53%</td> </tr> </table> <table style="margin-left: 20px;"> <tr> <td>Silt</td> <td>Fine silt</td> <td>Clay</td> </tr> <tr> <td>13.16%</td> <td>15.78%</td> <td>34.79%</td> </tr> </table>	Field No.	Org. Carbon	N	1	0.54%	162 lb./ac.	5	0.57%	392 lb./ac.	4	0.51%	168 lb./ac.	Field No.	Avl. P <sub>2</sub> O <sub>5</sub>	Avl. K <sub>2</sub> O	1	30.8 lb./ac.	—	5	36.8 lb./ac.	—	4	8.8 lb./ac.	—	Field No.	pH value	Salts	CaCO <sub>3</sub>	1	7.8	0.75%	1.18%	5	7.85	1.60%		4	7.8	0.40%		Stones above 3 mm.	Fine gravel 3 to 1 mm.	Coarse sand	Fine sand	—	4.76%	16.45%	11.53%	Silt	Fine silt	Clay	13.16%	15.78%	34.79%	N.A.	Khindri tank of Ramtek since 1929. No drainage system.	<p>3—Paddy</p> <p>3—Jowar</p> <p>9—Wheat</p> <hr/> <p>15—Total</p> <p>1—Mixed cropping</p> <hr/> <p>16—Total</p>	N.A.
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**MAHARASHTRA (Contd.)**

1	2	3	4	5	6	7
38.	Vadgaon : Agri. Res. Stn., Distt. Poona. 200 yards from Vadgaon Rly. Stn. Year of est 1940 Major crops : Paddy and Gram. It represents transitory tract between Konkan and Desh.	1. Soil type : Low to medium black. 2. Depth : 4" to 20". 3. Colour : Greyish to Medium black. 4. Structure : Coarse to medium. 5. Soil analysis : Not available.	June 9.23 July 23.29 Aug. 15.19 Sept. 0.82 Oct. 3.84 Dec. to March Nil April 0.63 May — <hr/> Total 53.00 Average of five years data.	Nil. No drainage system.	17—Paddy 3—Gram. <hr/> 20—Total	Nil.
39.	Washim : Govt. Seed and dem. farm. Distt. Akola. 52 miles from Akola Rly. Stn. Year of est. 1919. Major crops : Jowar, Wheat, Ground- nut, Cotton and Miscellaneous crops. It represents Vidarbha region.	1. Soil type : $\frac{1}{3}$ area is black cotton soil and the $\frac{2}{3}$ area is sandy loam.	Normal annual rainfall 30".	Well irrigation since 1919. Surface drainage system exists.	6—Jowar 4—Wheat 7—Cotton 3—Groundnut <hr/> 20—Total	

STATEMENT SHOWING DETAILS OF EXPERIMENTAL STATIONS.

MAHARASHTRA (Contd.)

1	2	3	4	5	6	7
40.	Yeotmal : Agri. Res. Stn. (1926), and Yeotmal : Govt. Seed and demonstration farm (1948) Rly. Stn. Yeotmal. It represents Ghat tract which includes Yeotmal. Darwhar, Pusad, Kelapur and Wani taluks of Akola Distt. Major crops : Cotton, Jowar and Groundnut.	1. Soil type : Black cotton soil. 2. Depth : 1' to 3'. 3. Colour : Brown to black. 4. Structure : Compact. 5. Soil analysis : (i) Chemical analysis : pH Soluble salts Org. Carbon N <sub>2</sub> (lb./ac.) as conductivity 7.7 0.95 0.4881 189.5 Avl. P <sub>2</sub> O <sub>5</sub> (lb./ac.) Avl. K <sub>2</sub> O 16.3 High (ii) Mechanical analysis : Not available.	June 6.80 July 12.29 Aug. 10.37 Sept. 8.11 Oct. 2.16 Nov. 0.42 Dec. 0.10 Jan. 0.23 Feb. 0.18 Mar. 0.59 April 0.57 May 0.51 <hr/> Total 42.53	Nil. No drainage system.	5—Jowar 6—Cotton 1—Groundnut <hr/> 12—Total	Alt. 1481 a.s. 1. There are hard sub-soil mother rocks which affect the percolation thus causing water lodging in some por- tions.

## Soil Analysis of Agri. Res. Stn., Karjat.

## B. Soils.

(a) Broad soil types	—	Sandy loam to clay loam.
(i) Depth	—	Varying from 6" to 2'.
(ii) Colour	—	Grey with black when dry and dark grey when wet.
(iii) Structure	—	Cloddy.

(b) Chemical analysis (if available)  
(Indicate the % of various constituents analysed for)

Chemical Analysis.	Depth	
	0—5"	5"—20"
Chemical Analysis.	The soils are well drained but there is no drainage system.	
Max. retentive capacity	73.69	74.34
Moisture equivalent	36.94	36.79

Chemical	Depth	
	percent on fine matter	
1. Moisture.	5.48	6.18
2. Loss on Ignition.	6.58	6.24
3. Acid insoluble matter.	64.94	64.72
4. Iron oxide (Fe <sub>2</sub> O <sub>3</sub> ).	10.87	10.24
5. Aluminium oxide (Al <sub>2</sub> O <sub>3</sub> ).	10.87	9.34
6. Lime (CaO).	0.88	0.90
7. Magnesia (MgO).	0.71	0.52
8. Potash (K <sub>2</sub> O).	0.10	0.10
9. Phosphoric acid (P <sub>2</sub> O <sub>5</sub> ).	0.08	0.08
10. Sulphate (SO <sub>3</sub> ).	0.32	0.18
11. Nitrogen.	0.08	0.77
12. Organic Carbon.	1.23	1.13
13. C/N ratio.	14.47	14.67
14. Humus.	0.35	0.38

Available Constituents	Mgm—Percent.	
Phosphoric acid (P <sub>2</sub> O <sub>5</sub> ).	12.73	13.92
Potash (K <sub>2</sub> O).	Traces.	Traces.

Exchangeable bases	Miliequivalents percent.	
Exchangeable Calcium.	26.80	25.13
Exchangeable Magnesium.	15.33	12.78
Exchangeable Potassium.	0.33	0.24
Exchangeable Sodium.	2.83	2.11
Total exchangeable bases.	45.29	40.26
pH.	6.03	6.06

## (e) Mechanical analysis (Indicate the % of the various constituents analysed for):

## (e) Mechanical analysis.

1. Moisture.	—	6.15	6.53
2. Carbonate (Ca CO <sub>3</sub> ).	—	0.01	1.01
3. Organic Matter.	—	1.99	1.82
4. Clay.	—	20.90	19.10
5. Silt.	—	31.60	22.25
6. Fine sand (by difference).	—	28.57	27.51
7. Coarse sand.	— — —	10.78	22.78

Crop :- Paddy (*Kharif*)  
Site :- Agri. Res. Stn., Akluj.

Ref:- Mh. 48(79).  
Type :- 'M'.

Object :—To study the effect of Bone-super top dressed on Paddy.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) Sugarcane. (c) 375 lb./ac. of N as A/S + G.N.C. in 1 : 1 ratio. (ii) (a) 'D' type. (b) Refer soil analysis, Akluj. (iii) 18.6.1948. (iv) (a) Ploughing, and harrowing. (b) to (e) N.A. (v) Nil. (vi) Local. (vii) Irrigated. (viii) Weeding. (ix) 21.78" (18.6.1948 to 16.11.1948). (x) 16.11.1948.

2. TREATMENTS :

1. 56 lb./ac. of Bone-super.
2. 56 lb./ac. of Bone-super + 56 lb./ac. of A/S.
3. 56 lb./ac. of A/S.
4. 150 lb./ac. of G.N.C.
5. No manure.

3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 6. (iv) (a) N.A. (b) 1/80 ac. (v) N.A. (vi) Yes.

4. GENERAL :

(i) No lodging. (ii) Nil. (iii) Yield of grain. (iv) (a) 1946—1948. (b) No. (c) Nil. (v) (a) Kopergaon, Deolali, Lakhampur. (b) N.A. (vi) Nil. (vii) N.A.

5. RESULTS :

- (i) 848 lb./ac.
- (ii) 238.8 lb./ac.
- (iii) Treatments do not differ significantly.
- (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	853
2.	880
3.	946
4.	813
5.	746
S.E./mean	= 97.5 lb./ac.

Crop :- Paddy. (*Kharif*).  
Site :- Rice Breeding Stn., Chiplun.

Ref :- Mh. 52(320).  
Type :- 'M'.

Object :—To study the effect of Di-calcium phosphate as compared to B.M. on yield of Paddy.

1. BASAL CONDITIONS :

(i) (a) Paddy-Paddy. (b) Paddy. (c) Nil. (ii) (a) Laterite soil. (b) N.A. (iii) 8.6.1952/28.7.1952. (iv) (a) N.A. (b) Transplanting. (c) —. (d) 10"×10". (e) 8 seedlings/bunch. (v) 5 C.L./ac. of F.Y.M. + 32 lb./ac. of N as A/S applied on 25.7.1952. (vi) Varangal—487. (vii) Unirrigated. (viii) 2 weedings. (ix) N.A. (x) 1.11.1952.

2. TREATMENTS :

1. 32 lb./ac. of P<sub>2</sub>O<sub>5</sub> as Di-calcium phosphate.
2. 32 lb./ac. of P<sub>2</sub>O<sub>5</sub> as B.M.  
P<sub>2</sub>O<sub>5</sub> applied on 25.7.1952.

3. DESIGN :

(i) R.B.D. (ii) (a) 2. (b) N.A. (iii) 12. (iv) (a) 40'×20'. (b) 30'×10'. (v) 5' ring. (vi) Yes.

4. GENERAL :

(i) Poor. (ii) Attack of *Karpa*. (iii) Grain and straw yield (iv) (a) 1952—1953. (b) No. (c) Nil. (v) (a) and (b) Nil. (vi) and (vii) Nil.

## 5. RESULTS:

- (i) 1621 lb./ac.  
 (ii) 130.2 lb./ac.  
 (iii) Treatments do not differ significantly.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	1612
2.	1630
S.E./mean	= 37.5 lb./ac.

Crop :- Paddy (*Kharif*).

Ref :- Mh. 50(107).

Site :- Rice Breeding Stn., Chiplun.

Type :- 'M'.

Object :- To study the effect of graded doses of Dolomite on Paddy crop.

## 1. BASAL CONDITIONS:

- (i) (a) Nil. (b) Paddy. (c) N.A. (ii) (a) N.A. (b) N.A. (iii) 3.6.1950/31.7.1950. (iv) (a) and (b) N.A. (c) N.A. (d) 10"×10". (e) 8 seedling/bunch. (v) 5 C.L./ac. of F.Y.M. (vi) Varangal-487. (vii) N.A. (viii) 4 weedings. (ix) N.A. (x) 7.11.1950.

## 2. TREATMENTS:

All combinations of (1) and (2)

(1) 5 levels of Dolomite :  $D_0=0$ ,  $D_1=0.5$ ,  $D_2=1$ ,  $D_3=1.5$  and  $D_4=2$  ton/ac.(2) 2 manures :  $M_0$ =No manure and  $M_1=40$  lb./ac. as N of G.N.C. + 40 lb./ac. of  $P_2O_5$  as B.M.

## 3. DESIGN:

- (i) 2×5 Fact. in R.B.D. (ii) (a) 10. (b) N.A. (iii) 4. (iv) (a) 26'8"×16'8". (b) 20'×10'. (v) 3'4" ring round the net plot. (vi) Yes.

## 4. GENERAL:

- (i) More vegetative growth in plots where G.N.C. was given. (ii) Slight attack of *kapra* in 3rd week of August. Crop dusted with gammaxene. (iii) Grain and straw yield. (iv) (a) 1950-1951. (b) and (c) N.A. (v) (a) Phondaghat. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS:

- (i) 3457 lb./ac.  
 (ii) 328.1 lb./ac.  
 (iii) Main effects of D and M and their interaction are significant.  
 (iv) Av. yield of grain in lb./ac.

	$D_0$	$D_1$	$D_2$	$D_3$	$D_4$	Mean
$M_0$	2021	1745	3648	3866	4029	3062
$M_1$	2222	4029	4302	4574	4138	3853
Mean	2122	2887	3975	4220	4084	3457

S.E. of marginal mean of M = 73.4 lb./ac.  
 S.E. of marginal mean of D = 116.0 lb./ac.  
 S.E. of body of table = 164.1 lb./ac.

Crop :- Paddy (*Kharif*).

Ref :- Mh. 51(141).

Site :- Rice Breeding Stn., Chiplun.

Type :- 'M'.

Object :- To study the effect of graded doses of Dolomite on Paddy crop.

## 1. BASAL CONDITIONS:

(i) (a) No particular rotation. (b) Paddy. (c) N.A. (ii) (a) and (b) N.A. (iii) 29.5.1951/29 to 31.7.1951. (iv) (a) N.A. (b) Transplanting. (c) N.A. (d) 10" × 10". (e) 8 seedlings/bunch. (v) 5 C.L./ac. of F.Y.M. (vi) Varangal-487. (vii) N.A. (viii) 3 weedings. (ix) N.A. (x) 14,15.11.1951.

## 2. TREATMENTS:

All combinations of (1) and (2)

(1) 5 levels of Dolomite :  $D_0=0$ ,  $D_1=0.5$ ,  $D_2=1$ ,  $D_3=1.5$ , and  $D_4=2$  ton/ac.(2) 2 manures :  $M_0$ =No manure and  $M_1=40$  lb./ac. of N as G.N.C. + 40 lb./ac. of  $P_2O_5$  as B.M.

## 3. DESIGN:

(i) 2 × 5 Fact. in R.B.D. (ii) (a) 10. (b) N.A. (iv) (a) 26'8" × 16'8". (b) 20' × 10'. (v) 3'4" ring round the net plot. (vi) Yes.

## 4. GENERAL:

(ii) There was complete lodging of crop in the last week of Sept. due to heavy rains and wind. (ii) Nil. (iii) Grain and straw yield. (iv) 1950—1952. (b) No. (c) N.A. (v) (a) Phondaghat. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS:

(i) 2356 lb./ac.

(ii) 253.2 lb./ac.

(iii) Main effects of D and M and their interaction are significant.

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

	$D_0$	$D_1$	$D_2$	$D_3$	$D_4$	Mean
$M_0$	1854	1919	2395	2409	2307	2177
$M_1$	2586	2508	2474	2654	2457	2536
Mean	2220	2213	2434	2531	2382	2356

S.E. of marginal mean of M = 56.6 lb./ac.

S.E. of marginal mean of D = 88.3 lb./ac.

S.E. of body of table = 126.6 lb./ac.

Crop :- Paddy (*Kharif*).

Ref :- Mh. 52(172).

Site :- Rice Breeding Stn., Chiplun.

Type :- 'M'.

Object :- To study the effect of graded doses of Dolomite on Paddy crop.

## 1. BASAL CONDITIONS:

(i) (a) Nil. (b) Paddy. (c) N.A. (ii) (a) N.A. (b) N.A. (iii) N.A. (iv) (a) and (b) N.A. (c) N.A. (d) 10" × 10". (e) 8 seedlings/bunch. (v) 5 C.L./ac. of F.Y.M. (vi) Varangal-487. (vii) N.A. (viii) N.A. (ix) N.A. (x) N.A.

## 2. TREATMENTS:

All combinations of (1) and (2)

(1) 5 levels of Dolomite :  $D_0=0$ ,  $D_1=0.5$ ,  $D_2=1$ ,  $D_3=1.5$ , and  $D_4=2$  ton/ac.(2) 2 manures :  $M_0$ =No manure and  $M_1=40$  lb./ac. of N as G.N.C + 40 lb./ac. of  $P_2O_5$  as B.M.

## 3. DESIGN

(i) 2×5 Fact. in R.B.D. (ii) (a) 10. (b) N.A. (iii) 4. (iv) (a) 26'8"×16'8". (b) 20'×10'. (v) 3'-4" ring round the net plot. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) N.A. (iii) Grain and straw yield. (iv) (a) 1950—1952. (b) and (c) N.A. (v) (a) Phondaghat. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 1216 lb./ac.  
 (ii) 207.9 lb./ac.  
 (iii) Interaction D×M alone is significant.  
 (iv) Av. yield of grain in lb./ac.

	D <sub>0</sub>	D <sub>1</sub>	D <sub>2</sub>	D <sub>3</sub>	D <sub>4</sub>	Mean
M <sub>0</sub>	1293	990	1187	1290	1279	1208
M <sub>1</sub>	1143	1239	1092	1361	1286	1224
Mean	1218	1114	1140	1325	1283	1216

S.E. of marginal mean of M = 46.5 lb./ac.  
 S.E. of marginal mean of D = 72.5 lb./ac.  
 S.E. of body of table = 104.0 lb./ac.

Crop :- (Kharif).

Site :- Rice Breeding Stn., Chiplun.

Ref :- Mh. 49(91).

Type :- 'M'.

Object :- To study the effect of deglued B.M. as a source of P<sub>2</sub>O<sub>5</sub> as compared to B.M. on the yield of Paddy crop.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) and (c) N.A. (ii) (a) N.A. (b) N.A. (iii) N.A. (iv) (a) N.A. (b) Transplanting. (c) —. (d) 10"×10". (e) 8 seedlings/bunch. (v) Nil. (vi) Varangal-487. (vii) N.A. (viii) N.A. (ix) 160". (x) N.A.

## 2. TREATMENTS :

- No manure.
- F.Y.M. at 5 C.L./ac.+G.N.C. at 40 lb./ac. of N+40 lb./ac. of P<sub>2</sub>O<sub>5</sub> as B.M.
- F.Y.M. at 5 C.L./ac.+G.N.C. at 40 lb./ac. of N+40 lb./ac. of P<sub>2</sub>O<sub>5</sub> as deglued B.M.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 3. (b) N.A. (iii) 6. (iv) (a) 26'8"×16'8". (b) 20'×10'. (v) 3'-4" ring round the net plot. (vi) Yes.

## 4. GENERAL :

(i) Normal. (ii) Severe attack of blast was observed. (iii) Grain yield. (iv) (a) 1949-1952. (b) and (c) N.A. (v) (a) Phondaghat. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 1206 lb./ac.  
 (ii) 79.92 lb./ac.  
 (iii) The treatment differences are highly significant.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	998
2.	1384
3.	1236
S.E./mean	= 32.62 lb./ac.



Crop :- Paddy (*Kharif*).

Ref :- Mh. 50(106).

Site :- Rice Breeding Stn., Chiplun.

Type :- 'M'.

Object :—To study the effect of deglued B.M. as a source of  $P_2O_5$  as compared to B.M. on the yield of Paddy crop.

## 1. BASAL CONDITIONS :

(i) (a) No. (b) Paddy. (c) N.A. (ii) (a) and (b) N.A. (iii) 1.6.1950/28.7.1950. (iv) (a) N.A. (b) Transplanting. (c) —. (d)  $10'' \times 10''$ . (e) 8 seedlings/bunch. (v) Nil. (vi) Varangal—487. (vii) N.A. (viii) 5 weedings (ix) N.A. (x) 6.11.1950.

## 2. TREATMENTS :

1. No manure.
2. 5 C.L./ac. of F.Y.M. + 40 lb./ac. of N as G.N.C. + 40 lb./ac. of  $P_2O_5$  as B.M.
3. 5 C.L./ac. of F.Y.M. + 40 lb./ac. of N as G.N.C. + 40 lb./ac. of  $P_2O_5$  as deglued B.M.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 3. (b) N.A. (iii) 6. (iv) (a)  $26'8'' \times 16'8''$ . (b)  $20' \times 10'$ . (v)  $3' \cdot 4''$  ring round the net plot. (vi) Yes.

## 4. GENERAL :

(i) Good vegetative growth in B.M. and D.B.M. plots, however, more vegetative growth in D.B.M. plots—lodging in plots in first week of October due to heavy rains, less no. of tillers in no manure plots. (ii) Slight attack of *karpa* in 4th week of August. Crop dusted with gammaxene powder ; Damage is negligible. (iii) Grain and straw yield. (iv) (a) 1949—1952. (b) N.A. (c) N.A. (v) (a) Phondaghat. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 2316 lb./ac.
- (ii) 184.5 lb./ac.
- (iii) Treatments differ highly significantly.
- (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield.
1.	1799
2.	2611
3.	2538
S.E./mean	= 75.3 lb./ac.

Crop :- Paddy (*Kharif*).

Ref :- Mh. 51(140).

Site :- Rice Breeding Stn., Chiplun.

Type :- 'M'.

Object :—To study the effect of deglued B.M. as a source of  $P_2O_5$  as compared to B.M. on the yield of Paddy crop.

## 1. BASAL CONDITIONS :

(i) (a) No. (b) Paddy. (c) N.A. (ii) (a) and (b) N.A. (iii) 29.5.1951/26,27.7.1951. (iv) (a) N.A. (b) Transplanting. (c) —. (d)  $10'' \times 10''$ . (e) 8 seedlings/bunch. (v) Nil. (vi) Varangal—487. (vii) N.A. (viii) 3 weedings, 3 rogueing. (ix) N.A. (x) 9, 13.11.1951.

## 2. TREATMENTS :

1. No manure.
2. 5 C.L./ac. of F.Y.M. + 40 lb./ac. of N as G.N.C. + 40 lb./ac. of  $P_2O_5$  as B.M.
3. 5 C.L./ac. of F.Y.M. + 40 lb./ac. of N as G.N.C. + 40 lb./ac. of  $P_2O_5$  as deglued B.M.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 3. (b) N.A. (iii) 6. (iv) (a)  $26'8'' \times 16'8''$  (b)  $20' \times 10'$ . (v)  $3' \cdot 4''$  ring round the net plot. (vi) Yes.

## 4. GENERAL :

(i) Growth in manured plots was vigorous, plant height was more in D.B.M. plots, lodging in one plot in the last week of Sept. and 1st week of Oct. Break of rains in the middle of Sept. (ii) Slight attack of *karpa* in the last week of August. Plants were dusted with gammaxene. (iii) Grain and straw yield. (iv) (a) 1949-1952. (b) N.A. (c) N.A. (v) (a) Phondaghat. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS

- (i) 1834 lb./ac.  
 (ii) 130.2 lb./ac.  
 (iii) Treatments differ highly significantly.  
 (iv) Av. yield of grain in lb /ac:

Treatment	Av. yield
1.	1288
2.	2026
3.	2189
S.E./mean	= 53.2 lb./ac.

Crop :- Paddy (*Kharif*).

Ref :- Mh. 52(321).

Site :- Rice Breeding Stn., Chiplun.

Type :- 'M'.

Object :- To study the residual effect of deglued B.M. as a source of  $P_2O_5$  as compared to B.M. applied to previous Paddy.

## 1. BASAL CONDITIONS :

(i) (a) Paddy-Paddy. (b) Paddy. (c) As per treatments. (ii) (a) Laterite soil. (b) N.A. (iii) N.A. (iv) (a) N.A. (b) Transplanting. (c) —. (d)  $10'' \times 10''$ . (e) 8 seedlings/bunch. (v) Nil. (vi) Varangal-487. (vii) Unirrigated. (viii) N.A. (ix) N.A. (x) N.A.

## 2. TREATMENTS :

- No manure.
  - 5 C.L./ac. of F.Y.M.+40 lb./ac. of N as G.N.C.+40 lb./ac. of  $P_2O_5$  as B.M.
  - 5 C.L./ac. of F.Y.M.+40 lb./ac. of N as G.N.C.+40 lb./ac. of  $P_2O_5$  as deglued B.M.
- Manures applied to previous Paddy crop.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 3. (b) N.A. (iii) 6. (iv) (a)  $26'8'' \times 13'4''$ . (b)  $20' \times 10'$ . (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) N.A. (iii) Grain yield. (iv) (a) 1949-1952 (residual effect in 1952). (b) Yes. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 856.6 lb./ac.  
 (ii) 88.35 lb./ac.  
 (iii) Treatments do not differ significantly.  
 (iv) Av. yield of grain in lb /ac.

Treatment	Av. yield
1.	809.8
2.	882.3
3.	877.8
S.E./mean	= 36.07 lb./ac.

Crop :- Paddy (*Kharif*).

Ref :- Mh. 48(13).

Site :- Agri. Res. Stn., Igatpuri.

Type :- 'M'.

Object :- To find out the N and P requirements of Paddy (without F.Y.M.).

## 1. BASAL CONDITIONS :

(i) (a) Paddy after paddy. (b) Paddy. (c) Nil. (ii) (a) Medium Black. (b) Refer soil analysis, Igatpuri. (iii) 8.6.1948/25th and 27th July, 1948. (iv) (a) 3 ploughings. (b) Sowing by broadcasting in seed bed. (c) 40 lb./ac. (d) 10"×10". (e) 8 seedlings/bunch. (v) Nil. (vi) K-226. (vii) Irrigated. (viii) Nil. (ix) 115.67". (x) 3rd and 5th Nov. 1948.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 4 levels of N :  $N_0=0$ ,  $N_1=32$ ,  $N_2=64$  and  $N_3=96$  lb./ac.(2) 4 levels of  $P_2O_5$  :  $P_0=0$ ,  $P_1=32$ ,  $P_2=64$ , and  $P_3=96$  lb./ac.N applied as G.N.C. and  $P_2O_5$  as Super. Manuring on 5.8.1948.

## 3. DESIGN :

(i) 4×4 Factorial in R.B.D. (ii) (a) 16. (b) N.A. (iii) 4. (iv) (a) 22.5'×15'. (b) 17.5'×10'. (v) 2.5' ring round the net plot. (vi) Yes.

## 4. GENERAL :

(i) Normal growth. (ii) Crab trouble. (iii) Grain yield. (iv) (a) 1948—1951 (from 1952, residual effects studied). (b) Yes. (c) N.A. (v) (a) Karjat, Amreli. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 1612 lb./ac.  
 (ii) 229.0 lb./ac.  
 (iii) Main effect of N alone is highly significant.  
 (iv) Av. yield of grain in lb./ac.

	$\bar{N}_0$	$N_1$	$N_2$	$N_3$	Mean
$P_0$	1034	1467	1737	1889	1532
$P_1$	1360	1319	1836	1966	1620
$P_2$	1242	1533	1734	2146	1664
$P_3$	1235	1732	1769	1795	1635
Mean	1218	1513	1769	1949	1612

S.E. of marginal mean of N or P

= 57.3 lb./ac.

S.E. of body of table

= 114.5 lb./ac.

Crop :- Paddy (*Kharif*).

Ref :- Mh. 49(23)/48(13).

Site Agri. Res. Stn., Igatpuri.

Type :- 'M'.

Object :- To study the N and P requirements of Paddy (without F.Y.M.).

## 1. BASAL CONDITIONS :

(i) (a) Paddy after paddy. (b) Paddy. (c) As per treatments. (ii) (a) Medium black. (b) Refer soil analysis, Igatpuri. (iii) 4.6.1949/30th and 31st July, 1949. (iv) (a) 4 ploughings. (b) Line sowing in nursery and transplanting. (c) —. (d) 10"×10". (e) 8 seedlings/bunch. (v) Nil. (vi) K-226. (vii) Unirrigated. (viii) Hand weeding on 14th and 15th Sept. 1949. (ix) 125.68". (x) 9.11.1949.

**2. TREATMENTS :**

All combinations of (1) and (2)

(1) 4 levels of N:  $N_0=0$ ,  $N_1=32$ ,  $N_2=64$ , and  $N_3=96$  lb./ac.

(2) 4 levels of  $P_2O_5$ :  $P_0=0$ ,  $P_1=32$ ,  $P_2=64$  and  $P_3=96$  lb./ac.

N applied as G.N.C. and  $P_2O_5$  as Super.

**3. DESIGN :**

(i)  $4 \times 4$  Fact. in R.B.D, (ii) (a) 16. (b) N.A. (iii) 4. (iv) (a)  $22.5' \times 15'$ . (b)  $17.5' \times 10'$ . (v) 2.5' ring round the net plot. (vi) Yes.

**4. GENERAL :**

(i) Normal. (ii) Crabtrouble. (iii) Grain yield. (iv) (a) 1948—1951. (b) Yes. (c) N.A. (v) (a) Karjat. (b) N.A. (vi) and (vii) Nil.

**5. RESULTS :**

(i) 1478 lb./ac.

(ii) 257.6 lb./ac.

(iii) Main effect of N alone is significant.

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

	$N_0$	$N_1$	$N_2$	$N_3$	Mean
$P_0$	934	1724	1714	1651	1506
$P_1$	1153	1539	1760	1456	1477
$P_2$	870	1353	1684	1525	1358
$P_3$	1339	1624	1828	1487	1570
Mean	1074	1560	1746	1530	1478

S.E. of marginal mean of N or P = 64.4 lb./ac.

S.E. of body of table = 123.8 lb./ac.

Crop :- Paddy (*Kharif*).

Ref :- Mh. 50(32)/49(23)/48(13).

Site :- Agri. Res. Stn., Igatpuri.

Type :- 'M'.

Object :- To study the N and P requirements of Paddy (without F.Y.M.).

**1. BASAL CONDITIONS :**

(i) (a) Paddy in *Kharif* and fallow in *Rabi*. (b) Paddy. (c) As per treatments. (ii) (a) Coarse to medium black. (b) Refer soil analysis, Igatpuri. (iii) 12.6.1950/6.8.1950. (iv) (a) 3 ploughings. (b) Transplanting. (c) —. (d)  $10'' \times 10''$ . (e) 8 seedlings/bunch. (v) Nil. (vi) *Kolamba-226* (late). (vii) Unirrigated. (viii) Hand weeding 3rd week of August 1950. (ix) 147.25". (x) 13.11.1950.

**2. TREATMENTS :**

All combinations of (1) and (2)

(1) 4 levels of N:  $N_0=0$ ,  $N_1=32$ ,  $N_2=64$  and  $N_3=96$  lb./ac.

(2) 4 levels of  $P_2O_5$ :  $P_0=0$ ,  $P_1=32$ ,  $P_2=64$  and  $P_3=96$  lb./ac.

N applied as G.N.C and  $P_2O_5$  as Super.

**3. DESIGN :**

(i)  $4 \times 4$  Fact. in R.B.D. (ii) (a) 16. (b) N.A. (iii) 4. (iv) (a)  $22'6'' \times 15'$ . (b)  $17'6'' \times 10'$ . (v) 2.5' ring round the net plot. (vi) Yes.

**4. GENERAL :**

(i) The general growth of the crop was fairly good. (ii) Nil. (iii) Grain and straw yield. (v) (a) 1948—1951. (b) Yes. (c) N.A. (v) (a) Karjat. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 2327 lb./ac.  
(ii) 298.8 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
P <sub>0</sub>	978	2428	2469	3049	2231
P <sub>1</sub>	1379	2104	2905	3065	2363
P <sub>2</sub>	1458	2196	2713	2783	2288
P <sub>3</sub>	1491	2402	2723	3087	2426
Mean	1326	2283	2702	2996	2327

S.E. of marginal mean of N or P = 74.7 lb./ac.  
S.E. of body of table = 149.4 lb./ac.

Crop :- Paddy (*Kharif*).

Ref :- Mh. 51(36)/50(32)/49(23)/48(13).

Site :- Agri. Res. Stn., Igatpuri.

Type :- 'M'.

Object :- To find the N and P requirements of Paddy (without F.Y.M.)

## 1. BASAL CONDITIONS :

(i) (a) Paddy after paddy. (b) Fallow in *Rabi*, Paddy in *Kharif*. (c) As per treatments. (ii) (a) Medium black. (b) Refer soil analysis, Igatpuri. (iii) 6.6.1951/7.7.1951. (iv) (a) 4 ploughings. (b) Transplanting line sowing. (c) ----- (d) 10'×10'. (e) 8 seedlings/bunch. (v) Nil. (vi) *Kolamba-226* (late). (vii) Rainfed. (viii) Hand weeding in 3rd week of Aug. 1951. (ix) 166.88'. (x) 14.10.1951 and 15.10.1951.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 4 levels of N : N<sub>0</sub>=0, N<sub>1</sub>=32, N<sub>2</sub>=64 and N<sub>3</sub>=96 lb./ac.(2) 4 levels of P<sub>2</sub>O<sub>5</sub> : P<sub>0</sub>=0, P<sub>1</sub>=32, P<sub>2</sub>=64 and P<sub>3</sub>=96 lb./ac.N applied as G.N.C. and P<sub>2</sub>O<sub>5</sub> as Super.

## 3. DESIGN :

(i) 4×4 Fact. in R.B.D. (ii) (a) 16. (b) N.A. (iii) 4. (iv) (a) 22.5'×15'. (b) 17.5'×10'. (v) 2.5' ring round the net plot. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Little crab trouble. (iii) Grain yield. (iv) (a) 1948-1951. (b) Yes. (c) N.A. (v) (a) Amrali, Karjat. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 2868 lb./ac.  
(ii) 271.2 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
P <sub>0</sub>	1313	2554	3436	3627	2733
P <sub>1</sub>	1991	2404	3546	3447	2847
P <sub>2</sub>	1820	2550	3603	3580	2888
P <sub>3</sub>	1900	2820	3443	3850	3003
Mean	1756	2582	3507	3626	2868

S.E. of marginal mean of N or P = 67.8 lb./ac.  
S.E. of body of table = 135.6 lb./ac.

Crop :- Paddy (*Kharif*).

Ref :- Mh. 52(62)/51(36)/50(32)/49(23)/48(13).

Site :- Agri. Res. Stn., Igatpuri. Type :- 'M'.

Object :- To study the residual effect of N and P applied to previous Paddy crop (without F. Y. M.).

## 1. BASAL CONDITIONS :

(i) (a) Fallow in *Rabi*, Paddy after paddy. (b) Paddy. (c) As per treatments. (ii) (a) Coarse to medium black. (b) Refer soil analysis, Igatpuri. (iii) 9.6.1952/10.7.1952. (iv) (a) 4 ploughings. (b) Transplanted : line sowing. (c) —. (d) 10" × 10". (e) 8 seedlings/bunch. (v) Nil. (vi) *Kolamba-226* (late.) (vii) Rainfed. (viii) Hand weeding in 4th week of Sept. (ix) 127.91". (x) 10.11.1952.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 4 levels of N :  $N_0=0$ ,  $N_1=32$ ,  $N_2=64$  and  $N_3=96$  lb./ac.(2) 4 levels of  $P_2O_5$  :  $P_0=0$ ,  $P_1=32$ ,  $P_2=64$  and  $P_3=96$  lb./ac.

Manures applied to last year crop.

## 3. DESIGN :

(i) 4 × 4 Fact. in R.B.D. (ii) (a) 16. (b) N.A. (iii) 4. (iv) (a) 22'-6" × 15'. (b) 17'-6" × 10'. (v) 2.5' ring round the net plot. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Slight crab trouble. (iii) Grain and straw yield. (iv) (a) 1948—1954 (from 1952, residual effect studied). (b) Yes. (c) N.A. (v) (a) Amreli, Karjat. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 1828 lb./ac.

(ii) 412.0 lb./ac.

(iii) Main effects of N and P and interaction NP are not significant.

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

	$N_0$	$N_1$	$N_2$	$N_3$	Mean
$P_0$	1762	1506	1883	1838	1747
$P_1$	2119	1383	1890	2003	1849
$P_2$	2078	1908	1847	2151	1996
$P_3$	1814	1810	1747	1520	1723
Mean	1943	1652	1842	1878	1828

S.E. of marginal mean of N or P

=103.0 lb./ac.

S.E. of body of table

=206.0 lb./ac.

Crop :- Paddy (*Kharif*). Ref :- Mh. 53 (346)/52 (62)/51 (36)/50 (32)/49 (23)/48 (13).

Site :- Agri. Res. Stn., Igatpuri.

Type :- 'M'.

Object :- To study the residual effect of N and P applied to previous Paddy crop (without F. Y. M.).

## 1. BASAL CONDITIONS :

(i) (a) Paddy-Paddy. (b) Paddy. (c) Nil. (ii) (a) Shallow and coarse soil. (b) Refer soil analysis, Igatpuri. (iii) 15.6.1953/24.7.1953. (iv) (a) 1 ploughing. (b) Transplanting. (c) —. (d) 10" × 10". (e) 8 seedlings/bunch. (v) Nil. (vi) K—226 (late). (vii) Unirrigated. (viii) Nil. (ix) 123.06" (x) 22.11.1953.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 4 levels of N :  $N_0=0$ ,  $N_1=32$ ,  $N_2=64$  and  $N_3=96$  lb./ac.(2) 4 levels of  $P_2O_5$  :  $P_0=0$ ,  $P_1=32$ ,  $P_2=64$  and  $P_3=96$  lb./ac.

Manures applied to paddy crop during 1948 to 1951.

## 3. DESIGN

(i) 4×4 Fact. in R.B.D. (ii) (a) 16. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 17.5'×10'. (v) N-A. (vi) Yes.

## 4. GENERAL :

(i) Normal. (ii) Attack of crabs. (iii) Grain yield. (iv) (a) 1948 to 1954. (b) Yes. (c) Nil. (v) (a) Karjat. (b) Nil. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 1865 lb./ac.  
 (ii) 418.0 lb./ac.  
 (iii) Main effects of N and P and their interaction 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
P <sub>0</sub>	1344	1922	1676	1899	1710
P <sub>1</sub>	1870	1661	2311	2096	1985
P <sub>2</sub>	2062	1808	2021	2184	2019
P <sub>3</sub>	1924	1965	1527	1579	1748
Mean	1800	1839	1884	1940	1865

S.E. of marginal mean of N or P = 104.5 lb./ac.  
 S.E. of body of table = 209.0 lb./ac.

Crop Paddy (*Kharif*). -

Site :- Agri. Res. Stn., Igatpuri.

Ref :- Mh. 48 (97).

Type :- 'M'.

Object :- To study the N and P requirements of Paddy with basal manuring of F.Y.M.

## 1. BASAL CONDITIONS

(i) (a) N.A. (b) Paddy. (c) Nil. (ii) (a) Shallow and coarse soil. (b) Refer soil analysis, Igatpuri. (iii) 8.6.1948/22.7.1948. (iv) (a) 3 ploughings. (b) Transplanting. (c) —. (d) 10"×10". (e) 8 seedlings/bunch. (v) 5 C.L./ac. of F.Y.M. (vi) K-226 (late). (vii) Unirrigated. (viii) 1 weeding. (ix) 115.67". (x) 31.10.1948.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 4 levels of N as G.N.C. : N<sub>0</sub>=0, N<sub>1</sub>=32, N<sub>2</sub>=64 and N<sub>3</sub>=96 lb./ac.

(2) 4 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 and P<sub>3</sub>=96 lb./ac.

## 3. DESIGN

(i) 4×4 Fact. in R.B.D. (ii) (a) 16. (b) N.A. (iii) 4. (iv) (a) 22' 6"×15'. (b) 14' 2"×6' 8". (v) N.A. (vi) Yes.

## 4. GENERAL

(i) Normal. (ii) Crab attack. (iii) Grain yield. (iv) (a) 1948 to 1951 ; (then residual effect upto 1953). (b) Yes. (c) Nil. (v) (a) Kopergaon, Ratnagiri and Vadagaon. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS

(i) 1686 lb./ac.  
 (ii) 244.4 lb./ac.  
 (iii) Main effect of N alone 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
P <sub>0</sub>	1035	1752	1802	2119	1677
P <sub>1</sub>	1143	1770	1795	2013	1680
P <sub>2</sub>	1066	1667	1847	2151	1683
P <sub>3</sub>	1170	1699	1939	2005	1703
Mean	1104	1722	1846	2072	1686

S.E. of marginal mean of N or P = 61.1 lb./ac.  
 S.E. of body of table = 122.2 lb./ac.

Crop :- Paddy (*Kharif*).

Ref :- Mh. 49(22)/48(12).

Site :- Agri. Res. Stn., Igatpuri.

Type :- 'M'.

Object :- To find the N and P requirements of Paddy with basal dose of F. Y. M.

## 1. BASAL CONDITIONS :

(i) (a) Paddy after Paddy. (b) Paddy. (c) As per treatments. (ii) (a) Medium black soil. (b) Refer soil analysis, Igatpuri. (iii) 4.6.1949/28.7.1949 and 29.7.1949. (iv) (a) 2 ploughings. (b) Transplanting. (c) —. (d) 10" × 10". (e) 8 seedlings/bunch. (v) 5 C.L./ac. of F.Y.M. (vi) K-226. (vii) Unirrigated. (viii) Hand-weeding on 15th and 16th September. (ix) 125.68". (x) 6.11.1949.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 4 levels of N : N<sub>0</sub>=0, N<sub>1</sub>=32, N<sub>2</sub>=64 and N<sub>3</sub>=96 lb./ac.(2) 4 levels of P<sub>2</sub>O<sub>5</sub> : P<sub>0</sub>=0, P<sub>1</sub>=32, P<sub>2</sub>=64 and P<sub>3</sub>=96 lb./ac.N applied as G.N.C. and P<sub>2</sub>O<sub>5</sub> as Super.

## 3. DESIGN :

(i) 4 × 4 Fact. in R.B.D. (ii) (a) 16'. (b) N.A.. (iii) 4. (iv) (a) 22' × 15'. (b) 17.5' × 10'. (v) 2.5' ring round the net plot. (vi) Yes.

## 4. GENERAL :

(i) Normal growth. (ii) Border plants eaten away by crabs. (iii) Grain and fodder yield. (iv) (a) 1948—1951. (b) Yes. (c) N.A. (v) (a) Kopergaon, Ratnagiri, Navapur, Vadagaon. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 1613 lb./ac.

(ii) 227.6 lb./ac.

(iii) Main effect of N alone 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
P <sub>0</sub>	1152	1640	1851	1584	1557
P <sub>1</sub>	1247	1785	1707	1324	1516
P <sub>2</sub>	1179	2054	2075	1623	1733
P <sub>3</sub>	1322	1812	1867	1586	1647
Mean	1225	1823	1875	1529	1613

S.E. of marginal mean of N or P = 56.9 lb./ac.  
 S.E. of body of table = 113.8 lb./ac.



Crop :- Paddy (*Kharif*).  
Site :- Agri. Res. Stn., Igatpuri.

Ref :- Mh. 50(145)/49(22)/48(12).  
Type :- 'M'.

Object :- To study the N and P requirements of Paddy with basal dose of F.Y.M.

### 1. BASAL CONDITIONS :

(i) (a) Paddy—Paddy. (b) Paddy. (c) As per treatments. (ii) (a) Shallow and coarse soil. (b) Refer soil analysis, Igatpuri. (iii) 12.6.1950/2.8.1950. (iv) (a) 2 ploughings. (b) Transplanting. (c) —. (d)  $10^{\circ} \times 10^{\circ}$ . (e) 8 seedlings/bunch. (v) 5 C.L./ac. of F.Y.M. (vi) K-226 (late). (vii) Unirrigated. (viii) 1 interculturing. (ix) 147.25°. (x) 15.11.1950.

### 2. TREATMENTS :

All combinations of (1) and (2)

- (1) 4 levels of N as G.N.C. :  $N_0=0$ ,  $N_1=32$ ,  $N_2=64$  and  $N_3=96$  lb./ac.  
(2) 4 levels of  $P_2O_5$  as Super :  $P_0=0$ ,  $P_1=32$ ,  $P_2=64$  and  $P_3=96$  lb./ac.

### 3. DESIGN :

(i)  $4 \times 4$  Fact. in R.B.D. (ii) (a) 16. (b) N.A. (iii) 4. (b) (a)  $22'6'' \times 15'$ . (b)  $17'6'' \times 10'$ . (v) 2.5, ring. (vi) Yes.

### 4. GENERAL :

(i) Normal. (ii) Nil. (iii) Grain yield. (iv) (a) 1948—1951. (b) Yes. (c) Nil. (v) (a) Kopergaon-Ratnagiri, Vadagaon. (b) N.A. (vi) and (vii) Nil.

### 5. RESULTS :

- (i) 2460 lb./ac.  
(ii) 398.0 lb./ac.  
(iii) Main effect of P is significant while that of N is highly significant. Interaction NP is not significant.  
(iv) Av. yield of grain in lb./ac.

	$N_0$	$N_1$	$N_2$	$N_3$	Mean
$P_0$	1011	2024	2654	3184	2218
$P_1$	1489	2757	3243	3238	2682
$P_2$	1285	1830	3133	2932	2295
$P_3$	1426	2423	3222	3511	2645
Mean	1303	2258	3063	3216	2460

S.E. of marginal mean of N or P = 99.5 lb./ac.  
S.E. of body of table = 199.0 lb./ac.

Crop :- Paddy (*Kharif*). Ref :- Mh. 51(147)/50(145)/49(22)/48(12).  
Site :- Agri. Res. Stn., Igatpuri. Type :- 'M'.

Object :- To find out the N and P requirements of Paddy with basal does of F.Y.M.

### 1. BASAL CONDITIONS :

(i) (a) Paddy after Paddy (fallow in *Rabi*). (b) Paddy. (c) As per treatments. (ii) (a) Coarse to medium black. (b) Refer soil analysis, Igatpuri. (iii) 5.6.1951/18.7.1951. (iv) (a) N.A. (b) Transplanting. (c) —. (d)  $10^{\circ} \times 10^{\circ}$ . (e) 8 seedlings/bunch. (v) 5 C.L./ac. of F.Y.M. (vi) *Kolamba*—226 (late). (vii) Unirrigated. (viii) Hand weeding in 3rd week of Sept. 1951. (ix) 116.88°. (x) 16.10.1951.

### 2. TREATMENTS :

All combinations of (1) and (2).

- (1) 4 levels of N :  $N_0=0$ ,  $N_1=32$ ,  $N_2=64$  and  $N_3=96$  lb./ac.  
(2) 4 levels of  $P_2O_5$  :  $P_0=0$ ,  $P_1=32$ ,  $P_2=64$  and  $P_3=96$  lb./ac.  
N as A/S and  $P_2O_5$  as Super.

## 3. DESIGN :

(i) 4×4 Fact. in R.B.D. (ii) (a) 16. (b) N.A. (iii) 4. (iv) (a) 22' 6"×15'. (b) 17' 6"×10'. (v) 2½' ring round the net plot. (vi) Yes.

## 4. GENERAL :

(i) The general growth of crop was fairly good. (ii) Little crab trouble. (iii) Grain yield. (iv) (a) 1948 to 1951. (b) Yes. (c) N.A. (v) (a) Amreli, Kopergoan, Ratnagiri, Navapur, Vadagaon. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 2894 lb./ac.  
 (ii) 330.4 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
P <sub>0</sub>	1561	2485	3244	3543	2708
P <sub>1</sub>	1887	2749	3495	3748	2970
P <sub>2</sub>	1848	2930	3339	3525	2911
P <sub>3</sub>	1843	2741	3607	3759	2988
Mean	1785	2726	3421	3644	2894

S.E. of marginal mean of N or P = 82.6 lb./ac.  
 S.E. of body of table = 165.2 lb./ac.

Crop :- Paddy (*Kharif*).

Ref :- Mh. 52(61)/51(147)/50(145)/49(22)/48(12).

Site :- Agri. Res. Stn., Igatpuri. Type :- 'M'.

Object :- To find out the N and P requirements of Paddy with basal dose of F.Y.M. (residual effect).

## 1. BASAL CONDITIONS :

(i) (a) Paddy after Paddy (fallow in *Rabi*). (b) Paddy. (c) As per treatments. (ii) (a) Coarse to medium black. (b) Refer soil analysis, Igatpuri. (iii) 9.6.1952/8.7.1952. (iv) (a) N.A. (b) Transplanting. (c) —. (d) 10"×10". (e) 8 seedlings/bunch. (v) 5 C.L./ac. of F.Y.M. (vi) *Kolamba-226* (late). (vii) Unirrigated (viii) Hand weeding in 3rd week of Sept. 1952. (ix) 127.91". (x) 9.11.1952.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 4 levels of N : N<sub>0</sub>=0, N<sub>1</sub>=32, N<sub>2</sub>=64 and N<sub>3</sub>=96 lb./ac.

(2) 4 levels of P<sub>2</sub>O<sub>5</sub> : P<sub>0</sub>=0, P<sub>1</sub>=32, P<sub>2</sub>=64 and P<sub>3</sub>=96 lb./ac.

N as A/S and P<sub>2</sub>O<sub>5</sub> as Super. Manures applied to previous crop.

## 3. DESIGN :

(i) 4×4 Fact. in R.B.D. (ii) (a) 16. (b) N.A. (iii) 4. (iv) (a) 22' 6"×15'. (b) 17' 6"×10'. (v) 2½' ring round the net plot. (vi) Yes.

## 4. GENERAL :

(i) The general growth of the crop was fairly good. (ii) Slight crab trouble. No Control measures taken. (iii) Grain and straw yield. (iv) (a) 1948—54 (from 1952 residual effect). (b) Yes. (c) No. (v) (a) Kopergaon, Ratnagiri, Navagaon, Vadagaon. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 1954 lb./ac.  
 (ii) 379.2 lb./ac.  
 (iii) Only the interaction N×P 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
P <sub>0</sub>	1749	1910	1778	1923	1840
P <sub>1</sub>	1713	2125	2126	2091	2014
P <sub>2</sub>	1725	2116	1700	1969	1877
P <sub>3</sub>	1804	2029	2561	1947	2085
Mean	1748	2045	2041	1982	1954

S.E. of marginal mean of N or P = 98.8 lb./ac.  
 S.E. of body of table = 189.6 lb./ac.

Crop :- Paddy (*Kharif*). Ref :- Mh. 53(3)/52(61)/51(147)/50(145)/49(22)/48(12).  
 Site :- Agri. Res. Stn., Igatpuri. Type :- 'M'.

Object :- To study the N and P requirements of Paddy with basal dose of F.Y.M. (residual effect).

#### 1. BASAL CONDITIONS :

(i) (a) Paddy in *Kharif* and Pulses in *Rabi*. (b) Gram in *Rabi*. (c) Nil. (ii) (a) Shallow coarse soil derived from Deccan trap rocks. (b) Refer soil analysis, Igatpuri. (iii) 15th June, 1953 & last week of July, 1953. (iv) (a) One ploughing in *Rabi* and 3 ploughings in *Kharif*. (b) Transplanting. (c) —. (d) 10" × 10". (e) N.A. (v) F.Y.M. at 5 C.L./ac. (vi) K.226 (late) (vii) Rainfed. (viii) Transplanting, interculturing done as per departmental method. Puddling and planting on 21st and 22nd July, 1953. (ix) 123°. (x) 23rd Nov. 1953.

#### 2. TREATMENTS :

All combinations of (1) and (2)

- (1) 4 levels of N : N<sub>0</sub>=0, N<sub>1</sub>=32, N<sub>2</sub>=64 and N<sub>3</sub>=96 lb./ac.  
 (2) 4 levels of P<sub>2</sub>O<sub>5</sub> : P<sub>0</sub>=0, P<sub>1</sub>=32, P<sub>2</sub>=64, and P<sub>3</sub>=96 lb./ac.  
 N as G.N.C. and P<sub>2</sub>O<sub>5</sub> as Super. Manures applied during 1948 to 1951.

#### 3. DESIGN :

(i) 4 × 4 Fact. in R.B.D. (ii) (a) 16. (b) N.A. (iii) 4. (iv) (a) 22'6" × 15'. (b) 17'6" × 10'. (v) 3 guard rows on each side. (vi) Yes.

#### 4. GENERAL :

(i) Paddy crop was fairly good through out the season. (ii) Nil. (iii) Grain Yield. (iv) (a) 1948—1954 (from 1952 residual effect.) (b) Yes. (c) N.A. (v) (a) Karjat and Ratnagiri. (b) N.A. (vi) and (vii) Nil.

#### 5. RESULTS :

- (i) 1592 lb./ac.  
 (ii) 500.3 lb./ac.  
 (iii) None of the effects 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
P <sub>0</sub>	1510	1363	1537	1716	1531
P <sub>1</sub>	1276	1705	1910	1385	1569
P <sub>2</sub>	1574	1728	2126	1457	1721
P <sub>3</sub>	1576	1459	1373	1785	1548
Mean	1484	1564	1736	1586	1592

S.E. of marginal mean of N or P = 125.1 lb./ac.  
 S.E. of body of table = 250.2 lb./ac.

Crop :- Paddy (*Kharif*).

Ref :- Mh. 49(21).

Site :- Agri. Res. Stn., Igatpuri.

Type :- 'M'.

Object :—To study the effect of leguminous crop (Peas) grown with and without  $P_2O_5$  on the succeeding cereal crop Paddy.

1. BASAL CONDITIONS :

(i) (a) Peas-Paddy. (b) Peas. (c) As per treatments. (ii) (a) Shallow and coarse trap soil. (b) Refer soil analysis, Igatpuri. (iii) 4.6.1949/20.7.1249. (iv) (a) 2 ploughings and 1 puddling. (b) Transplanted. (c) —. (d)  $10'' \times 10''$ . (d) 8 seedlings/bunch. (v) Nil. (vi) Z-31. (vii) Unirrigated. (viii) 1 weeding. (ix) 123.64%. (x) 23.10.1949.

2. TREATMENTS :

1. Control (no  $P_2O_5$ ).
  2. 50 lb./ac. of  $P_2O_5$  as Super.
  3. 100 lb./ac. of  $P_2O_5$  as Super.
  4. 150 lb./ac. of  $P_2O_5$  as Super.
  5. Fallow in *Rabi*.
- Manure applied to previous peas crop.

3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 5. (iv) (a)  $25' \times 15'$ . (b)  $20' \times 10'$ . (v) 2.5' ring. (vi) As per treatments.

4. GENERAL

(i) The growth was not satisfactory due to continuous rains. (ii) Crab pests. (iii) Grain yield. (iv) (a) 1948-49 (*Rabi*) to 1954-55 (*Kharif*). (b) Yes. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

- (i) 865 lb./ac.
- (ii) 121.5 lb./ac.
- (iii) Treatment differences are not significant.
- (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	813
2.	793
3.	897
4.	928
5.	893
S.E./mean	= 54.3 lb./ac.

Crop :- Paddy (*Kharif*).

Ref :- Mh. 50(30)/49(21).

Site :- Agri. Res. Stn., Igatpuri.

Type :- 'M'.

Object :—To study the effect of leguminous crop (Peas) grown with and without  $P_2O_5$  on the succeeding cereal crop Paddy.

1. BASAL CONDITIONS :

(i) (a) Peas-Paddy. (b) Peas. (c) As per treatments. (ii) (a) Shallow and coarse trap soil. (b) Refer soil analysis, Igatpuri. (iii) 12.6 1950/21.7.1950. (iv) (a) 2 ploughings, 1 puddling and planting. (b) Seedlings raised in rabbed seed-bed and transplanted. (c) —. (d)  $10'' \times 10''$ . (e) 8 seedlings/bunch. (v) Nil. (vi) Z-31 (mid-late). (vii) Unirrigated. (viii) 1 weeding. (ix) 150.85%. (x) 26.10.1950.

2. TREATMENTS :

1. Control (no  $P_2O_5$ )
  2. 50 lb./ac. of  $P_2O_5$  as Super.
  3. 100 lb./ac. of  $P_2O_5$  as Super.
  4. 150 lb./ac. of  $P_2O_5$  as Super.
  5. Fallow in *Rabi*.
- Manure applied to previous peas crop.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 5. (iv) (a) N.A. (b) 20' × 10'. (v) N.A. (vi) As per treatments.

## 4. GENERAL :

(i) The growth was excellent. (ii) Common crab pests appeared. (iii) Grain yield. (iv) (a) 1948-49 (*Rabi*) to 1954-55 (*Kharif*). (b) Yes. (c) Nil. (v) (a), (b) Nil. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 1645 lb./ac.  
 (ii) 253.9 lb./ac.  
 (iii) Treatment differences are highly significant.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	1320
2.	1308
3.	1752
4.	1964
5.	1380
S.E./mean	= 113.5 lb./ac.

Crop :- Paddy (*Kharif*).

Ref :- Mh. 51(34)/50(30)/49(21).

Site :- Agri. Res. Stn., Igatpuri.

Type :- 'M'.

Object :—To study the effect of leguminous crop (Peas) grown with and without  $P_2O_5$  manure on the succeeding cereal crop of Paddy.

## 1. BASAL CONDITIONS :

(i) (a) Peas-Paddy. (b) Peas. (c) As per treatments. (ii) (a) Shallow and coarse trap soil. (b) Refer soil analysis, Igatpuri. (iii) 6.6.1951/6.7.1951. (iv) (a) 1 ploughing and 1 puddling. (b) Transplanting. (c) — (d) 10" × 10". (e) 8 seedlings/bunch. (v) Nil. (vi) Z-31. (vii) Unirrigated. (viii) 1 weeding. (ix) 105.15". (x) 20.10.1951.

## 2. TREATMENTS :

- Control (no  $P_2O_5$ )
- 50 lb./ac. of  $P_2O_5$  as Super.
- 100 lb./ac. of  $P_2O_5$  as Super.
- 150 lb./ac. of  $P_2O_5$  as Super.
- Fallow in *Rabi*.

Manures applied to previous peas crop.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 5. (iv) (a) 25' × 15'. (b) 20' × 10'. (v) 2.5' ring. (vi) As per treatments.

## 4. GENERAL :

(i) Growth was normal. (ii) Slight attack of Crab pests. (iii) Grain yield. (iv) (a) 1948-1949 (*Rabi*), 1954-1955 (*Kharif*). (b) Yes. (c) Nil. (v) (a) and (b) Nil. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 1798 lb./ac.  
 (ii) 254.1 lb./ac.  
 (iii) Treatment differences are highly significant.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	1486
2.	1914
3.	2081
4.	2094
5.	1417
S.E./mean	= 113.6 lb./ac.

Crop :- Paddy. (*Kharif*).

Ref :- Mh. 52(60)/51(34)/50(30)/49(21).

Site :- Agri. Res. Stn., Igatpuri.

Type :- 'M'.

Object :—To study the effect of leguminous crop (Peas) grown with and without  $P_2O_5$  on the succeeding cereal crop Paddy.

## 1. BASAL CONDITIONS :

(i) (a) Peas-Paddy. (b) Peas. (c) As per treatments. (ii) (a) Shallow and coarse trap soil. (b) Refer soil analysis, Igatpuri. (iii) 9.6.1952/12.7.1952. (iv) (a) 1 ploughing and 1 puddling. (b) Transplanting. (c) —. (d)  $10'' \times 10''$ . (e) 8 seedlings/bunch. (v) Nil. (vi) Z-31. (vii) Unirrigated. (viii) Interculturing. (ix) 121.54'' (*Kharif*), 2.34'' (*Rabi*). (x) 31.10.1952.

## 2. TREATMENTS :

1. Control (no  $P_2O_5$ .)
  2. 50 lb./ac. of  $P_2O_5$  as Super.
  3. 100 lb./ac. of  $P_2O_5$  as Super.
  4. 150 lb./ac. of  $P_2O_5$  as Super.
  5. Fallow in *Rabi*.
- Manures applied to previous peas crop.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 5. (iv) (a)  $25' \times 15'$ . (b)  $20' \times 10'$ . (v) 2.5' ring. (vi) As per treatments.

## 4. GENERAL :

(i) Growth was normal. (ii) Common crab pest observed. (iii) Grain yield. (iv) (a) 1948-1949 (*Rabi*), 1954-1955 (*Kharif*). (b) Yes. (c) Nil. (v) (a) and (b) Nil. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 1459 lb./ac.  
(ii) 134.8 lb./ac.  
(iii) Treatment differences are highly significant.  
(iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	1297
2.	1516
3.	1504
4.	1610
5.	1371
S.E./mean	= 60.3 lb./ac.

Crop :- Paddy (*Kharif*).

Ref :- Mh. 53(2)/52(60)/51(34)/50(30)/49(21).

Site :- Agri. Res. Stn., Igatpuri.

Type :- 'M'.

Object :—To study the effect of leguminous crop (Peas) grown with and without  $P_2O_5$  on the succeeding cereal crop Paddy.

## 1. BASAL CONDITIONS :

(i) (a) Peas-Paddy. (b) Peas. (c) As per treatments. (ii) (a) Shallow and coarse trap soil. (b) Refer soil analysis, Igatpuri. (iii) 15.6.1953/24, 25.7.1953. (iv) (a) 1 ploughing ; 1 puddling. (b) Transplanting. (c) —. (d)  $10'' \times 10''$ . (e) 8 seedlings/bunch. (v) Nil. (vi) Z-31 (mid-late). (vii) Unirrigated. (viii) 1 interculturing. (ix) 29.99''. (x) 25.10.1953.

## 2. TREATMENTS :

1. Control (no  $P_2O_5$ .)
  2. 50 lb./ac. of  $P_2O_5$  as Super.
  3. 100 lb./ac. of  $P_2O_5$  as Super.
  4. 150 lb./ac. of  $P_2O_5$  as Super.
  5. Fallow in *Rabi*.
- Manure applied to previous peas crop.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 5. (iv) (a) 25'×15'. (b) 20'×10'. (v) 2.5' ring. (vi) Yes.

## 4. GENERAL :

(i) Not good. (ii) Severe attack of jassids and army worms. (iii) Grain yield. (iv) (a) 1948 to 1949 (*Rabi*) 1954 to 1955 (*Kharif*). (b) Yes. (c) Nil. (v) (a) and (b) Nil. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 950 lb./ac.  
 (ii) 165.5 lb./ac.  
 (iii) Treatment differences are highly significant.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	707
2.	1082
3.	1156
4.	1052
5.	803
S.E./mean	=74.0 lb./ac.

Crop :- Paddy (*Kharif*).

Ref :- Mh. 49(147).

Site :- Agri. Res. Stn., Igatpuri.

Type :- 'M'.

Object :—To study the effect of leguminous crop (*Lentils*) grown with and without  $P_2O_5$  on the succeeding cereal crop of Paddy.

## 1. BASAL CONDITIONS :

(i) (a) *Lentils*—Paddy. (b) *Lentils*. (c) As per treatments. (ii) (a) Shallow and coarse trap soil. (b) Refer soil analysis, Igatpuri. (iii) 4.6.1949/20.7.1949 and 21.7.1949. (iv) (a) 2 ploughings, 2 puddlings. (b) Transplanting. (c) — . (b) 10"×10". (e) 8 seedlings/bunch. (v) Nil. (vi) Z—31. (vii) Unirrigated. (viii) 1 weeding. (ix) 123.64". (x) 29.10.1949.

## 2. TREATMENTS :

- Control (no  $P_2O_5$ )
  - 50 lb./ac. of  $P_2O_5$  as Super.
  - 100 lb./ac. of  $P_2O_5$  as Super.
  - 150 lb./ac. of  $P_2O_5$  as Super.
  - Fallow in *Rabi*.
- Manures applied to previous *lentils* crop.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 5. (iv) (a) 25'×15'. (b) 20'×10'. (v) 2.5' ring. (vi) Yes.

## 4. GENERAL :

(i) The growth of the crop was checked due to heavy and continuous rains. (ii) Crab pest was observed which created a number of gaps. (iii) Grain yield (iv) (a) 1948 to 1949 (*Rabi*) to 1955 to 1955 (*Kharif*). (b) Yes. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 637 lb./ac.  
 (ii) 140.7 lb./ac.  
 (iii) Treatments do not differ significantly.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	658
2.	573
3.	674
4.	657
5.	622
S.E./mean	=62.9 lb./ac.

Crop :-Paddy (*Kharif*).

Ref :-Mh. 50(168)/49(147).

Site :-Agri. Res. Stn , Igatpuri.

Type :-'M'.

Object :-To study the effect of leguminous crop (Lentils) grown with and without  $P_2O_5$  on the succeeding cereal crop Paddy.

### 1. BASAL CONDITIONS

(i) (a) Lentils—Paddy. (b) Lentils. (c) As per treatments. (ii) (a) Shallow and coarse trap soil. (b) Refer soil analysis, Igatpuri. (iii) 12.6.1950/20,21.7.1950. (iv) (a) 2 ploughings and 1 puddling. (b) Seedlings raised in rabbed seed beds and transplanted. (c) —. (d)  $10'' \times 10''$ . (e) 8 seedlings/bunch (v) Nil. (vi) Z-31 (mid-late). (vii) Unirrigated. (viii) 1 weeding. (ix) 150.85%. (x) 27.10.1950.

### 2. TREATMENTS :

1. Control (no  $P_2O_5$ ).
2. 50 lb./ac. of  $P_2O_5$  as Super.
3. 100 lb./ac. of  $P_2O_5$  as Super.
4. 150 lb./ac. of  $P_2O_5$  as Super.
5. Fallow in *Rabi*.

Manures applied to previous lentils crop.

### 3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 5. (iv) (a)  $25' \times 15'$ . (b)  $20' \times 10'$ . (v) 2.5' ring. (vi) As per treatments.

### 4. GENERAL :

(i) The growth was good. (ii) (a) Common crab pest attack observed but it was very mild. (iii) Grain yield. (iv) (a) 1948—49 (*Rabi*) to 1954—55 (*Kharif*). (b) Yes. (c) Nil. (v) (a) and (b) Nil. (vi) and (vii) Nil.

### 5. RESULTS :

- (i) 1153 lb./ac.  
 (ii) 231.3 lb./ac.  
 (iii) Treatments do not differ significantly.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	1151
2.	1032
3.	1272
4.	1238
5.	1071
S.E./mean	= 103.4 lb./ac.

Crop :-Paddy (*Kharif*).

Ref :-Mh. 51(238)/50(168)/49(147).

Site :-Agri. Res. Stn., Igatpuri.

Type :-'M'.

Object :-To study the effect of leguminous crop (Lentils) grown with and without  $P_2O_5$  on the succeeding cereal crop Paddy.

### 1. BASAL CONDITIONS :

(i) (a) Lentils—Paddy. (b) Lentils. (c) As per treatments. (ii) (a) Shallow and coarse trap soil. (b) Refer soil analysis, Igatpuri. (iii) 5.6.1951/8 and 9.7.1951. (iv) (a) 1 ploughing and 1 puddling. (b) Transplanted. (c) —. (d)  $10'' \times 10''$ . (e) 8 seedlings/bunch. (v) Nil. (vi) Z-31. (vii) Unirrigated. (viii) 1 weeding. (ix) 105.15%. (x) 15.10.1951.

### 2. TREATMENTS :

1. Control (no  $P_2O_5$ ).
2. 50 lb./ac. of  $P_2O_5$  as Super.
3. 100 lb./ac. of  $P_2O_5$  as Super.
4. 150 lb./ac. of  $P_2O_5$  as Super.
5. Fallow in *Rabi*.

Manures applied to previous lentils crop.



## 3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 5. (iv) (a) 25'×15'. (b) 20'×10'. (v) 2.5' ring. (vi) As per treatments.

## 4. GENERAL :

(i) Growth was normal. (ii) Slight attack of crab pests. (iii) Grain yield. (iv) (a) 1948-49 (*Rabi*) to 1954-55 (*Kharif*). (b) Yes. (c) Nil. (v) (a) and (b) Nil. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 1077 lb./ac.

(ii) 155.6 lb./ac.

(iii) Treatments do not differ significantly.

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

Treatment	Av. yield
1.	1021
2.	954
3.	1102
4.	1236
5.	1071
S.E./mean	=69.6 lb./ac.

Crop :- Paddy (*Kharif*).

Ref :- Mh. 52(580)/51(238)/50(168)/49(147).

Site :- Agri. Res. Stn., Igatpuri.

Type :- 'M'.

Object :—To study the effect of leguminous crop (*Lentils*) grown with and without  $P_2O_5$  on the succeeding cereal crop of Paddy.

## 1. BASAL CONDITIONS :

(i) (a) *Lentils-Paddy*. (b) *Lentils*. (c) As per treatments. (ii) (a) Shallow and coarse trap soil. (b) Refer soil analysis, Igatpuri. (iii) 9.6.1952/13,14.7.1952. (iv) (a) 1 ploughing, 1 planking. (b) Transplanting. (c) —. (d) 10"×10". (e) 8 seedlings/bunch. (v) Nil. (vi) Z-31. (vii) Unirrigated. (viii) 1 interculturing. (ix) 121.54". (x) 30.10.1952.

## 2. TREATMENTS :

1. Control (no  $P_2O_5$ ).

2. 50 lb./ac. of  $P_2O_5$  as Super.

3. 100 lb./ac. of  $P_2O_5$  as Super.

4. 150 lb./ac. of  $P_2O_5$  as Super.

5. Fallow in *Rabi*.

Manures applied to previous lentils crop.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 5. (iv) (a) 25'×15'. (b) 20'×10'. (v) 2.5' ring. (vi) As per treatments.

## 4. GENERAL :

(i) Normal growth. (ii) The common crab pest observed. (iii) Grain yield. (iv) (a) 1948-49 (*Rabi*) to 1954-55 (*Kharif*). (b) Yes. (c) Nil. (v) (a) and (b) Nil. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 1041 lb./ac.

(ii) 187.6 lb./ac.

(iii) Treatments do not differ significantly.

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

Treatment	Av. yield
1.	977
2.	908
3.	1020
4.	1183
5.	1118
S.E./mean	= 83.9 lb./ac.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 2. (iv) (a) 25'×65'. (b) 20'×55'. (v) 2.5'×5' ring. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) N.A. (iii) Grain yield. (iv) (a) 1952—1954. (b) Yes. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 1945 lb./ac.  
 (ii) 66.13 lb./ac.  
 (iii) Treatment differences are significant.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	2158
2.	1881
3.	1901
4.	1841
S.E./mean	= 46.76 lb./ac.

Crop :- Paddy (*Kharif*).

Ref :- Mh. 53(260)/52(362).

Site :- Agri. Res. Stn., Igatpuri.

Type :- 'M'.

Object :- To assess the relative merits of G.N.C., A/S and Calcium cyanamide.

## 1. BASAL CONDITIONS :

(i) (a) Pulses in *Rabi* and Paddy in *Kharif*. (b) Gram in *Rabi*. (c) Nil. (ii) (a) Shallow and coarse soil derived from Deccan trap rock. (b) Refer soil analysis, Igatpuri. (iii) 18.6.1953/28.7.1953. (iv) (a) One ploughing for *Rabi* and 3 ploughings in *Kharif*. (b) to (e) N.A. (v) Nil. (vi) Z-31 (mid-late). (vii) Un-irrigated. (viii) Weeding and interculturing. (ix) 123". (x) 26.10.1953.

## 2. TREATMENTS :

- 64 lb./ac. of N as A/S.
- 64 lb./ac. of N as G.N.C.+A/S in 1 : 1 ratio.
- 64 lb./ac. of N as Calcium cyanamide.
- 64 lb./ac. of N as calcium Cyanamide+G.N.C. in 1 : 1 ratio.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 2. (iv) (a) 65'×25'. (b) 55'×20'. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) Crop was fairly good throughout the season. (ii) Jassids and army worms noticed. (iii) Height, no. of tillers, date of flowering and grain yield. (iv) (a) 1952—54. (b) Yes. (c) N.A. (v) (a) and (b) N.A. (vi) Nil. (vii) N.A.

## 5. RESULTS :

- (i) 638 lb./ac.  
 (ii) 129.3 lb./ac.  
 (iii) The treatments do not differ significantly.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	782
2.	422
3.	545
4.	802
S.E./mean	= 91.4 lb./ac.

Crop :- Paddy (*Kharif*). Ref :- Mh- 53(381)/52(380)/51(238)/50(168)/49(147).

Site :- Agri. Res. Stn., Igatpuri.

Type :- 'M'.

Object :—To study the effect of leguminous crop (Lentils) raised with and without  $P_2O_5$  on the succeeding cereal crop of Paddy.

1. BASAL CONDITIONS :

(i) (a) Lentils-Paddy. (b) Lentils, (e) As per treatments. (ii) (a) Shallow and coarse trap soil. (b) Refer soil analysis, Igatpuri. (iii) 15.6.1953/22,23.7.1953. (iv) (a) 1 ploughing and 1 puddling. (b) Transplanting. (c) — (d)  $10'' \times 10''$ . (e) 8 seedlings/bunch. (v) Nil. (vi) Z-31 (mid-late). (vii) Unirrigated. (viii) 1 interculturing. (x) 129.99''. (x) 25.10.1953.

2. TREATMENTS :

1. Control (no  $P_2O_5$ )
2. 50 lb./ac. of  $P_2O_5$  as Super.
3. 100 lb./ac. of  $P_2O_5$  as Super.
4. 150 lb./ac. of  $P_2O_5$  as Super.
5. Fallow in *Rabi*.

Manures applied to previous lentils crop.

3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 5. (iv) (a)  $25' \times 15'$ . (b)  $20' \times 10'$ . (v) 2.5' ring. (vi) As per treatments.

4. GENERAL :

(i) The growth was checked due to attack of pests. (ii) The expt. was affected by two pests, jassids followed by army worms. (iii) Grain yield. (iv) (a) 1948-49 (*Rabi*) to 1954-55 (*Kharif*). (b) Yes. (c) Nil. (v) (a) and (b) Nil. (vi) and (vii) Nil.

5. RESULTS :

- (i) 817.6 lb./ac.  
 (ii) 126.3 lb./ac.  
 (iii) Treatments do not differ significantly.  
 (iv) Av. yield of grain in lb./ac. —

Treatment	Av. yield
1.	665
2.	833
3.	931
4.	945
5.	714
S.E./mean	= 56.5 lb./ac.

Crop :- Paddy (*Kharif*).

Site :- Agri. Res. Stn., Igatpuri.

Ref :- Mh. 52(362).

Type :- 'M'.

Object :—To test the efficiency of Calcium cyanamide as compared to A/S and G.N.C.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) (a) Coarse to medium black. (b) Refer soil analysis, Igatpuri. (iii) 9.6.1952/30.7.1952. (iv) (a) 1 ploughing and 1 puddling. (b) Transplanting. (c) — (d)  $10'' \times 10''$ . (e) 6 seedlings/bunch. (v) Nil. (vi) Z-31 (mid-late). (vii) Unirrigated. (viii) 1 interculturing. (ix) 127.94''. (x) 1.11.1952.

2. TREATMENTS :

1. 64 lb./ac. of N as A/S.
2. 64 lb./ac. of N as G.N.C.+A/S in 1 : 1 ratio.
3. 64 lb./ac. of N as Calcium cyanamide.
4. 64 lb./ac. of N as Calcium cyanamide+G.N.C. in 1 : 1 ratio.

Crop :- Paddy (*Kharif*).

Ref :- Mh. 50(18).

Site :- Agri. Res. Stn., Karjat.

Type :- 'M'.

Object :—To study the effect of application of  $P_2O_5$  to the leguminous crop (*Wal*) for fixation of nitrogen in soils which should benefit the succeeding Paddy crop.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) *Wal*. (c) Manured as per treatments. (ii) (a) Sandy loam. Medium black derived from trap rock. (b) Refer soil analysis, Karjat. (iii) 12.6.1950/11.8.1950. (iv) (a) N.A. (b) Transplanting. (c) —. (d)  $10'' \times 10''$ . (e) 8 seedlings/bunch. (v) Nil. (vi) K-42 (late). (vii) Unirrigated. (viii) N.A. (ix) 124". (x) 1.12.1950.

## 2. TREATMENTS :

1. Fallow in *Rabi* (no manure).
2. Control (no  $P_2O_5$ ).
3. 50 lb./ac. of  $P_2O_5$ .
4. 100 lb./ac. of  $P_2O_5$ .
5. 150 lb./ac. of  $P_2O_5$ .

$P_2O_5$  as Super was applied to the previous crop *Wal* (*Rabi*) and its residual effect was studied on Paddy in *Kharif*.

## 3. DESIGN :

(i) R:B D. (ii) (a) 5. (b) N.A. (iii) 5. (iv) (a)  $20' \times 10'$ . (b)  $16.33' \times 8.33'$ . (v) 1.8' on either side, with 2 rows of 0.83' at either end. (vi) Yes.

## 4. GENERAL :

(i) The growth was poor due to the absence of rains for about 3 weeks immediately after planting. There was no lodging of the crop. (ii) The attack of paddy Mealy Bug was very severe in all the plots. Abnormal season. (iii) Grain yield. (iv) (a) 1949-N.A. (b) No. (c) N.A. (v) (a) N.A. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 249.2 lb./ac.  
 (ii) 157.1 lb./ac.  
 (iii) Treatments do not differ significantly.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	136.8
2.	306.4
3.	190.2
4.	400.4
5.	212.3
S.E./mean	= 70.23 lb./ac.

Crop :- Paddy (*Kharif*).

Ref :- Mh. 52(34).

Site :- Agri. Res. Stn., Karjat.

Type :- 'M'.

Object :—To study the effect of application of  $P_2O_5$  to leguminous crop (*Wal*) for fixation of nitrogen in the soil which should benefit the succeeding cereal crop Paddy.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) *Wal* in *Rabi*. (c) Manured as per treatments. (ii) (a) Sandy loam, medium black derived from trap rock. (b) Refer soil analysis, Karjat. (iii) 10.6.1952/6.7.1952. (iv) (a) 2 ploughings. (b) Sowing in the seedbeds and transplanting in the fields. (c) —. (d)  $8'' \times 8''$ . (e) N.A. (v) Nil. (vi) Paddy, K-540. (vii) Unirrigated. (viii) N.A. (ix) 109". (x) 12.11.1952.

## 2. TREATMENTS :

1. Fallow in *Rabi* (no manure).
2. Control (no  $P_2O_5$ ).
3. 50 lb./ac. of  $P_2O_5$ .
4. 100 lb./ac. of  $P_2O_5$ .
5. 150 lb./ac. of  $P_2O_5$ .

$P_2O_5$  as Super was applied to the previous crop *Wal* (*Rabi*) and the residual effect was studied on paddy in *Kharif*.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 4. (iv) (a) 20' × 10'. (b) 18.33' × 8.33'. (v) 0.83' ring round the net plot. (vi) Yes.

## 4. GENERAL :

(i) Four plots lost moisture earlier, hence poor growth. For all other plots uniform growth. (ii) Attack of stem borer was seen in a mild form. Gursoral spray was given. (iii) Grain yield. (iv) (a) N.A. (b) N.A. (c) N.A. (v) (a) N.A. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 1832 lb./ac.  
 (ii) 685.8 lb./ac.  
 (iii) Treatments do not differ significantly.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	2047
2.	1747
3.	1355
4.	2113
5.	1900
S.E./mean	= 342.9 lb./ac.

Crop :- Paddy (*Kharif*).

Site :- Agri. Res. Stn., Karjat.

Ref :- Mh. 53(121).

Type :- 'M'.

Object :- To study the effect of application of  $P_2O_5$  to leguminous crop (*Wal*) for fixation of nitrogen in the soil which should benefit the succeeding cereal crop of Paddy.

## 1. BASAL CONDITIONS :

(i) (a) *Wal*-Paddy. (b) *Wal* in *Rabi*. (c) As per treatments. (ii) (a) Sandy loam, medium black derived from trap rock. (b) Refer soil analysis, Karjat. (iii) 14.6.1953/16.7.1953. (iv) (a) 2 ploughings. (b) Transplanting. (c) —. (d) 8" × 8". (e) N.A. (v) Nil. (vi) Paddy K-42 (late). (vii) Unirrigated. (viii) 2 ploughings were given prior to puddling. (ix) 133". (x) 22.11.1953.

## 2. TREATMENTS :

- Fallow in *Rabi* (no manure).
- Control (no  $P_2O_5$ ).
- 50 lb./ac. of  $P_2O_5$ .
- 100 lb./ac. of  $P_2O_5$ .
- 150 lb./ac. of  $P_2O_5$ .

$P_2O_5$  as Super was applied to the previous leguminous crop *Wal* (*Rabi*) and its residual effect was studied on Paddy (*Kharif*).

## 3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 4. (iv) (a) 25' × 15'. (b) 21' × 11'. (v) 2' ring round the net plot. (vi) Yes.

## 4. GENERAL :

(i) Less height ; no lodging. (ii) Nil. (iii) Grain yield. (iv) (a) 1949 to 1954. (b) Yes. (c) N.A. (v) (a) Bulsar, Ratnagiri. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 1255 lb./ac.  
 (ii) 243.4 lb./ac.  
 (iii) Treatments do not differ significantly.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	1494
2.	1085
3.	1058
4.	1297
5.	1341
S.E./mean	= 121.7 lb./ac.

Crop :- Paddy (*Kharif*).  
Site :- Agri. Res. Stn., Karjat.

Ref :- Mh. 49(17).  
Type :- 'M'.

Object :- To ascertain the N and  $P_2O_5$  requirements of Paddy.

### 1. BASAL CONDITIONS :

(i) (a) No. (b) N.A. (c) N.A. (ii) (a) Sandy loam, medium black derived from trap rock. (b) Refer soil analysis, Karjat. (iii) 6.6.1949 : Transplanting Replication I—15.7.1949, II—17.7.1949, III—19.7.1949 and IV—20.7.1949. (iv) (a) 2 ploughings. (b) Transplanting. (c) 40 lb./ac. (d)  $10'' \times 10''$ . (e) 8 seedlings/bunch. (v) Nil. (vi) K. 42 late. (vii) Unirrigated. (viii) 2 weeding in August. Rain-water kept circulating throughout. (ix) 133°. (x) Replication I—14.11.1949, II—15.11.1949, III—16.11.1949, IV—17.11.1949.

### 2. TREATMENTS :

All combinations of (1) and (2).

(1) 4 levels of N :  $N_0=0$ ,  $N_1=32$ ,  $N_2=64$  and  $N_3=96$  lb./ac. of N.

(2) 4 levels of  $P_2O_5$  :  $P_0=0$ ,  $P_1=32$ ,  $P_2=64$  and  $P_3=96$  lb./ac. of  $P_2O_5$ .

$P_2O_5$  as Super, N as G.N.C.  $\frac{1}{2}$  dose of N and full dose of  $P_2O_5$  at puddling and remaining  $\frac{1}{2}$  dose of N 6 weeks after planting.

### 3. DESIGN :

(i)  $4 \times 4$  Factorial in R.B.D. (ii) (a) 16. (b) N.A. (iii) 4. (iv) (a)  $20' \times 30'$ . (b)  $10' \times 20'$ . (v) 5' guard ring round the net plot. (vi) Yes.

### 4. GENERAL :

(i) Normal. (ii) No major pest or disease ; seedlings were affected by blast but were treated with paronox. (iii) Grain yield and straw yield. (iv) (a) 1949 to 1951. (b) Yes. (c) N.A. (v) (a) Amreli, Igatpuri, Kopergaon, Nawapur, Ratnagiri and Vadgaon. (b) N.A. (vi) and (vii) Nil.

### 5. RESULTS :

(i) 2345 lb./ac.

(ii) 263.2 lb./ac.

(iii) Effect of N alone in highly significant. Others are not significant.

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

	$N_0$	$N_1$	$N_2$	$N_3$	Mean
$P_0$	1516	2196	2693	2790	2299
$P_1$	1635	2411	2635	2877	2389
$P_2$	1636	2212	2704	2858	2353
$P_3$	1765	2217	2564	2815	2340
Mean	1638	2259	2649	2835	2345

S.E. of marginal means of N or P

= 65.8 lb./ac.

S.E. of body of table

= 131.6 lb./ac.

Crop :- Paddy (*Kharif*).  
Site :- Agri. Res. Stn., Karjat.

Ref :- Mh. 50(26)/49(17).  
Type :- 'M'.

Object :- To find out the N and  $P_2O_5$  requirements of Paddy.

### 1. BASAL CONDITIONS :

(i) (a) No. (b) Paddy. (c) As per treatments. (ii) (a) Sandy loam, medium black derived from trap rock. (b) Refer soil analysis, Karjat. (iii) 10.6.1950 ; Transplanting Repli. I—19.7.1950, II—20.7.1950, III—21.7.1950 and IV—22.7.1950. (iv) (a) and (b) Transplanting. (c) 40 lb./ac. (d)  $10'' \times 10''$ . (e) 8 seedlings/bunch. (v) Nil. (vi) K-42 (late). (vii) Unirrigated. (viii) Rain-water kept circulating. (ix) 124°. (x) Rep. I—12.11.1950, II—13.11.1950, III—14.11.1950 and IV—15.11.1950.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 4 levels of N :  $N_0=0$ ,  $N_1=32$ ,  $N_2=64$  and  $N_3=96$  lb./ac. of N.

(2) 4 levels of  $P_2O_5$  :  $P_0=0$ ,  $P_1=32$ ,  $P_2=64$  and  $P_3=96$  lb./ac. of  $P_2O_5$ .

N as G.N.C. and  $P_2O_5$  as Super.

$\frac{1}{2}$  dose of N and full dose of P at puddling and the other  $\frac{1}{2}$  dose of N applied 6 weeks after planting.

## 3. DESIGN :

(i)  $4 \times 4$  Fact. in R.B.D. (ii) (a) 16. (b) N.A. (iii) 4. (iv) (a)  $25' \times 15'$ . (b)  $20' \times 10'$ . (v) 3 rows on all sides. (vi) Yes.

## 4. GENERAL :

(i) Normal. Crop lodged badly in maturity stage. (ii) Little attack of crabs. (iii) Grain yield. (iv) (a) 1949-1951. (b) Yes. (c) N.A. (v) (a) Amreli, Igatpuri, Kopergaon, Nawapur, Ratnagiri and Vadgaon. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 2821 lb./ac.

(ii) 270.2 lb./ac.

(iii) Effect of N alone is significant. Others are not significant.

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

	$N_0$	$N_1$	$N_2$	$N_3$	Mean
$P_0$	1871	2565	3327	3504	2817
$P_1$	1888	2705	1358	3535	2822
$P_2$	2041	2629	2871	3644	2796
$P_3$	1847	2698	3287	3559	2848
Mean	1912	2649	3161	3561	2821

S.E. of marginal mean of N or P = 67.6 lb./ac.

S.E. of body of table = 135.1 lb./ac.

Crop :- Paddy (Kharif).

Ref :- Mh. 51(28)/50(26)/49(17).

Site :- Agri. Res. Stn., Karjat.

Type :- 'M'.

Object :- To find out the N and  $P_2O_5$  requirements of Paddy.

## 1. BASAL CONDITIONS :

(i) (a) No. (b) Paddy. (c) As per treatments. (ii) (a) Sandy loam, medium black derived from trap rock. (b) Refer soil analysis, Karjat. (iii) 13.6.1951/19.7.1951. (iv) (a) N.A. (b) Transplanting. (c) 40 lb./ac. (d) Spacing  $10'' \times 10''$ . (e) 8 seedlings/bunch. (v) Nil. (vi) K-42 (late). (vii) Unirrigated. (viii) One weeding. (ix) 124''. (x) 12.11.1951.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 4 levels of N :  $N_0=0$ ,  $N_1=32$ ,  $N_2=64$  and  $N_3=96$  lb./ac. of N.

(2) 4 levels of  $P_2O_5$  :  $P_0=0$ ,  $P_1=32$ ,  $P_2=64$  and  $P_3=96$  lb./ac. of  $P_2O_5$ .

N as G.N.C. and  $P_2O_5$  as Super.

$\frac{1}{2}$  dose of N and all dose of P at puddling and the remaining  $\frac{1}{2}$  dose of N applied 6 weeks after sowing.

## 3. DESIGN :

(i)  $4 \times 4$  Fact. in R.B.D. (ii) (a) 16. (b) N.A. (iii) 4. (iv) (a)  $25' \times 15'$ . (b)  $20' \times 10'$ . (v) 2.5' ring round the net plot. (vi) Yes.

## 4. GENERAL :

(i) Normal. (ii) Nil. (iii) Grain yield. (iv) (a) 1949—1951. (b) Yes. (c) N.A. (v) (a) Amrel, Igatpuri, Kopergaon, Nawapur, Ratnagiri and Vadgaon. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 2758 lb./ac.  
 (ii) 405.8 lb./ac.  
 (iii) Main effect of N alone 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
P <sub>0</sub>	2164	2555	3283	3059	2765
P <sub>1</sub>	1827	2426	3225	3545	2756
P <sub>2</sub>	2324	2450	3151	3654	2895
P <sub>3</sub>	1725	2392	3045	3307	2617
Mean	2010	2456	3176	3391	2758

S.E. of marginal mean of N or P = 101.4 lb./ac.

S.E. of body of table = 202.9 lb./ac.

Crop :- Paddy (*Khari*).  
 Site :- Agri. Res. Stn., Karjat.

Ref :- Mh. 52(55).  
 Type :- 'M'.

Object :- To study the residual effect of the application of N and P to Paddy for three years.

## 1. BASAL CONDITIONS :

(i) (a) No. (b) Paddy. (c) As per treatments. (ii) (a) Sandy loam, medium black derived from trap rock. (b) Refer soil analysis, Karjat. (iii) 10.6.1952/4.7.1952 and 5.7.1952. (iv) (a) Ploughing and puddling. (b) N.A. (c) 40 lb./ac. (d) 8" × 8". (e) N.A. (v) Nil. (vi) K-42 (late). (vii) Unirrigated. (viii) N.A. (ix) 109". (x) 8.11.1952 and 9.11.1952.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 4 levels of N: N<sub>0</sub>=0, N<sub>1</sub>=32, N<sub>2</sub>=64 and N<sub>3</sub>=96 lb./ac. of N.

(2) 4 levels of P<sub>2</sub>O<sub>5</sub>: P<sub>0</sub>=0, P<sub>1</sub>=32, P<sub>2</sub>=64 and P<sub>3</sub>=96 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. Manures applied during last 3 years and now the residual effect studied.

## 3. DESIGN :

(i) 4 × 4 Fact. in R.B.D. (ii) (a) 16. (b) 100' × 60'. (iii) 3. (iv) (a) 25' × 15'. (b) 20' × 10'. (v) 2½' ring round the net plot. (vi) Yes.

## 4. GENERAL :

(i) Uniform and good. (ii) No major pest or disease. (iii) Grain yield. (iv) (a) 1949—54 (direct effect upto 1951, thereafter residual effect). (b) Yes. (c) N.A. (v) (a) Amrel, Igatpuri, Kopergaon, Nowapur, Ratuagiri and Vadgaon. (b) N.A. (vi) Nil. (vii) Originally it was laid out with 4 replications but one replication was dropped due to low yields.

## 5. RESULTS :

- (i) 2386 lb./ac.  
 (ii) 346.8 lb./ac.  
 (iii) Main effects of N and P and their interaction 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
P <sub>0</sub>	2491	2546	2074	2160	2318
P <sub>1</sub>	2614	2105	1990	2128	2209
P <sub>2</sub>	2543	2666	2575	2255	2510
P <sub>3</sub>	2219	2487	2723	2605	2509
Mean	2466	2451	2341	2287	2386

S.E. of marginal mean of N or P = 100.1 lb./ac.

S.E. of body of table = 200.2 lb./ac.

Crop :- Paddy (*Kharif*).

Ref :- Mh. 53(122)/52(55).

Site :- Agri. Res. Stn., Karjat.

Type :- 'M'.

Object :—To study the residual effect of N and P to Paddy for three years.

## 1. BASAL CONDITIONS :

(i) (a) No. (b) Paddy. (c) Nil. (ii) (a) Medium black. (b) Refer soil analysis, Karjat. (iii) 10.6.1953/13,14.7.1953. (iv) (a) 2 ploughings and puddlings (b) transplanting. (c) 40 lb./ac. (d) 10"×10". (e) N.A. (v) Nil. (vi) *Kolamba-42*. (vii) Unirrigated. (viii) 1 weeding. (ix) 133%. (x) 1.11.1953.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 4 levels of N : N<sub>0</sub>=0, N<sub>1</sub>=32, N<sub>2</sub>=64 and N<sub>3</sub>=96 lb./ac. of N.(2) 4 levels of P<sub>2</sub>O<sub>5</sub> : P<sub>0</sub>=0, P<sub>1</sub>=32, P<sub>2</sub>=64 and P<sub>3</sub>=96 lb./ac. of P<sub>2</sub>O<sub>5</sub>.N as A/S, P<sub>2</sub>O<sub>5</sub> as Super. Manures applied during three years 1949-50 to 1951-52 and residual effect studied for this year.

## 3. DESIGN :

(i) 4×4 Fact. in R.B.D. (ii) (a) 16. (b) N.A. (iii) 4. (iv) (a) 25'×15'. (b) 20'×10'. (v) 3 lines on each side all round the net plot. (vi) Yes.

## 4. GENERAL :

(i) Normal. (ii) Nil. (iii) Mean height, no. of tillers, yield of grain and straw. (iv) (a) 1949 to 1954 (direct effect up to 1952, thereafter residual effect). (b) Yes. (c) N.A. (v) (a) Amreli, Igatpuri, Kopergaon, Nawapur, Ratnagiri and Vadgaon. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 2074 lb./ac.

(ii) 371.6 lb./ac.

(iii) Main effects of N and P and interaction N×P 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
P <sub>0</sub>	1903	2417	1987	1753	2015
P <sub>1</sub>	2087	1845	1954	1978	1966
P <sub>2</sub>	2454	2514	1964	2100	2258
P <sub>3</sub>	1957	2029	2277	1967	2057
Mean	2100	2201	2046	1949	2074

S.E. of marginal mean of N or P = 92.9 lb./ac.

S.E. of body of table = 185.8 lb./ac.

Crop :- Paddy (*Kharif*).  
Site :- Agri. Res. Stn., Karjat.

Ref :- Mh. 51(150).  
Type :- 'M'.

Object :—To find out the optimum quantity of lime required to make up the loss caused by the application of A/S.

1. BASAL CONDITIONS :

(i) (a) No. (b) *Kharif* Paddy. (c) As per treatments. (ii) (a) Sandy loam, black medium soil derived from trap rock. (b) Refer soil analysis, Karjat. (iii) 13.6.1951/23.7.1951. (iv) (a) 2 ploughings and 4 puddlings. (b) transplanting. (c) 40 lb./ac. (d) 10" × 10". (e) N.A. (v) 40 lb./ac. of N as A/S applied one week after transplanting. (vi) K-42. (vii) Unirrigated. (viii) N.A. (ix) 56.03". (x) 19.11.1951.

2. TREATMENTS :

All combinations of (1) and (2)+ a control (no lime).

(1) 4 levels of lime :  $L_1=300$ ,  $L_2=900$ ,  $L_3=1800$  and  $L_4=3600$  lb./ac.

(2) 3 times of application :  $T_1$ =every year,  $T_2$ =every alternate year and  $T_3$ =every third year.

3. DESIGN:

(i) R.B.D. (ii) (a) 13 (only 5 independent treatments). (b) N.A. (iii) 2. (iv) (a) 20' × 15'. (b) 18'-8" × 13'-8". (v) 2 lines each side. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) Grain yield. (iv) (a) 1951-contd. (b) Yes. (c) N.A. (v) (a) No. (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 1948 lb./ac.

(ii) 355.6 lb./ac.

(iii) Doses of lime do not differ significantly, control vs. others is not significant.

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

Control = 2031 lb./ac.

Treatment	Av. yield
$L_1$	1732
$L_2$	1865
$L_3$	1877
$L_4$	2291
S.E. of control mean	= 251.5 lb./ac.
S.E./mean (other than control)	= 145.2 lb./ac.

Crop :- Paddy (*Kharif*).  
Site :- Agri. Res. Stn., Karjat.

Ref :- Mh. 52(148)/51(150).  
Type :- 'M'.

Object :—To find out the quantity of lime required to make up the loss caused by the application of A/S to Paddy crop.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) Paddy. (c) As under treatments. (ii) (a) Sandy loam, medium-black derived from trap rock. (b) Refer soil analysis, Karjat. (iii) 10.6.1952/2.7.1952. (iv) (a) 2 ploughings and puddlings. (b) Transplanting. (c) to (e) N.A. (v) 40 lb./ac. of N as A/S. (vi) K-42. (vii) Unirrigated. (viii) N.A. (ix) 10.9". (x) 8.11.1952.

2. TREATMENTS :

All combinations of (1) and (2)+ a control (no lime)

(1) 4 levels of lime :  $L_1=300$ ,  $L_2=900$ ,  $L_3=1800$  and  $L_4=3600$  lb./ac.

(2) 3 Limes of application :  $T_1$ =every year,  $T_2$ =every alternate year and  $T_3$ =every third year.

J. 2. aN: 3. N6

## 3. DESIGN :

(i) R.B.D. (ii) (a) 13 (only 9 independent treatments). (b) N.A. (iii) 2. (iv) (a) 20'×15'. (b) 18'-8"×13'-8". (v) Two lines on each side. (vi) Yes.

## 4. GENERAL :

(i) Normal. (ii) Attacked by crabs. Border lines suffered and gap filling was done. (iii) Grain and straw yield. (iv) (a) 1951-contd. (b) Yes. (c) N.A. (v) (a) N.A. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 2764 lb./ac.  
(ii) 329.3 lb./ac.  
(iii) None of the effects and interaction is significant.  
(iv) Av. yield of grain in lb./ac.

Control = 2733 lb./ac.					
	L <sub>1</sub>	L <sub>2</sub>	L <sub>3</sub>	L <sub>4</sub>	Mean
T <sub>1</sub>	2811	2532	2900	2166	2752
T <sub>2</sub>	2766	2766	2856	2878	2816
Mean	2788	2549	2258	2822	

S.E. of marginal mean of T = 116.4 lb./ac.  
S.E. of marginal mean of L = 164.6 lb./ac.  
S.E. of control vs. other treatment mean = 254.9 lb./ac.  
S.E. of body of table = 232.9 lb./ac.

Crop :- Paddy (*Kharif*).

Ref :- Mh. 53(231)/52(148)/51(150).

Site :- Agri. Res. Stn., Karjat.

Type :- 'M'.

Object :- To find out the optimum quantity of lime necessary to recoup the loss caused by continuous application of A/S.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) As per treatments. (ii) (a) Sandy loam, medium black. (b) Refer soil analysis, Karjat. (iii) 14.6.1953/14.7.1953. (iv) (a) Two ploughings and puddlings. (b) Transplanting. (c) 40 lb./ac. (d) 10"×10". (e) N.A. (v) One week after transplanting, 40 lb./ac. of N in the form of A/S given to all plots. (vi) Kolamba-42. (vii) Unirrigated. (viii) One weeding. (ix) 132" (x) 30.10.1953.

## 2. TREATMENTS :

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

(1) 4 levels of lime : L<sub>1</sub>=300 L<sub>2</sub>=900, L<sub>3</sub>=1800 and L<sub>4</sub>=3600 lb./ac.

(2) 3 times of application : T<sub>1</sub> = every year, T<sub>2</sub> = every alternate year and T<sub>3</sub> = every third year.

## 3. DESIGN:

(i) R.B.D. (ii) (a) 13. (b) N.A. (iii) 2. (iv) (a) 20'×15'. (b) 18'-8"×13'-8". (v) Two lines on each side. (vi) Yes.

## 4. GENERAL :-

(i) Normal. (ii) Nil. (iii) Height of tillers and straw. (iv) (a) 1951-contd. (b) Yes. (c) N.A. (v) (a) Nil. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 2182 lb./ac.  
(ii) 259.6 lb./ac.  
(iii) Main effects of L and T and their interaction do not differ significantly.  
(iv) Av. yield of fodder in lb./ac.

Control = 2130 lb./ac.

	L <sub>1</sub>	L <sub>2</sub>	L <sub>3</sub>	L <sub>4</sub>	Mean
T <sub>1</sub>	2300	2180	2160	2280	2230
T <sub>2</sub>	2120	2360	2200	2240	2230
T <sub>3</sub>	1940	2220	2300	1940	2100
Mean	2120	2253	2220	2153	2187

S.E. of marginal mean of L = 106.0 lb./ac.  
S.E. of marginal mean of T = 91.8 lb./ac.  
S.E. of body of table = 183.6 lb./ac.

Crop :- Paddy (*Kharif*).

Ref :- Mh. 52(182).

Site :- Agri. Res. Stn., Karjat.

Type :- 'M'.

Object :- To find the best time and method of application of N in the form of A/S to Paddy.

## 1. BASAL CONDITIONS :

- (i) (a) No. (b) N.A. (c) N.A. (ii) (a) Sandy loam, medium black derived from trap rock. (b) Refer soil analysis, Karjat. (iii) 10.6.1952/21.7.1952. (iv) (a) 2 ploughings and 4 puddlings. (b) Transplanting. (c) 40 lb./ac. (d) 8" x 8". (e) N.A. (v) 5 C.L./ac. of F.Y.M. (vi) K-42. (vii) Unirrigated. (viii) N.A. (ix) 109". (x) 15.11.1952.

## 2. TREATMENTS:

64 lb./ac. of N as A/S was given to all plots as :

1.  $\frac{2}{3}$  at puddling +  $\frac{1}{3}$  at tillering (surface application).
2.  $\frac{2}{3}$  at puddling +  $\frac{1}{3}$  at tillering in pellet form. (deep application)
3.  $\frac{1}{3}$  dose at puddling +  $\frac{2}{3}$  at tillering (surface application).
4.  $\frac{1}{3}$  dose at puddling +  $\frac{2}{3}$  at tillering in pellet form (deep application).

## 3. DESIGN :

- (i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 2. (iv) (a) 40' x 15'. (b) 36' x 11'. (v) 2' ring round the net plot. (vi) Yes.

## 4. GENERAL :

- (i) Normal. (ii) Replication I was attacked by rats. Damage was caused to the extent of about 10% by cutting earheads. (iii) Grain yield. (iv) (a) 1952 to 1954. (b) Yes. (c) N.A. (v) (a) No. (b) N.A. (vi) Nil. (vii) Nil.

## 5. RESULTS :

- (i) 3413 lb./ac.  
(ii) 121.3 lb./ac.  
(iii) Treatments do not differ significantly.  
(iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	3438
2.	3383
3.	3273
4.	3558
S.E./mean	= 85.77 lb./ac.

Crop :- Paddy (*Kharif*).

Ref :- Mh. 53 (195)/52 (182).

Site :- Agri. Res. Stn., Karjat.

Type :- 'M'.

Object :- To find out the best time and method of application of N to Paddy.

1. BASAL CONDITIONS :

(i) (a) No. (b) Paddy. (c) N.A. (ii) (a) Medium black. (b) Refer soil analysis, Karjat. (iii) 14.6.1953 to 17.7.1953. (iv) (a) Two ploughings. (b) Transplanting. (c) 40 lb./ac. (d) 8"×8". (e) N.A. (v) 5 C.L./ac. of F.Y.M. (vi) Kolamba-42. (vii) Irrigated. (viii) One weeding. (ix) 132.02". (x) 11.11.1953.

2. TREATMENTS :

64 lb./ac. of N as A/S was given to all the plots as :-

1.  $\frac{2}{3}$  at puddling +  $\frac{1}{3}$  at tillering (surface application).
2.  $\frac{2}{3}$  at puddling +  $\frac{1}{3}$  at tillering in pellet form (deep application).
3.  $\frac{1}{2}$  at puddling +  $\frac{1}{2}$  at tillering (surface application).
4.  $\frac{1}{2}$  at puddling +  $\frac{1}{2}$  at tillering in pellet form (deep application).

3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 2. (iv) (a) 15'×40'. (b) 11'×36'. (v) 2' ring round the net plot. (vi) Yes.

4. GENERAL :

(i) The crop growth was vigorous on average. All the plots were almost completely lodged by the middle of October. (ii) Nil. (iii) Grain yield, height and no. of tillers. (iv) (a) 1952 to 1953. (b) Yes. (c) N.A. (v) (a) No. (b) N.A. (vi) Nil. (vii) Nil.

5. RESULTS :

- (i) 1796 lb./ac.
- (ii) 263.0 lb./ac.
- (iii) Treatments do not differ significantly.
- (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	2008
2.	1564
3.	1940
4.	1671
S.E./mean	= 186.0 lb./ac.

Crop :- Paddy (*Kharif*).

Ref :- Mh. 52 (183).

Site :- Agri. Res. Stn., Karjat.

Type :- 'M'.

Object :- To compare sann and *dhaincha* as green manures for Paddy and to study if application of  $P_2O_5$  increases their value as green manure.

1. BASAL CONDITIONS :

(i) (a) No. (b) N.A. (c) N.A. (ii) (a) High level, low level and *varkas* soil. (b) Refer soil analysis, Karjat. (iii) 10.6.1952/13.7.1952 to 26.7.1952. (iv) (a) Two ploughings and puddlings. (b) Transplanting. (c) 40 lb./ac. (d) 8"×8". (e) N.A. (v) Nil. (vi) Paddy K-42. (vii) Irrigated. (viii) N.A. (ix) 109". (x) 8.10.1952 to 7.11.1952.

2. TREATMENTS :

1. Sann only.
2. Sann with  $P_2O_5$  at 50 lb./ac.
3. *Dhaincha* only.
4. *Dhaincha* with  $P_2O_5$  at 50 lb./ac.
5. Control.

## 3. DESIGN :

(i) R.B.D. (ii) (a) (Unequal plots in a block) 4 plots in Rep I and II with treatments 1 to 4, 3 plots in Rep III and IV with treatments 3 to 5. (b) N.A. (iii) 4. (iv) (a) 25'×15'. (b) 20'×10'. (v) 2½' ring round the net plot. (vi) Yes.

## 4. GENERAL :

(i) Normal. (ii) No major pest or disease except mild attack of *skipper*. (iii) Grain yield. (iv) (a) 1952 to 1954. (b) No. (c) N.A. (v) (a) No. (b) N.A. (vi) Nil. (vii) Nil.

## 5. RESULTS :

(i) 2428 lb./ac.  
 (ii) 375.3 lb./ac.  
 (iii) Treatments do not differ significantly.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	2507
2.	2651
3.	2230
4.	2761
5.	1989
S.E./mean	= 187.6 lb./ac.

Crop :- Paddy (*Kharif*).

Ref :- Mh. 53(185).

Site :- Agri. Res. Stn., Karjat.

Type :- 'M'.

Object :—To compare Sann and *Dhaincha* (with and without Phosphatic manure) as green manures for Paddy.

## 1. BASAL CONDITIONS :

(i) (a) No. (b) Paddy. (c) N.A. (ii) (a) Deep and clay loam. (b) Refer soil analysis, Karjat. (iii) K. 42 on 14.6.1953 and 23.7.1953, E.K.—70 on 13.6.1953 and 27.7.1953. (iv) (a) Two ploughings and puddlings at transplanting. (b) Transplanting. (c) 40 lb./ac. (d) 8"×8" (e) N.A. (v) Nil. (vi) *Kolamba* 42 and Early *Kolpi* 70. (vii) Unirrigated. (viii) One weeding. (ix) 132.02". (x) 11.10.1953.

## 2. TREATMENTS :

1. Sann only (without P<sub>2</sub>O<sub>5</sub>).  
 2. Sann with P<sub>2</sub>O<sub>5</sub> applied at 50 lb./ac.  
 3. *Dhaincha* only (without P<sub>2</sub>O<sub>5</sub>).  
 4. *Dhaincha* with 50 lb./ac. of P<sub>2</sub>O<sub>5</sub>.

## 3. DESIGN :

(i) R.B.D. (with unequal No. of plots in a block). (ii) (a) 4 plots block in two blocks, 2 plots/block in two blocks. (b) N.A. (iii) 4. (iv) (a) 25'×15'. (b) 21'×11'. (v) 2' ring round the net plot. (vi) Yes.

## 4. GENERAL :

(i) Growth of green manure, crop was poor on average as compared with sann and *Dhaincha* in lodged areas. (ii) Nil. (iii) Grain yield. (iv) (a) 1952 to 1954. (b) No. (c) N.A. (v) (a) No. (b) N.A. (vi) Nil. (vii) The design is R.B.D. with unequal number of plots per block the treatments 1, 2, 3, 4 are based on 4, 4, 2, 2 plots respectively.

## 5. RESULTS :

(i) 2136 lb./ac.  
 (ii) 35.50 lb./ac.  
 (iii) Treatments do not differ significantly.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	2227
2.	2055
3.	2313
4.	1948
S.E./mean	= 17.75 lb./ac.

Crop :- Paddy (*Kharif*).

Ref :- Mh. 48(55).

Site :- Agri. Res. Stn., Karjat.

Type :- 'M'.

Object :—To find out which of the four mixtures is beneficial to the Paddy crop under Karjat conditions.

1. BASAL CONDITIONS :

- (i) (a) Paddy-Paddy. (b) Paddy. (c) Various doses of nitrogen *viz*, 0, 32, 64, 96 and 128 lb./ac. of N.  
 (ii) (a) Sandy loam, medium black derived from trap rock. (b) Refer soil analysis, Karjat. (iii) 11.6.1948/  
 18.7.1948 (iv) (a) N.A. b) Transplanting. (c) N.A. (d) 12" apart. (e) 10 seedlings per bunch. (v) N.A.  
 (vi) Paddy K-42. (vii) Unirrigated. (viii) N.A. (ix) 130". (x) 18.11.1948.

2. TREATMENTS:

1. Control.
  2. Mix No. I at 280 lb./ac.
  3. Mix No. II at 273 lb./ac.
  4. Mix No. III at 251 lb./ac.
  5. Mix No. IV at 270 lb./ac.
- Details of mixture N.A.

3. DESIGN:

- (i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 6. (iv) (a) 29'×16'. (b) 23'×12'. (v) N.A. (vi) Yes.

4. GENERAL :

- (i) All the treatments entered at various stages of growth at the same time. There was lodging of the plants which was prevented by tying jute twice in bundles. (ii) Serious pests of any kind were absent. Damage was negligible. Just after transplanting crabs were noticed, also leaf eating caterpillars were noticed. (iii) Padd and straw yield. (iv) (a) No. (b) No. (c) N.A. (v) (a) N.A. (b) N.A. (vi) and (vii) Nil.

5. RESULTS

- (i) 3201 lb./ac.  
 (ii) 224.7 lb./ac.  
 (iii) The treatments differ highly significantly.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	2865
2.	3338
3.	3218
4.	3430
5.	3155
S.E./mean	=92.56 lb./ac.

Crop :- Paddy (*Kharif*).

Ref :- Mh. 53(379).

Site :- Agri. Res. Stn., Khopoli.

Type :- 'M'.

Object :—To study the effect of N and P on Paddy yield.

1. BASAL CONDITIONS :

- (i) (a) Not fixed. (b) Gram. (c) Nil. (ii) (a) Medium black. (b) N.A. (ii) 24.6.1953/4.8.1953. (iv)  
 (a) N.A. (b) On raised seed beds and transplanted. (c) 15 lb./ac. (d) 12"×9". (e) 4 seedlings/bunch.  
 (v) Nil. (vi) K-42. (vii) Unirrigated. (viii) 1 weeding and 2 interculturings. (ix) 124.4". (x) 11.11.1953.

2. TREATMENTS :

1. 64 lb./ac. of N as A/S.
  2. 64 lb./ac. of N as A/S+32 lb./ac. of P<sub>2</sub>O<sub>5</sub> as Super.
  3. 32 lb./ac. of N as A/S+32 lb./ac. of P<sub>2</sub>O<sub>5</sub> as Super.
  4. 32 lb./ac. of P<sub>2</sub>O<sub>5</sub> as Super.
- Manuring done on 4.8.1953.

3. DESIGN :

- (i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 4. (iv) (a) 27'×23'. (b) 24'×20'. (v) 1.5' ring. (vi) Yes.

## 4. GENERAL :

(i) Season was rather late. (ii) Nil. (iii) Grain yield. (iv) (a) 1953-54. (b) N.A. (c) Nil. (v) (a) Igatpuri, Karjat, Kopergaon and Ratnagiri. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 1880 lb./ac.  
 (ii) 314.4 lb./ac.  
 (iii) Treatments differ highly significantly.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	2223
2.	2155
3.	1872
4.	1270
S.E./mean	= 57.28 lb./ac.

Crop :- Paddy (*Kharif*).

Ref :- Mh. 53(343).

Site :- Agri. Res. Stn., Khopoli.

Type :- 'M'.

Object :—To study the effect of  $P_2O_5$  in the form of Super in comparison with a normal dose of compost on Paddy.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) Fallow. (c) Nil. (ii) (a) Medium black. (b) N.A. (iii) 26.6.1953/20.7.1953. (iv) (a) 1 ploughing. (b) and (c) Seed sown on raised seed beds at the rate of 15 lb./*guntha* of seed bed area. (d)  $12'' \times 12''$ . (e) 5. (v) Nil. (vi) K-540. (vii) Unirrigated. (viii) 1 weeding and 2 interculturings. (ix)  $124.4''$ . (x) 31.10.1953.

## 2. TREATMENTS :

1. 0 lb./ac. of  $P_2O_5$ .  
 2. 50 lb./ac. of  $P_2O_5$ .  
 3. 100 lb./ac. of  $P_2O_5$ .  
 4. 150 lb./ac. of  $P_2O_5$ .  
 5. 10 C.L./ac. of compost.  
 $P_2O_5$  as Super. Manures applied on 3.7.1953.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 3. (iv) (a)  $33.5' \times 11.5'$ . (b)  $31.5' \times 9.5'$ . (v) 1' ring. (vi) Yes.

## 4. GENERAL :

(i) Normal. (ii) Nil. (iii) Grain and straw yield. (iv) (a) 1953—N.A. (b) N.A. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 1766 lb./ac.  
 (ii) 375.5 lb./ac.  
 (iii) Treatments do not differ significantly.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	1795
2.	1819
3.	1625
4.	1698
5.	1892
S.E./mean	= 216.6 lb./ac.



Crop :-Paddy (*Kharif*).  
Site :-Agri. Res. Stn. Khopoli.

Ref :-Mh. 53(317).  
Type :-'M'.

Object :-To observe the effects of green manuring on the yield of Paddy.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Brinjal. (c) Nil. (ii) (a) Medium black. (b) N.A. (iii) 25.6.1953. (iv) (a) N.A. (b) Transplanting. (c) 15 lb./ac. (d) 8"×8". (e) N.A. (v) Nil. (vi) Z-31 (mid late). (vii) Unirrigated. (viii) N.A. (ix) 124.04". (x) 4.8.1953.

2. TREATMENTS :

1. Control.
2. 2000 lb./ac. of Green material.
3. 4000 lb./ac. of Green material.
4. 8000 lb./ac. of Green material.

3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) 56'×21'. (iii) 3. (iv) (a) 21'×14'. (b) 20'×14'. (v) One guard row. (vi) Yes.

4. GENERAL :

(i) Poor. (ii) Nil. (iii) Grain yield data. (iv) (a) 1953-56. (b) No. (c) Nil. (v) (a) N.A. (b) —. (vi) and (vii) Nil.

5. RESULTS :

- (i) 724 lb./ac.
- (ii) 84.24 lb./ac.
- (iii) Treatments do not differ significantly.
- (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	602
2.	745
3.	717
4.	831
S.E./mean	=48.64 lb./ac.

Crop :-Paddy (*Kharif*).  
Site :-Agri. Res. Stn., Kopergaon.

Ref :-Mh. 49 (33).  
Type :-'M'.

Object :-To study the effect of leguminous crop Gram grown with and without P<sub>2</sub>O<sub>5</sub> on the succeeding cereal crop of Paddy.

1. BASAL CONDITIONS :

(i) (a) Paddy-Gram. (b) Gram. (c) As per treatments. (ii) (a) Medium black. (b) Refer soil analysis, Kopergaon. (iii) 5.7.1949. (iv) (a) N.A. (b) Drilling. (c) Seedrate 40 lb./ac. (d) Spacing between rows-12". (e) N.A. (v) 42 lb./ac. of N as G.N.C. at sowing and 22 lb./ac. of N as A/S at flowering. (vi) *Krishnasal* (mid late). (vii) Irrigated. (viii) Gap filling on 15.7.1949 and hoeing on 5, 16.8.1949. (ix) 17.69". (x) 30.10.1949.

2. TREATMENTS :

1. No manure.
2. 50 lb./ac. of P<sub>2</sub>O<sub>5</sub> applied to gram.
3. 100 lb./ac. of P<sub>2</sub>O<sub>5</sub> applied to gram.
4. 150 lb./ac. of P<sub>2</sub>O<sub>5</sub> applied to gram.
5. Local method (Control) (Fallow in *Rabi* and sown in *Kharif* with 64 lb./ac. of N).  
P<sub>2</sub>O<sub>5</sub> was applied to the previous crop gram and the residual effect on Paddy is studied. P<sub>2</sub>O<sub>5</sub> applied as Super.

3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 5. (iv) (a) 56'×26'. (b) 46'×12'. (v) 5'×7'. (vi) Yes.

## 4. GENERAL:

(i) The germination was good. The crop was not so healthy because of no rains in June and July. The general condition was good after September when there was rain. (ii) Nil. (iii) Grain yield. (iv) (a) Rabi 1948-49 to Kharif 1955-56. (b) Yes. (c) N.A. (v) (a) Karjat, Kosbad, Vadgaon. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS:

- (i) 1276 lb./ac.  
 (ii) 175.8 lb./ac.  
 (iii) Treatments do not differ significantly.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	1283
2.	1214
3.	1255
4.	1235
5.	1392
S.E./mean	=78.6 lb./ac.

Crop :- Paddy (*Kharif*).

Ref :- Mh. 50(47)/49(33).

Site :- Agri. Res. Stn., Kopergaon.

Type :- 'M'.

Object :- To study the effect of leguminous crop Gram grown with and without  $P_2O_5$  on the succeeding cereal crop Paddy.

## 1. BASAL CONDITIONS:

(i) (a) Paddy-Gram. (b) Gram. (c) As per treatments. (ii) (a) Medium black. (b) Refer soil analysis, Kopergaon. (iii) 27.6.1950. (iv) (a) N.A. (b) Drilling. (c) N.A. (d) Distance between two plants not constant; between rows-12". (e) N.A. (v) 42 lb./ac. of N as G.N.C. at sowing and 22 lb./ac. of N as A/S at flowering. (vi) *Krishnasa* (mid-late). (vii) Irrigated. (viii) Hoeing thrice and weeding once. (ix) 21.26". (x) 1.11.1950.

## 2. TREATMENTS:

1. No manure.
  2. 50 lb./ac. of  $P_2O_5$  applied to gram.
  3. 100 lb./ac. of  $P_2O_5$  as applied to gram.
  4. 150 lb./ac. of  $P_2O_5$  as applied to gram.
  5. Control (Fallow in *rabi* and sown in *kharif* with 64 lb./ac. of N).
- $P_2O_5$  was applied to gram and its residual effects studied on Paddy.  $P_2O_5$  applied as Super.

## 3. DESIGN:

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 5. (iv) (a) 57' x 24'. (b) 46' x 12'. (v) 5½' x 6'. (vi) Yes.

## 4. GENERAL

(i) The germination of the crop was satisfactory. The average height of the crop was 2½' but the crop was poor. (ii) Attack of blast disease. (iii) Grain yield. (iv) (a) Rabi 1948-49 to *kharif* 1955-56. (b) Yes. (c) N.A. (v) (a) Karjat, Kosbad and Vadgaon. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS

- (i) 474 lb./ac.  
 (ii) 31.1 lb./ac.  
 (iii) The treatments differ highly significantly.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	482
2.	464
3.	424
4.	382
5.	617
S.E./mean	= 13.9 lb./ac.

Crop:- Paddy (*Kharif*).

Ref :- Mh. 51(50)/50(47)/49(33).

Site :- Agri. Res. Stn., Kopergaon.

Type :- 'M'.

Object :—To study the effect of leguminous crop grown with and without  $P_2O_5$  on succeeding cereal crop Paddy.

## 1. BASAL CONDITIONS :

(i) (a) Paddy-Gram. (b) Gram. (c) As per treatments. (ii) (a) Medium black. (b) Refer soil analysis, Kopergaon. (iii) 23.5.1951. (iv) (a) N.A. (b) Drilling. (c) 40 lb./ac. (d) Distance bet. rows-12". (e) N.A. (v) 42 lb./ac. of N as G.N.C. at sowing and 22 lb./ac. of N as A/S at flowering. (vi) *Krishnasal* (Mid late). (vii) Irrigated (viii) Hoeing-28.7.1951, 12,29.8.1951 ; weeding 31.7.1951. 1.8.1951, 3.8.1951, 4.8.1951, 4.9.1951 and 5.9.1951. (ix) 34.67". (x) 18.19.11.1951.

## 2. TREATMENTS :

1. No manure.
  2. 50 lb./ac. of  $P_2O_5$  as super applied to gram.
  3. 100 lb./ac. of  $P_2O_5$  as super applied to gram.
  4. 150 lb./ac. of  $P_2O_5$  as super applied to gram.
  5. Control (Fallow in *rabi* and sown in *kharif* with 64 lb./ac. of N).
- $P_2O_5$  was applied to gram at sowing and its residual effect studied on paddy.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 5. (iv) (a) 57'×24'. (b) 46'×12'. (v) 5.5'×6'. (vi) Yes.

## 4. GENERAL :

(i) The germination was good ; few gaps were seen here and there. Untimely rains ruined the crop ; the growth was poor. (ii) Blast was observed and the yield was affected to a great extent. (iii) Grain yield. (iv) (a) 1948-49 (*rabi*) to 1955-56 (*kharif*). (b) Yes. (c) N.A. (v) (a) Karjat, Kosbad and Vadgaon. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 721 lb./ac.
- (ii) 170.2 lb./ac.
- (iii) The treatments do not differ significantly.
- (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	673
2.	788
3.	687
4.	665
5.	793
S.E./mean	= 76.1 lb./ac.

Crop :- Paddy (*Kharif*).

Ref :- Mh. 52 (77)/51 (50)/50 (47)/49 (33).

Site :- Agri. Res. Stn., Kopergaon. Type :- 'M'.

Object :—To study the effect of leguminous crop gram grown with and without  $P_2O_5$  on the succeeding cereal crop Paddy.

## 1. BASAL CONDITIONS :

(i) (a) Paddy-Gram. (b) Gram. (c) According to treatments. (ii) (a) Medium black. (b) Refer soil analysis, Kopergaon. (iii) 26.6.1952. (iv) (a) 1 ploughing. (b) Drilling. (c) 40 lb./ac. (d) Distance between two rows-12" between plants irregular. (e) N.A. (v) 42 lb./ac. of N in the form of G.N.C. at the time of sowing and 22 lb./ac. of N in the form of A/S at the time of flowering. (vi) *Krishnasal* (mid-late). (vii) Irrigated. (viii) 1 gap filling, 2 harrowings, 3 weedings and 1 interculturing. (ix) 11.73". (x) 1 and 2.11.1952.

## 2. TREATMENTS :

1. No manure.
2. 50 lb./ac. of  $P_2O_5$ .
3. 100 lb./ac. of  $P_2O_5$ .
4. 150 lb./ac. of  $P_2O_5$ .
5. Control. (Fallow in *Rabi* and sown in *Kharif* with 64 lb./ac. of N.)

$P_2O_5$  was applied to gram and its residual effect studied on paddy.  $P_2O_5$  applied as Super.

## 3. DESIGN :

- (i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 5. (iv) (a) 57'×24'. (b) 46'×12'. (v) 5.5'×6'. (vi) Yes.

## 4. GENERAL :

- (i) The germination was 70 to 72% ; few gaps were seen. Average height of the crop was 18" to 20" with 7 to 8 tillers. The crop was not vigorous as there were no rains. (ii) Slight attack of blast. (iii) Grain yield. (iv) (a) *Rabi* 1948—49 to *Kharif* 1955—56. (b) Yes. (c) N.A. (v) (a) Karjat, Kosbad and Vadgaon. (b) N.A. (vi) Nil. (vii) Nil.

## 5. RESULTS :

- (i) 1218 lb./ac.  
 (ii) 228.8 lb./ac.  
 (iii) The treatments differ highly significantly.  
 (iv) Av yield of grain in lb./ac.

Treatment	Av. yield
1.	1240
2.	1003
3.	1105
4.	1023
5.	1721
S.E./mean.	= 102.3 lb./ac.

Crop :- Paddy (*Kharif*). Ref :- Mh. 53 (37)/52 (77)/51 (50)/50 (94)/49(33).

Site :- Agri. Res. Stn., Kopergaon.

Type :- 'M'.

Object :- To study the effect of leguminous crop gram grown with and without  $P_2O_5$  on the succeeding cereal crop Paddy.

## 1. BASAL CONDITIONS :

- (i) (a) Nil. (b) Gram. (c) As per treatments. (ii) (a) A type. (b) Refer soil analysis, Kopergaon. (iii) 7.7.1953. (iv) (a) 1 ploughing and 1 loading. (b) to (e) N.A. (v) Nil. (vi) Dodki (mid late). (vii) Irrigated. (viii) 2 weedings and 4 hoeings (ix) 17.22". (x) 1.11.1953.

## 2. TREATMENTS :

1. Control.
2. 50 lb./ac. of  $P_2O_5$ .
3. 100 lb./ac. of  $P_2O_5$ .
4. 150 lb./ac. of  $P_2O_5$ .
5. Fallow in *rabi* but 42 lb./ac. of N as G.N.C. and 22 lb./ac. of N as A/S applied during this season.  $P_2O_5$  as Super applied to previous crop gram.

## 3. DESIGN :

- (i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 5. (iv) (a) 57'×24'. (b) 46'×12'. (v) 5.5'×6'. (vi) Yes.

## 4. GENERAL :

- (i) Good. (ii) Nil. (iii) Germination date, flowering date, heights, tillers etc. (iv) (a) 1948—55 (b) Yes. (c) N.A. (v) (a) N.A. (b) N.A. (vi) Nil. (vii) Nil.

## 5. RESULTS :

- (i) 1882 lb./ac.  
 (ii) 644.0 lb./ac.  
 (iii) Treatments differ highly significantly.

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

Treatment	Av. yield
1.	1177
2.	1824
3.	1724
4.	1741
5.	2943
S.E./mean	— 288.8 lb /ac.

Crop :- Paddy (*Kharif*).

Ref :- Mh. 48(18).

Site :- Agri. Res. Stn., Kopergaon.

Type :- 'M'.

Object :—To study the N and P requirements of Paddy.

## 1. BASAL CONDITIONS :

(i) (a) Wheat Paddy. (b) Wheat. (c) 3 C.L./ac. of compost+40 lb./ac. of A/S+2 bags of G.N.C. (ii) (a) Medium black. (b) Refer soil analysis, Kopergaon. (iii) 30.6.1948. (iv) (a) N.A. (b) Drilled. (c) 40 lb./ac. (d) Between rows 12". (e) N.A (v) 5 C.L./ac.of F.Y.M. applied on 25th June, 1948. (vi) *Krishnasal* (mid-late). (vii) Irrigated. (viii) 1 interculturing, 2 weedings and 1 roguing. (ix) 33.20". (x) 29.11.1948.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 4 levels of N :  $N_0=0$ ,  $N_1=32$ ,  $N_2=64$  and  $N_3=96$  lb./ac.(2) 4 levels of  $P_2O_5$  :  $P_0=0$ ,  $P_1=32$ ,  $P_2=64$  and  $P_3=96$  lb./ac.N as G.N.C. and  $P_2O_5$  as Super. N broadcast on 20.6.1948 and  $P_2O_5$  drilled on 20.6.1948.

## 3. DESIGN :

(i) 4×4 Factorial in R.B.D. (ii) (a) 16. (b) N.A. (iii) 4. (iv) (a) 40'×22'. (b) 30'×12'. (v) 5' ring round the net plot. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Crop suffered from leaf rust to a little extent. (iii) Grain yield. (iv) (a) 1948-1951. (b) No. (c) N.A. (v) (a) Amreli, Igatpuri, Ratnagiri and Vadgaon. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 2180 lb./ac.  
(ii) 617.6 lb./ac.  
(iii) Main effect of N alone is significant. Others are not significant.  
(iv) Av. yield of grain in lb./ac.

	$N_0$	$N_1$	$N_2$	$N_3$	Mean
$P_0$	1622	1977	2125	2467	2048
$P_1$	1802	1762	2666	2386	2154
$P_2$	1684	2095	2057	2669	2126
$P_3$	2163	2455	2231	2713	2391
Mean	1818	2072	2270	2559	2180

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

=154.4 lb./ac.  
=308.8 lb./ac.

Crop :- Paddy (*Kharif*).  
Site :- Agri. Res. Stn., Kopergaon.

Ref :- Mh. 49(32).  
Type :- 'M'.

Object :- To study the N and P requirements of Paddy.

### 1. BASAL CONDITIONS :

(i) (a) Wheat-Paddy. (b) Wheat. (c) 2 bags/ac. of G.N.C.+40 lb./ac. of A/S. (ii) (a) Medium black. (b) Refer soil analysis, Kopergaon. (iii) 5.7.1949. (iv) (a) N.A. (b) Drilled. (c) 40 lb./ac. (d) 12" between rows. (e) N.A. (v) 5 C.L./ac. of F.Y.M. (vi) *Krishnasal* (mid-late). (vii) Irrigated. (viii) 1 hoeing, 3 weedings and 2 harrowings and gap filling on 15.7.1949. (ix) 17.69". (x) 12.11.1949.

### 2. TREATMENTS :

All combinations of (1) and (2)

(1) 4 levels of N :  $N_0=0$ ,  $N_1=32$ ,  $N_2=64$  and  $N_3=96$  lb./ac.

(2) 4 levels of  $P_2O_5$  :  $P_0=0$ ,  $P_1=32$ ,  $P_2=64$  and  $P_3=96$  lb./ac.

N as G.N.C. and  $P_2O_5$  as Super.  $P_2O_5$  drilled on 5.7.1949 and N broadcast one month after sowing.

### 3. DESIGN :

(i) 4×4 Factorial in R.B.D. (ii) (a) 16. (b) N.A. (iii) 4. (iv) (a) 40'×22'. (b) 30'×12'. (v) 5' ring round the net pl. t. (vi) Yes.

### 4. GENERAL :

(i) Good. (ii) Nil. (iii) Grain yield. (iv) (a) 1948-1951. (b) No. (c) N.A. (v) (a) Amreli, Igatpuri, Ratnagiri and Vadgaon. (b) N.A. (vi) and (vii) Nil.

### 5. RESULTS :

(i) 1379 lb./ac.

(ii) 208.8 lb./ac.

(iii) Effect of N is highly significant. Others are not significant.

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

	$N_0$	$N_1$	$N_2$	$N_3$	Mean
$P_0$	988	1349	1624	1991	1488
$P_1$	1156	1188	1390	1561	1324
$P_2$	1084	1195	1649	1638	1392
$P_3$	1138	1203	1334	1583	1314
Mean	1091	1234	1499	1693	1379

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

= 52.2 lb./ac.  
= 104.4 lb./ac.

Crop :- Paddy (*Kharif*).  
Site :- Agri. Res. Stn., Kopergaon.

Ref :- Mh. 50(46).  
Type :- 'M'.

Object :- To study the N and  $P_2O_5$  requirements of Paddy.

### 1. BASAL CONDITIONS :

(i) (a) Wheat in *Rabi*-Paddy in *Kharif*. (b) Wheat. (c) 3 bags of G.N.C./ac. + 75 lb./ac. of A/S. (ii) (a) Medium black (b) Refer soil analysis, Kopergaon. (iii) 1.7.1950. (iv) (a) 2 ploughings and 4 harrowings. (b) Drilled. (c) 40 lb./ac. (d) Spacing between rows 12". (e) —. (v) 5 C.L./ac. of F.Y.M. on 25.6.1950. (vi) *Krishnasal* (mid-late). (vii) Irrigated. (viii) 3 hoeings. (ix) 21.23". (x) 20 to 22.11.1950.

## 2. TREATMENTS:

All combinations of (1) and (2)

(1) 4 levels of N :  $N_0=0$ ,  $N_1=32$ ,  $N_2=64$  and  $N_3=96$  lb./ac.

(2) 4 levels of  $P_2O_5$  :  $P_0=0$ ,  $P_1=32$ ,  $P_2=64$  and  $P_3=96$  lb./ac.

N as G.N.C. and  $P_2O_5$  as Super.  $P_2O_5$  drilled with Paddy and N applied on 30.6.1950.

## 3. DESIGN :

(i) 4×4 Fact. in R.B.D. (ii) (a) 16. (b) N.A. (iii) 4. (iv) (a) 40'×22' (b) 30'×12'. (v) 6' ring at round the net plot. (vi) Yes.

## 4. GENERAL :

(i) Satisfactory. (ii) Blast disease observed. (iii) Grain yield. (iv) (a) 1948—1951. (b) No. (c) N.A. (v) (a) Amreli, Igatpuri, Ratnagiri and Vadgaon. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 1321 lb./ac.

(ii) 369.6 lb./ac.

(iii) Main effect of N alone is highly significant.

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

	$N_0$	$N_1$	$N_2$	$N_3$	Mean
$P_0$	955	1314	1613	1623	1376
$P_1$	1129	1008	1499	1622	1314
$P_2$	1055	992	1355	1410	1203
$P_3$	1098	1198	1548	1718	1391
Mean	1059	1128	1504	1593	1321

S.E. of marginal mean of N or P = 92.4 lb./ac.

S.E. of body of table = 184.8 lb./ac.

Crop :- Paddy (*Kharif*).

Site :- Agri. Res. Stn., Kopergaon.

Ref. :- Mh. 51(49).

Type :- 'M'.

Object :- To study the N and  $P_2O_5$  requirements of Paddy.

## 1. BASAL CONDITIONS :

(i) (a) Gram Paddy. (b) Gram. (c) Nil. (ii) (a) Medium black. (b) Refer soil analysis, Kopergaon. (iii) 6.7.7.1951. (iv) (a) N.A. (b) Drilling. (c) 40 lb./ac. (d) 12". (e) N.A. (v) 5 C.L./ac. of F.Y.M. (vi) *Krishnasal* (mid-late). (vii) Irrigated. (viii) 3 weedings and 1 harrowing. (ix) 34.67". (x) 28.11.1951 and 29.11.1951.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 4 levels of N :  $N_0=0$ ,  $N_1=32$ ,  $N_2=64$  and  $N_3=96$  lb./ac.

(2) 4 levels of  $P_2O_5$  :  $P_0=0$ ,  $P_1=32$ ,  $P_2=64$  and  $P_3=96$  lb./ac.

N as G.N.C. and  $P_2O_5$  as Super. Manuring of N and P on 5.7.1951.

## 3. DESIGN :

(i) 4×4 Fact. in R.B.D. (ii) (a) 16. (b) N.A. (iii) 4. (iv) 40'×22'. (b) 30'×12'. (v) 5' ring round the net plot. (vi) Yes.

## 4. GENERAL :

(i) Satisfactory. (ii) Blast disease observed. (iii) Grain yield. (iv) (a) 1948—1951. (b) No. (c) N.A. (v) (a) Amreli, Igatpuri, Ratnagiri and Vadgaon. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 1380 lb./ac.  
 (ii) 240.0 lb./ac.  
 (iii) Effect of N alone is 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>	N <sub>3</sub>	Mean
P <sub>0</sub>	989	1157	1814	1512	1368
P <sub>1</sub>	984	1100	1412	1773	1308
P <sub>2</sub>	1126	1266	1410	2063	1466
P <sub>3</sub>	995	1498	1284	1742	1379
Mean	1014	1255	1480	1772	1380

S.E. of marginal mean of N or P = 60.0 lb./ac.  
 S.E. of body of table = 120.0 lb./ac.

Crop :- Paddy (*Kharif*).

Ref :- Mh. 52(189).

Site :- Agri. Res. Stn., Padegaon.

Type :- 'M'.

Object :- To find out the comparative merits of A/S and A.S.N on the growth of Paddy.

## 1. BASAL CONDITIONS :

- (i) (a) No. (b) *Jowar*. (c) Nil. (ii) (a) B' Type. (b) Refer soil analysis, Padegaon. (iii) 27.6.1952.  
 (iv) (a) N.A. (b) Hand sowing. (c) 40 lb./ac. (d) Between rows 2'. (e) N.A. (v) Nil. (vi) *Krishnasal*.  
 (vii) Irrigated. (viii) Weedings on 3.8.1952 and 23.8.1952. (ix) 11.01'. (x) 21.11.1952.

## 2. TREATMENTS :

- G.N.C. at 32 lb./ac. of N+A.S.N. at 10 lb./ac. of N and A/S.N. at 22 lb./ac. of N. Mixture of G.N.C. and A.S.N. at sowing ; and A.S.N. at flowering.
- G.N.C. at 32 lb./ac. of N+A/S at 10 lb./ac. of N and A/S at 22 lb./ac. of N. Mixture of G.N.C.+A/S at sowing and A/S at flowering.
- G.N.C. at 32 lb./ac. of N+A.S.N. at 10 lb./ac. of N and A.S.N. at 22 lb./ac. of N. Mixture of G.N.C.+A.S.N. at sowing and A.S.N. at tillering.
- G.N.C. at 32 lb./ac. of N+A/S at 10 lb./ac. of N and A/S at 22 lb./ac. of N. Mixture of G.N.C.+A/S at sowing and A/S at tillering.
- G.N.C. at 42 lb./ac. of N+A/S at 22 lb./ac. of N. G.N.C. at sowing and A/S at flowering.

## 3. DESIGN :

- (i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 4. (iv) (a) 26' x 24'. (b) 20' x 20'. (v) 2 rows on either side 3' either end. (vi) Yes.

## 4. GENERAL :

- (i) Due to late sowing of paddy the crop, growth was slightly retarded and the yields were below average.  
 (ii) Nil. (iii) Grain yield. (iv) (a) 1952.-N.A. (b) N.A. (c) No. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 1384 lb./ac.  
 (ii) 216.6 lb./ac.  
 (iii) Treatment differences are not significant.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	1366
2.	1368
3.	1351
4.	1365
5.	1470
S.E./mean	= 108.3 lb./ac.



Crop :- Paddy (*Kharif*).  
Site :- Agri. Res. Stn., Padegaon.

Ref :- Mh. 52(190).

Type :- 'M'.

Object :—To study the effect of *Mahuwa* cake for normal top dressing of Paddy crop.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Sugarcané. (c) 375 lb./ac. of N as A/S. (ii) (a) 'B' type. (b) Refer soil analysis, Padegaon (iii) 27.6.1952. (iv) (a) N.A. (b) Hand sowing. (c) 40 lb./ac. (d) 1' between rows. (e) N.A. (v) Nil. (vi) *Krishnasal*. (vii) Irrigated. (viii) Interculturing on 13.8.1952, 4.9.1952 and 18.9.1952. (ix) 11.01'. (x) 25.11.1952.

## 2. TREATMENTS :

1. G.N.C. and A/S in 2 : 1 ; G.N.C. at sowing and A/S at flowering.
2. *Mahuwa* cake and A/S in 2 : 1 ; *Mahuwa* cake at sowing and A/S at flowering.
3. *Mahuwa* cake, G.N.C. and A/S in 1 : 1 : 1 ; Mixture of *Mahuwa* cake and G.N.C. at sowing and A/S at flowering.
4. *Mahuwa* cake+A/S in 1 : 2 ; Mixture of *Mahuwa* cake and half of A/S at sowing and half of A/S at flowering.
5. G.N.C. and A/S in 1 : 2 ; Mixture of G.N.C. and half of A/S at sowing and half of A/S at flowering.
6. *Mahuwa* cake and A/S in 2 : 1 ; Decomposed *Mohuwa* cake 22 days after sowing and A/S at flowering.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) 26'×18'. (b) 20'×14'. (v) 2 rows on either side, 3' at either end. (vi) Yes.

## 4. GENERAL :

(i) Due to late sowing, growth was slightly less and yields were below normal. (ii) Nil. (iii) Grain and straw yield. (iv) (a) 1952—N.A. (b) No. (c) N.A. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- ( ) 1204 lb./ac.  
(ii) 194.9 lb./ac.  
(i) Treatments do not differ significantly.  
(iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	1314
2.	1067
3.	1122
4.	1266
5.	1342
6.	1112
S.E./mean	=97.4 lb./ac.

Crop :-Paddy (*Kharif*).  
Site :-Agri. Res. Stn., Phondaghat.

Ref :-Mh. 49(3).

Type :-'M'.

Object :—To study the effect of deglued B.M. as a source of  $P_2O_5$  as compared to B.M. on Paddy crop.

## 1. BASAL CONDITIONS :

(i) (a) Paddy after Paddy. (b) Paddy. (c) N.A. (ii) (a) Laterite soil. (b) N.A. (iii) 26.4.1949 ; transplanting 29.5.1949. (iv) (a) to (c) N.A. (d) 10"×10". (e) 8 seedlings/bunch. (v) 5 C.L./ac. of F.Y.M. (vi) *Patni* (early). (vii) Unirrigated. (viii) Weeding on 3rd August 1949. (ix) 159.82". (x) 19.9.1949.

## 2. TREATMENTS :

1. Control (no manure).
2. 40 lb /ac. of  $P_2O_5$  as B.M. +40 lb./ac. of N as G.N.C.
3. 40 lb./ac. of  $P_2O_5$  as deglued B.M. +40 lb./ac. of N as G.N.C.  
Manuring on 29.6.1949.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 3. (b) 80'×16'-8". (iii) 6. (iv) (a) 26'-8"×16'-8". (b) 20'×10'. (v) 3'-4" ring all round the net plot, 4 rows all round the net plot. (vi) Yes.

## 4. GENERAL :

(i) Satisfactory. (ii) Nil. (iii) No. of tillers, height of plants, and grain yield. (iv) (a) 1949-1952. (b) and (c) Yes. (v) (a) Chiplun. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS:

(i) 1472 lb./ac.  
 (ii) 243.9 lb./ac.  
 (iii) Treatment differences are highly significant.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	758
2.	1990
3.	1668
S.E./mean	=99.7 lb./ac.

Crop :-Paddy (*Kharif*).

Ref :-Mh. 50(3)/49(3).

Site :-Agri. Res. Stn., Phondaghat.

Type :-'M'.

Object :-To study the effect of deglued bonemeal as a source of  $P_2O_5$  as compared to B.M. on yield of Paddy.

## 1. BASAL CONDITIONS :

(i) (a) Paddy after Paddy. (b) Paddy. (c) As per treatments. (ii) (a) Laterite soil. (b) N.A. (iii) 28.5.195/5.7.1950. (iv) (a) to (c) N.A. (d) 10"×10". (e) 8 seedlings/bunch. (v) F.Y.M. at 5 C.L./ac. (vi) *Waksal-207* (mid-late). (vii) Unirrigated. (viii) Weeding on 14.8.1950. (ix) 164.37". (x) 15.10.1950.

## 2. TREATMENTS

1. Control (no manure).  
 2. 40 lb./ac. of  $P_2O_5$  as B.M.+40 lb./ac. of N as G.N.C.  
 3. 40 lb./ac. of  $P_2O_5$  as deglued B.M.+40 lb./ac. of N as G.N.C.  
 Manuring on 5.7.1950.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 3. (b) 80'×16'-8". (iii) 6. (iv) (a) 26'-8"×16'-8". (b) 20'×10'. (v) 3'-4" ring all round the net plot. (vi) Yes.

## 4. GENERAL :

(i) Lodging observed due to constant heavy rains. (ii) Nil. (iii) Grain yield, straw yield, Av. height. and Av. no. of tillers. (iv) (a) 1949-1952. (b) Yes. (c) N.A. (v) (a) Chiplun. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 1844 lb./ac.  
 (ii) 276.8 lb./ac.  
 (iii) Treatment differences are highly significant.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	973
2.	2482
3.	2078
S.E./mean	=113.0 lb./ac.

Crop :- Paddy (*Kharif*).  
Site :- Agri. Res. Stn., Phondaghat.

Ref :- Mh. 51(3)/50(3)/49(3).  
Type :- 'M'.

Object :—To study the effect of deglued bonemeal as a source of  $P_2O_5$  as compared to B.M. on the yield of Paddy.

1. BASAL CONDITIONS :

(i) (a) Paddy after Paddy. (b) Paddy. (c) As per treatments. (ii) (a) Laterite soil. (b) N.A. (iii) 28.5.1951 ; Transplanting 9.7.1951. (iv) (a) to (e) N.A. (v) 5 C.L./ac. of F.Y.M. (vi) *Waksal-207* (mid-late). (vii) Unirrigated. (viii) Weeding on 12.8.1951. (ix) 153.40". (x) 12,13.10.1951

2. TREATMENTS :

1. Control (no manure).
2. 40 lb./ac. of  $P_2O_5$  as B.M. + 40 lb./ac. of N as G.N.C.
3. 40 lb./ac. of  $P_2O_5$  as deglued B.M. + 40 lb./ac. of N as G.N.C.  
Manuring on 9.7.1951.

3. DESIGN :

(i) R.B.D. (ii) (a) 3. (b) N.A. (iii) 6. (iv) (a) 26' 8" × 16' 8". (b) 20' × 10'. (v) 3' 4" ring round the net plot. (vi) Yes.

4. GENERAL :

(i) Lodging due to constant rains. (ii) Nil. (iii) Grain yield, Av. no. of tillers and Av. height of plants. (iv) (a) 1949—1952. (b) Yes. (c) N.A. (v) (a) Chiplun. (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

- (i) 1519 lb./ac.
- (ii) 197.4 lb./ac.
- (iii) Treatment differences are highly significant.
- (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	880
2.	1862
3.	1814
S.E./mean	= 80.6 lb./ac.

Crop :- Paddy (*Kharif*).  
Site :- Agri. Res. Stn., Phondaghat.

Ref :- Mh. 52(173).  
Type :- 'M'.

Object :—To study the suitability of dicalcium phosphate for Paddy crop.

1. BASAL CONDITIONS :

(i) (a) Paddy after Paddy. (b) Paddy. (c) N.A. (ii) (a) Loam derived from gniess and laterite. (b) N.A. (iii) 24.5.1952 ; Transplanting on 5.7.1952 to 14.7.1952. (iv) (a) to (e) N.A. (v) Nil. (vi) *Waksal-207* (mid-late). (vii) Unirrigated. (viii) Weeding on 30.7. 1952, 6.7.1952 and 7.8.1952. (ix) 135.77". (x) 1.10.1952 and 30.9.1952.

2. TREATMENTS :

1. 40 lb./ac. of  $P_2O_5$  in the form of dicalcium phosphate.
2. 40 lb./ac. of  $P_2O_5$  applied in the form of B.M.

3. DESIGN :

(i) R.B.D. (ii) (a) 2. (b) N.A. (iii) 12. (iv) (a) 40' × 20'. (b) 30' × 10'. (v) 5' ring all round the net plot. (vi) Yes.

4. GENERAL :

(i) Lo<sup>o</sup>ging occurred in last week of September. (ii) Nil. (iii) Grain yield. (iv) (a) 1952-N.A. (b) Yes. (c) N.A. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 1867 lb./ac.
- (ii) 310.3 lb./ac.
- (iii) Treatments do not differ significantly.
- (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	1874
2.	1861
S.E./mean	= 89.7 lb./ac.

Crop :- Paddy (*Kharif*).

Ref :- Mh. 53 (261)/52 (173).

Site :- Agri. Res. Stn., Phondaghat.

Type :- 'M'.

Object :- To study the suitability of dicalcium phosphate as a source of  $P_2O_5$ .

## 1. BASAL CONDITIONS :

- (i) (a) Paddy after Paddy. (b) Paddy. (c) As per treatments. (ii) (a) Loam, derived from gniess and laterite. (b) N.A. (iii) 17.6.1953/23 and 24.7.1953. (iv) (a) to (e) N.A. (v) Nil. (vi) *Waksal-207* (mid-late). (vii) Unirrigated. (viii) Weeding in the 2nd week of August. (ix) 170.78". (x) N.A.

## 2. TREATMENTS :

- 1. 32 lb./ac. of  $P_2O_5$  in the form of dicalcium phosphate.
- 2. 32 lb./ac. of  $P_2O_5$  in the form of B.M.

## 3. DESIGN :

- (i) Paired plot. (ii) (a) 2. (b) N.A. (iii) 12. (iv) (a) 40' x 20'. (b) 30' x 10'. (v) 5' ring. (vi) Systematic allocation.

## 4. GENERAL :

- (i) Lodging observed. (ii) Crop was heavily affected by army-worms. (iii) Grain and straw yield. (iv) (a) 1952-N.A. (b) Yes. (c) N.A. (v) (a), (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 1550 lb./ac.
- (ii) 369.0 lb./ac.
- (iii) Treatments do not differ significantly.
- (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	1545
2.	1555
S.E./mean	= 106.5 lb./ac.

Crop :- Paddy (*Kharif*).

Ref :- Mh. 50 (4).

Site :- Agri. Res. Stn., Phondgahat.

Type :- 'M'.

Object :- To study the effect of graded doses of dolomite on Paddy yield.

## 1. BASAL CONDITIONS :

- (i) Paddy after Paddy. (b) Paddy. (c) N.A. (ii) (a) Laterite soil. (b) N.A. (iii) 28.5.1950; transplanting on 6.7.1950. (iv) (a), (b) and (c) N.A. (d) 10' x 10'. (e) 8 seedlings/bunch. (v) 5 C.L./ac. of F.Y.M. (vi) *Waksal-207* (mid-late.) (vii) Unirrigated. (viii) Weeding on 6.7.1950. (ix) 164.37". (x) 16.10.1950.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 5 levels of dolomite :  $D_0=0$ ,  $D_1=0.5$ ,  $D_2=1$ ,  $D_3=1.5$  and  $D_4=2$  ton/ac.

(2) 2 manures :  $M_0$ =No manure and  $M_1=40$  lb./ac. of N as G.N.C.+40 lb./ac. of  $P_2O_5$  as B.M.

## 3. DESIGN

(i)  $2 \times 5$  factorial in R.B.D. (ii) (a) 10. (b)  $16'8'' \times 266'8''$ . (iii) 4. (iv) (a)  $26'8'' \times 16'8''$ . (b)  $20' \times 10'$ . (v)  $3'4''$  ring all round the net plot. (vi) Yes.

## 4. GENERAL

(i) Due to constant heavy showers, crop was lodged. Otherwise satisfactory. (ii) Nil. (iii) Average height, no. of tillers and grain yield. (iv) (a) 1950 to 1951. (b) and (c) N.A. (v) (a) and (b) Chiplun. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 1974 lb./ac.

(ii) 213.4 lb./ac.

(iii) Main effects of dolomite and manures and their interaction are significant.

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

	$M_0$	$M_1$	Mean
$D_0$	1072	2525	1798
$D_1$	1201	2358	1780
$D_2$	1405	2467	1936
$D_3$	1875	2335	2105
$D_4$	1923	2576	2249
Mean	1495	2452	1973

S.E. of marginal mean of D

= 75.4 lb./ac.

S.E. of marginal mean of M

= 47.7 lb./ac.

S.E. of body of table

= 106.7 lb./ac.

Crop :- Paddy (*Kharif*).

Ref :- Mh. 51(4).

Site :- Agri. Res. Stn., Phondaghat.

Type :- 'M'.

Object :- To study the effect of graded doses of dolomite on the yield of Paddy.

## 1. BASAL CONDITIONS :

(i) (a) Paddy after Paddy. (b) Paddy. (c) N.A. (ii) (a) Laterite soil. (b) N.A. (iii) 28.5.1951; transplanting on 5 and 8.7.1951. (iv) (a) to (c) N.A. (d)  $10'' \times 10''$ . (e) N.A. (v) 5 C.L./ac. of F.Y.M. (vi) *Waksal-207* (mid-late). (vii) Unirrigated. (viii) Weeding on 1.8.1951. (ix) 153.40%. (x) 12.10.1951 and 13.10.1951.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 5 levels of dolomite :  $D_0=0$ ,  $D_1=0.5$ ,  $D_2=1$ ,  $D_3=1.5$  and  $D_4=2$  ton/ac.

(2) 2 manures :  $M_0$ =No manure and  $M_1=40$  lb./ac. of N as G.N.C.+40 lb./ac. of  $P_2O_5$  as B.M. Bonemeal applied on 5.7.1951.

## 3. DESIGN :

(i)  $2 \times 5$  Fact. in R.B.D. (ii) (a) 10. (b) N.A. (iii) 4. (iv) (a)  $26'8'' \times 16'8''$ . (b)  $20' \times 10'$ . (v)  $3'4''$  ring round the net plot. (vi) Yes.

## 4. GENERAL :

(i) Good. Lodging due to heavy showers. (ii) Nil. (iii) Grain yield, Av. no. of tillers and height. (iv) (a) 1950-1951. (b) and (c) N.A. (v) (a) Chiplun. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 1759 lb./ac.  
 (ii) 265.6 lb./ac.  
 (iii) Main effect of dolomite and manure are significant, while their interaction is not significant.  
 (iv) Av. yield of grain in lb./ac.

	M <sub>0</sub>	M <sub>1</sub>	Mean
D <sub>0</sub>	1080	2082	1581
D <sub>1</sub>	1192	2055	1623
D <sub>2</sub>	1373	2024	1698
D <sub>3</sub>	1742	2089	1915
D <sub>4</sub>	1771	2188	1979
Mean	1431	2088	1759

S.E. of marginal mean of D = 93.9 lb./ac.  
 S.E. of marginal mean of M = 29.6 lb./ac.  
 S.E. of body of table = 132.8 lb./ac.

Crop :- Paddy (*Kharif*).

Ref :- Mh. 53(112).

Site :- Agri. Res. Stn., Phondaghat.

Type :- 'M'.

Object :—To study the optimum dose of N and P<sub>2</sub>O<sub>5</sub> in combination with lime.

## 1. BASAL CONDITIONS :

(i) (a) No. (b) Paddy. (c) N.A. (ii) (a) Laterite soil. (b) N.A. (iii) 16th [June 1953/21st July 1953. (iv) (a) and (b) N.A. (c) 40 lb./ac. (d) 10' × 10'. (e) N.A. (v) N.A. (vi) Varangal-487 (late). (vii) Un-irrigated. (viii) Weeding 2nd week of August. (ix) 170.78". (x) 13th Nov. 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>=15 and N<sub>2</sub>=30 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>=30 and P<sub>2</sub>=60 lb./ac. of P<sub>2</sub>O<sub>5</sub>.

(3) 3 levels of lime : L<sub>1</sub>=1.25, L<sub>2</sub>=2.50 and L<sub>3</sub>=3.75 ton/ac.

N and P applied on 21.7.1953 ; lime applied on 20.7.1953.

## 3. DESIGN :

(i) 3<sup>3</sup> confounded factorial. (ii) (a) 9 plots/block and 3 blocks/replication. (b) N.A. (iii) 1. (iv) (a) 10' 10" × 33' 4". (b) 7' 6" × 30' 0". (v) 3' 4" ring all round the plot. (vi) Yes.

## 4. GENERAL :

(i) Satisfactory. (ii) Crop affected by black-smut and army-worm. 10% B.H.C. dusting was done. (iii) Grain, straw and average no. of tillers, height. (iv) (a) 1953—contd. (b) and (c) No. (v) (a) Ratangiri, and Karajat. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 1814 lb./ac.  
 (ii) 327.6 lb./ac.  
 (iii) All the main effects and their 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	L <sub>1</sub>	L <sub>2</sub>	L <sub>3</sub>
P <sub>0</sub>	2065	1766	2081	1970	1855	2008	2048
P <sub>1</sub>	2117	1730	1601	1816	1839	1819	1790
P <sub>2</sub>	1903	1645	1419	1656	1552	1798	1617
Mean	2028	1714	1700	1814	1748	1875	1818
L <sub>1</sub>	1754	1693	1798				
L <sub>2</sub>	2145	1794	1685				
L <sub>3</sub>	2186	1653	1617				

S.E. of marginal mean of N, P or L = 109.2 lb./ac.  
 S.E. of body of table = 189.1 lb./ac.

Crop :- Paddy (*Kharif*).

Ref :- Mh. 53(103).

Site :- Agri. Res. Stn., Ratnagiri.

Type :- 'M'.

Object :- To ascertain the optimum dose of N and P<sub>2</sub>O<sub>5</sub> in combination with lime to get maximum yield of Paddy.

## 1. BASAL CONDITIONS :

(i) (a) No. (b) Paddy. (c) 5 C.L./ac. of F.Y.M. (ii) (a) Laterite. (b) N.A. (iii) 4.6.1953/54 and 25.7.1953. (iv) (a) Puddling was done by ploughing the field 5 times. (b) N.A. (c) 15 lb./ac. (d) 10' × 10'. (e) N.A. (v) N.A. (vi) *Bhadas-79*. (vii) Unirrigated. (viii) Interculturing and weeding was undertaken at the time of application of N. (ix) 148.06". (x) 10.11.1953.

## 2. TREATMENTS :

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

- (1) 3 levels of N as Calcium Cyanamide : N<sub>0</sub>=0, N<sub>1</sub>=15 and N<sub>2</sub>=30 lb./ac. of N.  
 (2) 3 levels of P<sub>2</sub>O<sub>5</sub> as B.M. : P<sub>0</sub>=0, P<sub>1</sub>=30 and P<sub>2</sub>=60 lb./ac. of P<sub>2</sub>O<sub>5</sub>.  
 (3) 3 levels of lime : L<sub>1</sub>=2, L<sub>2</sub>=4 and L<sub>3</sub>=6 ton/ac.

## 3. DESIGN :

(i) 3<sup>3</sup> Fact. in R B.D. (confounded). (ii) (a) 9. (b) N.A. (iii) 1. (iv) (a) 33' 4" × 10' 10". (b) 30' × 7' 6". (v) 1' 8" ring round the net plot. (vi) Yes.

## 4. GENERAL :

(i) Satisfactory. (ii) Blue-beetle, case-worms and army-worms observed. (iii) Grain and straw yield. (iv) (a) 1953-contd. (b) No. (c) N.A. (v) (a) Hatakhamba. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 2049 lb./ac.  
 (ii) 336.9 lb./ac.  
 (iii) Main 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	L <sub>1</sub>	L <sub>2</sub>	L <sub>3</sub>
P <sub>0</sub>	2004	2295	1956	2085	2242	2000	2012
P <sub>1</sub>	1844	1969	1976	1929	1803	2045	1940
P <sub>2</sub>	2432	2000	1977	2136	1867	2351	2190
Mean	2093	2088	1970	2049	1971	2132	2048
L <sub>1</sub>	1847	2097	1968				
L <sub>2</sub>	2452	2122	1823				
L <sub>3</sub>	1980	2045	2117				

S.E. of marginal mean of N, P or L = 112.3 lb./ac.

S.E. of body of table = 194.5 lb./ac.

Crop :- Paddy (*Khariif*).

Ref :- Mh. 48(1).

Site :- Agri. Res. Stn., Ratnagiri.

Type :- 'M'.

Object :- To study the combined effect of N and P manures on Paddy crop.

## 1. BASAL CONDITIONS:

(i) (a) Paddy after Paddy. (b) *Kulthi* mixture in *Rabi*. (c) Nil. (ii) (a) *Mala* or low lying. (b) pH value 5.0. Lime requirement in ton/ac. of CaCO<sub>3</sub> 4.4. (iii) 11th June 1948; transplanted between 3rd and 7th August, 1948. (iv) (a) to (c) N.A. (d) 10' × 10'. (e) 8 seedlings/bunch. (v) 5 C.L./ac. of F.Y.M. (vi) *Waksal-207* (mid-late). (vii) Unirrigated. (viii) No weeding or interculturing. (ix) 141.51°. (x) 7th November 1948.

## 2. TREATMENTS:

All combinations of (1) and (2)

(1) 4 levels of N: N<sub>0</sub>=0, N<sub>1</sub>=32, N<sub>2</sub>=64 and N<sub>3</sub>=96 lb./ac.(2) 4 levels of P<sub>2</sub>O<sub>5</sub>: P<sub>0</sub>=0, P<sub>1</sub>=32, P<sub>2</sub>=64 and P<sub>3</sub>=96 lb./ac.N as G.N.C. and P<sub>2</sub>O<sub>5</sub> as B.M.

N applied on 17.8 1948

## 3. DESIGN:

(i) 4 × 4 Fact. in R.B.D. (ii) (a) 16. (b) N.A. (iii) 4. (iv) (a) 30' × 20'. (b) 20' × 10'. (v) 5' ring around the net plot. (vi) Yes.

## 4. GENERAL:

(i) Satisfactory. (ii) Nil. (iii) Grain and straw yield. (iv) (a) 1948-1956 (Residual effects from 1952 onwards). (b) Yes. (c) N.A. (v) (a) and (b) N.A. (vi) and (b) Nil.

## 5. RESULTS

(i) 1694 lb./ac.

(ii) 166.0 lb./ac.

(iii) Main effect of N is not significant while main effect of P<sub>2</sub>O<sub>5</sub> and the interaction are 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
P <sub>0</sub>	1331	1446	1562	1585	1481
P <sub>1</sub>	1562	1776	1763	1719	1705
P <sub>2</sub>	1596	1790	1776	1808	1743
P <sub>3</sub>	1742	1923	1875	1834	1844
Mean	1558	1734	1744	1737	1694

S.E. of marginal mean of N or P = 41.5 lb./ac.  
S.E. of body of table = 83.0 lb./ac.

Crop :- Paddy (*Kharif*).

Ref :- Mh. 49(1)/48(1).

Site :- Agri. Res. Stn., Ratnagiri.

Type :- 'M'.

Object :- To study the combined effect of N and P<sub>2</sub>O<sub>5</sub> on Paddy.

## 1. BASAL CONDITIONS

(i) (a) N.A. (b) *Kulthi* mixture in *Rabi*. (c) Nil. (ii) (a) *Mala* or low lying. (b) pH value 5.0 lime requirement in terms of CaCO<sub>3</sub>=4.4 ton/ac. (iii) 3 and 4. 6. 1949 ; Transplanting bet. 28.7.1949 to 1.8.1949. (iv) (a), (b) and (c) N.A. (d) 10'×10'. (e) 8 seedlings/bunch. (v) 5 C.L./ac. of F.Y.M. (vi) *Waksal-207*. (vii) Unirrigated. (viii) Nil. (ix) 105.90°. (x) 24.10.1949 to 3.11.1949.

## 2. TREATMENTS:

All combinations of (1) and (2)

(1) 4 levels of N : N<sub>0</sub>=0, N<sub>1</sub>=32, N<sub>2</sub>=64 and N<sub>3</sub>=96 lb./ac.(2) 4 levels of P<sub>2</sub>O<sub>5</sub> : P<sub>0</sub>=0, P<sub>1</sub>=32, P<sub>2</sub>=64 and P<sub>3</sub>=96 lb./ac.N as G.N.C. applied on 16.8.1949 and P<sub>2</sub>O<sub>5</sub> applied prior to transplanting.

## 3. DESIGN:

(i) 4×4 Fact. in R.B.D. (ii) (a) 16. (b) N.A. (iii) 4. (iv) (a) 30'×20'. (b) 20'×10'. (v) 5' ring round the net plot. (vi) Yes.

## 4. GENERAL

(i) Harvesting delayed due to heavy rain ; shedding of grain about 15% ; complete lodging. (ii) Attack of *karpa* in August. (iii) Straw and grain yield. (iv) (a) 1948—1956 (Residual effect from 1952 onwards), (b) Yes. (c) N.A. (v) (a) Igatapuri, Vadgaon, Karjat, Kopergaon. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS

(i) 1819 lb./ac.

(ii) 388.8 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
P <sub>0</sub>	2042	1797	1634	2042	1878
P <sub>1</sub>	1824	2015	2178	1770	1947
P <sub>2</sub>	1879	1688	1497	1579	1661
P <sub>3</sub>	1770	2042	1960	1388	1790
Mean	1879	1885	1817	1695	1819

S.E. of marginal mean of N or P = 97.2 lb./ac.  
S.E. of body of table = 194.4 lb./ac.

Crop :- Paddy (*Kharif*).

Ref :- Mh. 50(1)/49(1)/48(1).

Site :- Agri. Res. Stn., Ratnagiri.

Type :- 'M.'

Object :- To study the combined effect of N and P on Paddy crop.

## 1. BASAL CONDITIONS :

(i) (a) Paddy after Paddy. (b) Paddy. (c) As per treatments. (ii) (a) Laterite. (b) N.A. (iii) 2,4.6.1950 ; Transplanting between 11 to 14.6.1950. (iv) (a) to (c) N.A. (d)  $10'' \times 10''$ . (e) 8 seedlings/bunch. (v) 5 C.L./ac. of F.Y.M. at the time of puddling. (vi) *Waksal-207* (mid-late). (vii) Unirrigated. (viii) Nil. (ix) 129.08%. (x) 3rd week of Oct. 1950.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 4 levels of N :  $N_0=0$ ,  $N_1=32$ ,  $N_2=64$  and  $N_3=96$  lb./ac.(2) 4 levels of  $P_2O_5$  :  $P_0=0$ ,  $P_1=32$ ,  $P_2=64$  and  $P_3=96$  lb./ac.N as G.N.C. and  $P_2O_5$  as B.M. N applied on 2.8.1950.

## 3. DESIGN :

(i)  $4 \times 4$  Fact. in R.B.D. (ii) (a) 16. (b) N.A. (iii) 4. (iv) (a)  $30' \times 20'$ . (b)  $20' \times 10'$ . (v) 5' ring round the net plot. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Crop slightly affected by *karpa*. Hexaglene dusted. (iii) Grain and straw yield. (iv) (a) 1948—56 (Residual effect from 1952 onwards). (b) Yes. (c) N.A. (v) (a) Igatpuri, Vadgaon, Karajat, and Kopergaon. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 2292 lb./ac.

(ii) 238.9 lb./ac.

(iii) Main effect of P is significant while main effect of N and the interaction are not significant.

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

	$N_0$	$N_1$	$N_2$	$N_3$	Mean
$P_0$	2001	2069	2273	2096	2110
$P_1$	2055	2314	2219	2518	2277
$P_2$	2178	2355	2505	2205	2311
$P_3$	2396	2396	2423	2668	2471
Mean	2158	2282	2355	2372	2292

S.E. of marginal mean of N or P = 59.7 lb./ac.

S.E. of body of table = 119.4 lb./ac.

Crop :- Paddy (*Kharif*).

Ref :- Mh. 51(1)/50(1)/49(1)/48(1).

Site :- Agri. Res. Stn., Ratnagiri.

Type :- 'M'.

Object :- To study the N and P requirements of Paddy.

## 1. BASAL CONDITIONS :

(i) (a) Paddy in *Kharif*—fallow in *Rabi*. (b) Paddy. (c) As per treatments. (ii) (a) Laterite. (b) N.A. (iii) 2nd and 4th June 1951. Transplanting between 28th and 3 1st July 1951. (iv) (a), (b) and (c) N.A. (d)  $10'' \times 10''$ . (e) 8 seedlings/bunch. (v) 5 C.L./ac. of F.Y.M. given at the time of puddling. (vi) *Waksal-207* (mid-late). (vii) Unirrigated. (viii) Nil. (ix) 129.08%. (x) 1st week of November 1951.

## 2. TREATMENTS :

All combinations of (1) and (2).

(1) 4 levels of N :  $N_0=0$ ,  $N_1=32$ ,  $N_2=64$  and  $N_3=96$  lb./ac. of N.

(2) 4 levels of  $P_2O_5$  :  $P_0=0$ ,  $P_1=32$ ,  $P_2=64$  and  $P_3=96$  lb./ac. of  $P_2O_5$ .  
 $P_2O_5$  as B.M. and N as G.N.C.

## 3. DESIGN :

(i)  $4 \times 4$  Factorial in R.B.D. (ii) (a) 16. (b) N.A. (iii) 4. (iv) (a)  $30' \times 20'$ . (b)  $20' \times 10'$ . (v) 5' ring all round the net plot. (vi) Yes.

## 4. GENERAL :

(i) Fairly good germination. Crop was not normal due to absence of rain. (ii) Attack of *Karpa*; Gammaxene dusting was done during the 1st week and 3rd week of August 1951. (iii) Grain and straw yield. (iv) (a) 1948 to 1956 (residual effect studied from 1952 onwards), (b) Yes. (c) N.A. (v) (a) Igatpuri. Vadagaon, Karjat. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS

(i) 1604 lb./ac.

(ii) 222.0 lb./ac.

(iii) Main effects and their interaction are not significant.

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

	$N_0$	$N_1$	$N_2$	$N_3$	Mean
$P_0$	1518	1616	1651	1480	1566
$P_1$	1531	1695	1705	1576	1627
$P_2$	1460	1555	1651	1668	1583
$P_3$	1657	1596	1633	1668	1639
Mean	1541	1616	1660	1598	1604

S.E. of marginal mean of N or P = 55.5 lb./ac.

S.E. of body of table = 111.0 lb./ac.

Crop :- Paddy (*Kharif*).

Ref :- Mh. 52(17)/51(1)/50(1)/49(1)/48(1).

Site :- Agri. Res. Stn., Ratnagiri.

Type :- 'M'.

Object :- To study the residual effect of the application of N and P to Paddy applied during last five years.

## 1. BASAL CONDITIONS :

(i) (a) Paddy after Paddy. (b) Paddy. (c) As per treatments. (ii) (a) Laterite. (b) N.A. (iii) 2.6.1952, Transplanting - Replication I and II on 27.6.1952, III and IV on 22.6.1952. (iv) (a) Puddling before transplanting, 3 ploughings, (b) Transplanting. (c) —. (d)  $10' \times 10'$ . (e) 8 seedlings/bunch. (v) 5 C.L./ac. of F.Y.M. (vi) *Waksal-207*. (mid,-late). (vii) Unirrigated. (viii) Nil. (ix) 70.20%. (x) 20.10.1952 and 21.10.1952.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 4 levels of N :  $N_0=0$ ,  $N_1=32$ ,  $N_2=64$  and  $N_3=96$  lb./ac. of N.

(2) 4 levels of  $P_2O_5$  :  $P_0=0$ ,  $P_1=32$ ,  $P_2=64$  and  $P_3=96$  lb./ac. of  $P_2O_5$ .  
 $P_2O_5$  as B.M. and N as A/S ; manures applied last year.

## 3. DESIGN

(i)  $4 \times 4$  Factorial in R.B.D. (ii) (a) 16. (b) N.A. (iii) 4. (iv) (a)  $30' \times 20'$ . (b)  $20' \times 10'$ . (v) 5' ring all round the net plot. (vi) Yes.

## 4. GENERAL :

(i) Satisfactory. (ii) Nil. (iii) Grain and straw yield. (iv) (a) 1948 to 1956. (b) Yes. (c) N.A. (v) (a) Igatpuri, Vadgaon. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 2562 lb./ac.  
 (ii) 313.2 lb./ac.  
 (iii) Main effects of N and P and their interaction 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
P <sub>0</sub>	2442	2556	2540	2284	2455
P <sub>1</sub>	2628	2461	2521	2477	2522
P <sub>2</sub>	2610	2456	2694	2617	2594
P <sub>3</sub>	2777	2572	2733	2624	2676
Mean	2614	2511	2622	2500	2562

S.E. of marginal mean of N or P = 78.3 lb./ac.  
 S.E. of body of table = 156.6 lb./ac.

Crop :- Paddy (*Kharif*).

Ref :-Mh. 53(106)/52(17)/51(1)/50(1)/49(1)/48(1).

Site :-Agri. Res. Stn., Ratnagiri.

Type :-'M'.

Object :-To study the residual effect of application of N and P to Paddy crop.

## 1. BASAL CONDITIONS :

(i) (a) No. (b) Paddy. (c) 2nd year of residual effect. No manure last year. (ii) (a) Laterite (b) N.A. (iii) 3 and 4.6.1953; transplanting from 18 to 21.7.1953. (iv) (a) to (c) N.A. (d) 10' × 10'. (e) 8 seedlings/bunch. (v) 5 C.L./ac. of F.Y.M. (vi) *Waksal-207* (mid-late). (vii) Unirrigated. (viii) Weeding and interculturing done on 6,7 and 8th of August. (ix) 148.06°. (x) 26 to 28th Oct. 1953.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 4 levels of N: N<sub>0</sub>=0, N<sub>1</sub>=32, N<sub>2</sub>=64 and N<sub>3</sub>=96 lb./ac. of N.

(2) 4 levels of P<sub>2</sub>O<sub>5</sub>: P<sub>0</sub>=0, P<sub>1</sub>=32, P<sub>2</sub>=64 and P<sub>3</sub>=95 lb./ac. of P<sub>2</sub>O<sub>5</sub>.

P<sub>2</sub>O<sub>5</sub> as bonemeal; N as A/S. Manures applied 2 years back.

## 3. DESIGN :

(i) 4 × 4 Fact. in R.B.D. (ii) (a) 16. (b) N.A. (iii) 3. (iv) (a) 30' × 20'. (b) 20' × 10'. (v) 5' ring all round the net plot. (vi) Yes.

## 4. GENERAL :

(i) Not good due to heavy rain and attack of beetles and army-worm. (ii) Attack of blue-beetles and army-worms; gammaxene was dusted to check the attack on 25.8.1953 and 2.9.1953. (iii) Grain and straw yield. (iv) (a) 1948—1956. (b) Yes. (c) N.A. (v) (a) Igatpuri and Vadgaon. (b) N.A. (vi) Nil. (vii) Experiment laid out with 4 replications.

## 5. RESULTS :

- (i) 2079 lb./ac.  
 (ii) 419.8 lb./ac.  
 (iii) Main effect of N is not significant, main effect of P and the interaction are 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
P <sub>0</sub>	2006	2019	1920	1117	1765
P <sub>1</sub>	1357	2279	2287	2373	2074
P <sub>2</sub>	1924	2391	1847	2524	2171
P <sub>3</sub>	2287	1965	2305	2650	2301
Mean	1893	2163	2090	2166	2079

S.E. of marginal mean of N or P = 121.2 lb./ac.  
S.E. of body of table = 242.3 lb./ac.

Crop :- Paddy (*Kharif*).  
Site :- Agri. Res. Stn., Ratnagiri.

Ref :- Mh. 52(30).  
Type :- 'M'.

Object :- To find out the effect of Sann green manuring on Paddy.

#### 1. BASAL CONDITIONS :

(i) (a) No. (b) and (c) N.A. (ii) (a) Red loam. (b) N.A. (iii) 2.6.1952/23.7.1952. (iv) (a) 2 ploughings. (b) and (c) N.A. (d) 10"×10". (e) 8 seedlings/bunch. (v) 5 C.L./ac. of F.Y.M. on 16.5.1952. (vi) *Patni-6* (early). (vii) Unirrigated. (viii) Nil. (ix) N.A. (x) 1.10.1952.

#### 2. TREATMENTS

1. Sann green manure.
2. No green manure.

Manure mixture at 160 lb./ac. was applied both the treatments. Sann sown on 5.5.1952.

#### 3. DESIGN :

(i) R.B.D. (ii) (a) 2. (b) N.A. (iii) 8. (iv) (a) 33'-4"×33'-4". (b) 25'×25'. (v) 5 rows all round the net plot. (vi) Yes.

#### 4. GENERAL :

(i) Normal. (ii) Nil. (iii) Grain yield. (iv) (a) 1951—N.A. (b) and (c) No. (v) (a) and (b) N.A. (vi) and (vii) Nil.

#### 5. RESULTS :

- (i) 4883 lb./ac.
- (ii) 492.6 lb./ac.
- (iii) Treatments differ highly significantly.
- (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	5510
2.	4256
S.E./mean	= 174.2 lb./ac.

Crop :- Paddy (*Kharif*).  
Site :- Agri. Res. Stn., Ratnagiri.

Ref :- Mh. 49 (5).  
Type :- 'M'

Object :- To study the effect of leguminous crop grown with and without P<sub>2</sub>O<sub>5</sub> on the succeeding cereal crop.

#### 1. BASAL CONDITIONS :

(i) (a) *Wal In Rabi*, Paddy in *Kharif* (b) *Wal in Rabi*. (c) As per treatment. (ii) (a) *Malad* or low lying laterite (b) Lime requirement in terms of CaCO<sub>3</sub>=4.4 ton/ac. pH value 5.0. (iii) 3, 4.6.1949; 16, 19.7.1949. (iv) (a), (b) and (c) N.A. (d) 10"×10". (e) 5 seedlings/bunch. (v) 5 C.L./ac. of F.Y.M. (vi) *Panvel 61*. (vii) Irrigated. (viii) Nil. (ix) 105.90". (x) 23, 29 8.1949.

## 2. TREATMENTS :

1. No  $P_2O_5$  to *wal* in *Rabi*.
2. 50 lb./ac. of  $P_2O_5$  to *wal* in *Rabi*.
3. 100 lb./ac. of  $P_2O_5$  to *wal* in *Rabi*.
4. 150 lb./ac. of  $P_2O_5$  to *wal* in *Rabi*.
5. Fallow in *Rabi*.

## 3. DESIGN :

- (i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 6. (iv) (a) 30'×20'. (b) 20'×10'. (v) 5' ring round the net plot. (vi) Yes.

## 4. GENERAL :

- (i) Good. (ii) Slightly affected by *Karpa*. (iii) Grain and straw yield. (iv) (a) 1948 to 1956. (b) Yes. (c) N.A. (v) (a) Karjat. (b) N.A. (vi) Nil. (vii) Nil.

## 5. RESULTS :

- (i) 2736 lb./ac.  
 (ii) 414.7 lb./ac.  
 (iii) Treatments differ significantly.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	2414
2.	2795
3.	3028
4.	3040
5.	2405
S.E./mean	= 169.3 lb./ac.

Crop :- Paddy (*Kharif*).

Ref :- Mh. 50 (12)/49 (5).

Site :- Agri. Res. Stn., Ratnagiri.

Type :- 'M'.

Object :- To study the effect of leguminous crop *Wal* raised with and without  $P_2O_5$  on succeeding cereal crop of Paddy.

## 1. BASAL CONDITIONS :

- (i) (a) Paddy in *Kharif*, pulse in *Rabi*. (b) *Wal* in *Rabi*. (c) As per treatments. (ii) (a) Laterite. (b) N.A. (iii) 2 and 4.6.1950/26 to 28.6.1950. (iv) (a), (b), (c) N.A. (d) 10'×10'. (e) 8 seedlings/bunch. (v) 5 C.L./ac. of F.Y.M. Top dressing 8 lb./*guntha* of manure mixture. (vi) *Panvel-61*. (vii) Unirrigated. (viii) Nil. (ix) 97.65". (x) 16 to 18.10.1950.

## 2. TREATMENTS :

1. Control (no  $P_2O_5$ .)
2. 50 lb./ac. of  $P_2O_5$ .
3. 100 lb./ac. of  $P_2O_5$ .
4. 150 lb./ac. of  $P_2O_5$ .
5. Fallow in *Rabi*.

$P_2O_5$  was applied to the previous crop *wal* and its residual effect is studied on Paddy this year.

## 3. DESIGN :

- (i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 5. (iv) (a) 30'×20'. (b) 20'×10'. (v) 5' ring around the net plot. (vi) Yes.

## 4. GENERAL :

- (i) Good. (ii) Nil. (iii) Grain and straw yield. (iv) (a) 1949 to 1955. (b) Yes. (c) N.A. (v) (a) Karjat. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 2350 lb./ac.  
 (ii) 237.2 lb./ac.  
 (iii) Treatments differ significantly.

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

Treatment	Av. yield
1.	2276
2.	2320
3.	2418
4.	2712
5.	2026
S.E./mean	= 106.0 lb./ac.

Crop :-Paddy (*Kharif*).

Ref :-Mh. 51(15)/50(12)/49(5).

Site :-Agri. Res. Stn., Ratnagiri.

Type :-'M'.

Object :-To study the effect of leguminous crop *Wal* raised with and without  $P_2O_5$  on succeeding Paddy crop:

## 1. BASAL CONDITIONS :

(i) (a) Paddy in *Kharif*—*wal* in *Rabi*. (b) *Wal* in *Rabi*. (c) As per treatments. (ii) (a) Laterite. (b) N.A. (iii) 3.6.1951/13 to 18.7.1951. (iv) (a) N.A. (b) Trar splanting. (c) —. (d)  $10'' \times 10''$ . (e) 8 seedlings/bunch. (v) 5 C.L./ac. of F.Y.M. (vi) *Panvel-61* (mid-late). (vii) Unirrigated. (viii) Nil. (ix) 129.02". (x) 16 to 18.10.1951.

## 2. TREATMENTS :

- Control (no  $P_2O_5$ ).
- 50 lb /ac. of  $P_2O_5$ .
- 100 lb./ac. of  $P_2O_5$ .
- 150 lb./ac. of  $P_2O_5$ .
- Fallow in *Rabi*.

$P_2O_5$  was applied to the previous crop *wal* and its residual effect is studied on Paddy this year.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 5. (iv) (a)  $30' \times 20'$ . (b)  $20' \times 10'$ . (v) 5' around the net plot. (vi) Yes.

## 4. GENERAL :

(i) Fairly good. (ii) Nil. (iii) Grain and straw yield. (iv) (a) 1949—1955. (b) Yes. (c) N.A. (v) (a) Karjat. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 2090 lb./ac.  
(ii) 307.3 lb./ac.  
(iii) Treatments do not differ significantly.  
(iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	2058
2.	2113
3.	2045
4.	2287
5.	1949
S.E./mean	= 137.3 lb./ac.

Crop :-Paddy (*Kharif*).

Ref :-Mh. 52(29)/51(15)/50(12)/49(5).

Site :-Agri. Res. Stn., Ratnagiri.

Type :-'M'.

Object :-To study the effect of leguminous *Wal* crop raised with and without  $P_2O_5$  on succeeding cereal crop.

## 1. BASAL CONDITIONS :

(i) (a) Paddy—*Wal*. (b) *Wal* in *Rabi* (c) As per treatments. (ii) (a) Laterite. (b) N.A. (iii) 3.6.1952 ; transplanting. Replication. I, II and III on 1.7.1952 ; IV and V on 30.6.1952. (iv) (a) to (c) N.A. (d)  $10' \times 10'$ . (e) 8 seedlings/bunch. (v) 5 C L /ac. of F.Y.M. (vi) *Panvel-61*. (vii) Unirrigated. (viii) Nil. (ix) 70.20' (x) 9 10.1952.

## 2. TREATMENTS :

1. Control (no  $P_2O_5$ ).
2. 50 lb./ac. of  $P_2O_5$ .
3. 100 lb./ac. of  $P_2O_5$ .
4. 150 lb./ac. of  $P_2O_5$ .
5. Fallow in *Rabi*

$P_2O_5$  was applied to the previous crop *wal* and its residual effect studied on Paddy this year.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 5. (iv) (a)  $30' \times 20'$ . (b)  $20' \times 10'$ . (v) 5' ring round the net plot. (vi) Yes.

## 4. GENERAL :

(i) Normal. (ii) Nil. (iii) Grain and straw yield. (iv) (a) 1949—1955. (b) Yes. (c) N.A. (v) (a) *Karjat*. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS

- (i) 2755 lb./ac.  
 (ii) 467.1 lb./ac.  
 (iii) Treatments do not differ significantly.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	2738
2.	2921
3.	2730
4.	3108
5.	2278
.S.E./mean	=208.7 lb./ac.

Crop :- Paddy (*Kharif*).

Ref :- Mh. 53(110)/52(29)/51(15)/50(12)/49(5).

Site :- Agri. Res. Stn., Ratnagiri.

Type :- 'M'.

Object :-To study the effect of leguminous crop *Wal* raised with and without  $P_2O_5$  on the succeeding cereal crop Paddy.

## 1. BASAL CONDITIONS :

(i) (a) *Wal*—Paddy. (b) *Wal*. (c) As per treatments. (ii) (a) Laterite. (b) N.A. (iii) 4.6.1953 ; Transplanting—Replications I, II and III, 8.7.1953 IV and V, 7.7.1953. (iv) (a) Puddling and ploughing the field 4 or 5 times. (b) Transplanting. (c) —. (d)  $10' \times 10'$ . (e) N.A. (v) 5 C.L./ac. of F.Y.M. (vi) *Panvel 61* (mid-late). (vii) Unirrigated. (viii) Weeding and interculturing on 16.8.1953. (ix) 148.06'' (x) 18.10.1953 and 20.10.1953.

## 2. TREATMENTS:

1. Control (no  $P_2O_5$ ).
2. 50 lb /ac. of  $P_2O_5$ .
3. 100 lb./ac. of  $P_2O_5$ .
4. 150 lb./ac. of  $P_2O_5$ .
5. Fallow is *Rabi*.

$P_2O_5$  was applied to the previous crop *wal* and its residual effect studied on Paddy this year.



## 3. DESIGN :

- (i) R.B.D. (ii) 5. (b) N.A. (iii) 5. (iv) (a) 30'×20'. (b) 20'×10'. (v) 5' ring round the net plot. (vi) Yes.

## 4. GENERAL :

- (i) Fairly satisfactory, 10—12 tillers in a bunch. (ii) No incidence of pest and disease. (iii) Grain and straw yield. (iv) (a) 1948—1956. (b) Yes. (c) N.A. (v) (a) Karjat. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 3321 lb./ac.  
 (ii) 503.1 lb./ac.  
 (iii) Treatments do not differ significantly.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	3354
2.	3430
3.	3447
4.	3188
5.	3188
S.E./mean	= 225.2 lb./ac.

Crop :- Paddy (*Kharif*).

Ref :- Mh. 51(153).

Site :- Govt. Seed and Demonstration Farm, Sindewahi.

Type :- 'M'.

Object :- To assess the effect of common dose of different manures on yield of Paddy crop.

## 1. BASAL CONDITIONS :

- (i) (a) N.A. (b) and (c) N.A. (ii) (a) Sandy loam. (b) N.A. (iii) N.A. (iv) (a) to (e) N.A. (v) N.A. (vi) *Luchai* (medium). (vii) Irrigated. (viii) N.A. (ix) 56.03". (x) N.A.

## 2. TREATMENTS :

- Control.
- Cotton seed cake decorticated at 20 lb./ac. of N.
- Cotton seed cake undecorticated at 20 lb./ac. of N.
- A/S at 20 lb./ac. of N.
- G.N.C. at 20 lb./ac. of N.

## 3. DESIGN :

- (i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 5. (iv) (a) N.A. (b) 1/40th of an ac. (v) N.A. (vi) Yes.

## 4. GENERAL :

- (i) N.A. (ii) N.A. (iii) Grain yield. (iv) (a) 1951—N.A. (b) No. (c) N.A. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 2365 lb./ac.  
 (ii) 381.6 lb./ac.  
 (iii) Treatments do not differ significantly.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	2288
2.	2412
3.	2404
4.	2368
5.	2356
S.E./mean	= 170.6 lb./ac.

Crop :- Paddy (*Kharif*).

Ref :- Mh. 53(275).

Site :- Govt. Seed and Demonstration Farm, Sindewahi.

Type :- 'M'.

Object :- To study the effect of placement of manures on the yield of Paddy.

## 1. BASAL CONDITIONS

(i) (a) N.A. (b) N.A. (c) N.A. (ii) (a) Sandy loam. (b) N.A. (iii) N.A. (iv) (a) to (e) N.A. (v) N.A. (vi) *Luchai*. (vii) Irrigated. (viii) N.A. (ix) 65.34". (x) N.A.

## 2. TREATMENTS

1. Broadcast at 30 lb./ac. of N+15 lb./ac. of P<sub>2</sub>O<sub>5</sub>.
2. Smearing manures to the roots at 30 lb./ac. of N+15 lb./ac. of P<sub>2</sub>O<sub>5</sub>.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 2. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 1/100 ac. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) N.A. (iii) Grain yield. (iv) (a) 1953—56. (b) N.A. (c) N.A. (v) (a) N.A. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 2215 lb./ac.
- (ii) 731.0 lb./ac.
- (iii) Treatments do not differ significantly.
- (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	2350
2.	2081
S.E./mean	= 365.5 lb./ac.

Crop :- Paddy (*Kharif*).

Ref :- Mh. 52(185).

Site :- Govt. Seed and Demonstration Farm, Sindewahi.

Type :- 'M'.

Object :- To find out the best time of sowing sannhemp as green manure for Paddy crop.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) N.A. (c) N.A. (ii) (a) Sandy loam. (b) N.A. (iii) N.A. (iv) (a) to (e) N.A. (v) N.A. (vi) N.A. (vii) Irrigated. (viii) N.A. (ix) 44.90". (x) N.A.

## 2. TREATMENTS :

Sowing of sannhemp on

1. 15.3.1952.
2. 1.4.1952.
3. 15.4.1952.
4. 1.5.1952.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 1/80th of an acre. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) N.A. (iii) Grain yield. (iv) (a) 1952-N.A. (b) N.A. (v) (a) N.A. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 2255 lb./ac.
- (ii) 391.9 lb./ac.
- (iii) Treatments do not differ significantly.

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

Treatment	Av. yield
1.	2050
2.	2380
3.	2540
4.	2050
S.E./mean	=195.9 lb./ac.

Crop :- Paddy (*Kharif*).

Ref :- Mh. 50(114).

Site :- Govt. Seed and Demonstration Farm, Sindewahi.

Type :- 'M'.

Object :—To find out the effect of application of *Mohuwa* cake to Paddy crop.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) N.A. (c) N.A. (ii) (a) Sandy loam. (b) N.A. (iii) N.A. (iv) (a) to (e) N.A. (v) N.A. (vi) N.A. (vii) Irrigated. (viii) N.A. (ix) 51.86". (x) N.A.

## 2. TREATMENTS :

1. No manure.
2. 20 lb./ac. of N as *Mohuwa* cake.
3. 40 lb./ac. of N as *Mohuwa* cake.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 3. (b) N.A. (iii) 5. (iv) (a) N.A. (b) 1/40 ac. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) N.A. (iii) Grain yield. (iv) (a) 1950 to 1952. (b) N.A. (c) N.A. (v) (a) N.A. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 2045 lb./ac.
- (ii) 236.6 lb./ac.
- (iii) Treatments do not differ significantly.
- (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	1872
2.	2212
3.	2052
S.E./mean	=105.8 lb./ac.

Crop :- Paddy (*Kharif*).

Ref :- Mh. 51(151).

Site :- Govt. Seed and Demonstration Farm, Sindewahi.

Type :- 'M'.

Object :—To find the effect of application of *Mohuwa* cake to Paddy crop.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) N.A. (c) N.A. (ii) (a) Sandy loam. (b) N.A. (iii) N.A. (iv) (a) to (e) N.A. (v) N.A. (vi) N.A. (vii) Irrigated. (viii) N.A. (ix) 56.03". (x) N.A.

## 2. TREATMENTS :

1. Control.
2. 20 lb./ac. of N as *Mohuwa* cake.
3. 40 lb./ac. of N as *Mohuwa* cake.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 3. (b) N.A. (iii) 5. (iv) (a) N.A. (b) 1/40 ac. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) N.A. (iii) Grain yield. (iv) (a) 1950 to 1952. (b) N.A. (c) N.A. (v) (a) N.A. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 2155 lb./ac.  
 (ii) 544.4 lb./ac.  
 (iii) Treatment differences are not significant.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	1860
2.	2308
3.	2298
S.E./mean	=243.4 lb./ac.

Crop :- Paddy (*Kharif*).

Ref :- Mh. 52 (184).

Site :- Govt. Seed and Demonstration Farm, Sindewahi.

Type :- 'M'.

Object :—To find out the utility of application of *Mohuwa* cake to Paddy crop.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) N.A. (c) N.A. (ii) (a) Sandy loam. (b) N.A. (iii) N.A. (iv) (a) to (e) N.A. (v) N.A. (vi) *Luchai* (medium). (vii) Irrigated. (viii) N.A. (ix) 44.90°. (x) N.A.

## 2. TREATMENTS :

- Control.
- 20 lb./ac. of N as *Mohuwa* cake.
- 40 lb./ac. of N as *Mohuwa* cake.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 3. (b) N.A. (iii) 5. (iv) (a) N.A. (b) 1/80 ac. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) N.A. (iii) Grain yield (iv) (a) 1950 to 1952. (b) No. (c) N.A. (v) (a) N.A. (b) N.A. (vi) Nil. (vii) Nil.

## 5. RESULTS :

- (i) 4665 lb./ac.  
 (ii) 1656 lb./ac.  
 (iii) Treatments do not differ significantly.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	4388
2.	5232
3.	4376
S.E./mean	= 740.6 lb./ac.

Crop :- Paddy (*Kharif*).

Ref :- Mh. 49 (93).

Site :- Govt. Seed and Demonstration Farm, Sindewahi.

Type :- 'M'.

Object :- To find out the usefulness of applying green leaf before transplanting Paddy.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) N.A. (c) N.A. (ii) (a) Sandy loam. (b) N.A. (iii) N.A. (iv) (a) to (e) N.A. (v) N.A. (vi) Red *luchai*. (vii) Irrigated. (viii) N.A. (ix) 80.13". (x) N.A.

2. TREATMENTS :

1. 1 ton/ac. of green leaves.
2. 2 ton/ac. of green leaves.
3. 3 ton/ac. of green leaves.

3. DESIGN :

(i) R.B.D. (ii) (a) 3. (b) N.A. (iii) 3. (iv) (a) N.A. (b) 1/40th of an acre. (v) N.A. (vi) Yes.

4. GENERAL :

(i) N.A. (ii) N.A. (iii) N.A. (iv) (a) 1949 to 1952. (b) N.A. (c) N.A. (v) (a) N.A. (b) N.A. (vi) Nil. (vii) Nil.

5. RESULTS :

- (i) 2320 lb./ac.
- (ii) 521.6 lb./ac.
- (iii) Treatments do not differ significantly.
- (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	2080
2.	2480
3.	2400
S.E./mean	= 301.2 lb./ac.

Crop :- Paddy (*Kharif*).

Ref :- Mh, 50(112).

Site :- Govt. seed and Demonstration Farm, Sindewahi.

Type :- 'M'.

Object :- To find out the suitability of green leaf as manure for Paddy.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) N.A. (c) N.A. (ii) (a) Sandy loam. (b) N.A. (iii) N.A. (iv) (a) to (e) N.A. (v) N.A. (vi) N.A. (vii) Irrigated. (viii) N.A. (ix) 51.86". (x) N.A.

2. TREATMENTS :

1. 1 ton/ac. of green leaves.
2. 2 ton/ac. of green leaves.
3. 3 ton/ac. of green leaves.

3. DESIGN :

(i) R.B.D. (ii) (a) 3. (b) N.A. (iii) 3. (iv) (a) N.A. (b) 1/40th of an acre. (v) N.A. (vi) Yes.

4. GENERAL :

(i) N.A. (ii) N.A. (iii) Grain yield. (iv) (a) 1943 to 1952. (b) N.A. (c) N.A. (v) (a) N.A. (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

- (i) 2224 lb./ac.
- (ii) 128.0 lb./ac.
- (iii) Treatments do not differ significantly.

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

Treatment	Av. yield
1.	2133
2.	2367
3.	2173
S.E./mean	=73.9 lb./ac.

Crop :- Paddy (*Kharif*).

Ref :- Mh. 51(152).

Site :- Govt. Seed and Demonstration Farm, Sindewahi.

Type :- 'M'.

Object :- To find out the suitability of green leaf as manure for Paddy crop.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) N.A. (c) N.A. (ii) (a) Sandy loam. (b) N.A. (iii) N.A. (iv) (a) to (e) N.A. (v) N.A. (vi) N.A. (vii) Irrigated. (viii) N.A. (ix) 56.03". (x) N.A.

## 2. TREATMENTS :

1. Control.
2. 1 ton green leaves/ac.
3. 2 ton green leaves/ac.
4. 3 ton green leaves/ac.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) No. (iii) 3. (iv) (a) N.A. (b) 1/40th of an acre. (v) N.A. (vi) Yes.

## 4. GENERAL

(i) N.A. (ii) N.A. (iii) Grain yield. (iv) (a) 1943 to 1952. (b) N.A. (c) N.A. (v) (a) N.A. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 1396 lb./ac.
- (ii) 222.7 lb./ac.
- (iii) Treatments do not differ significantly.
- (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	1253
2.	1453
3.	1567
4.	1313
S.E./mean	=128.60 lb./ac.

Crop :- Paddy (*Kharif*).

Ref :- Mh. 51(177).

Site :- Govt. Expt. Farm, Tharsa.

Type :- 'M'.

Object :- To study the effect of application of decorticated cotton seed cake to Paddy crop.

## 1. BASAL CONDITIONS :

(i) (a) Paddy after Paddy. (b) Paddy. (c) N.A. (ii) (a) Medium black. (b) Refer soil analysis, Tharsa. (iii) 4 to 6.8.1951. (iv) (a) and (b) N.A. (c) 80 lb./ac. (d) 4" x 4". (e) N.A. (v) Nil. (vi) E.B-17 (early). (vii) Irrigated. (viii) 2 interculturings. (ix) 42.90". (x) 5.11.1951.

## 2. TREATMENTS :

1. 20 lb./ac. of N as G.N.C.
2. 20 lb./ac. of N as decorticated cotton seedcake.
3. 20 lb./ac. of N as undecorticated cotton seedcake.
4. 20 lb./ac. of N as A/S.
5. Control.

Manuring done at the time of transplanting.

## 3. DESIGN :

- (i) L. Sq. (ii) (a) 5. (b) N.A. (iii) 5. (iv) (a) N.A. (b)  $66' \times 16\frac{1}{2}'$ . (v) N.A. (vi) Yes.

## 4. GENERAL :

- (i) Satisfactory. (ii) Nil. (iii) Grain and straw yield. (iv) (a) 1951—N.A. (b) No. (c) N.A. (v) (a) and (b) N.A. (vi) No reasons are given for low yields. (vii) Nil.

## 5. RESULTS :

- (i) 739 lb./ac.  
 (ii) 120.8 lb./ac.  
 (iii) Treatments differ significantly.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	768
2.	872
3.	848
4.	640
5.	568
S.E./mean	=54.02 lb./ac.

Crop :-Paddy (*Kharif*).

Ref :-Mh. 52(208).

Site :-Govt. Expt. Farm, Tharsa.

Type :-'M'.

Object :-To study the effect of decorticated and undecorticated cotton seed cake on Paddy,

## 1. BASAL CONDITIONS :

- (i) (a) Paddy—Paddy. (b) Paddy. (c) N.A. (ii) (a) High fertility soil. (b) Refer soil analysis, Tharsa. (iii) 24.6.1952/27.8.1952. (iv) (a) N.A. (b) Transplanting. (c) —. (d) and (e) N.A. (v) Nil. (vi) E.B.-17 (early). (vii) Irrigated. (viii) 2 interculturings. (ix) 27.39". (x) 10.11.1952.

## 2. TREATMENTS :

1. G.N.C. at 20 lb./ac. of N.
2. Decorticated cotton seed cake at 20 lb./ac. of N.
3. Undecorticated cotton seed cake at 20 lb./ac. of N.
4. A/S at 20 lb./ac. of N.
5. Control.

Manures applied at transplanting.

## 3. DESIGN

- (i) L. Sq. (ii) (a) 5. (b) N.A. (iii) 5. (iv) (a) N.A. (b)  $69' \times 16\frac{1}{2}'$ . (v) N.A. (vi) Yes.

## 4. GENERAL :

- (i) Normal. (ii) Nil. (iii) Grain yield. (iv) (a) 1951—N.A. (b) No. (c) N.A. (v) (a) and (b) N.A. (vi) No reasons are given for low yields. (vii) Nil.

## 5. RESULTS :

- (i) 403 lb./ac.  
 (ii) 71.0 lb./ac.  
 (iii) Treatments differ significantly.

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

Treatment	Av. yield
1.	388
2.	456
3.	470
4.	448
5.	252
S.E./mean	=31.8 lb./ac.

Crop :- Paddy (*Kharif*).

Ref :- Mh. 53(295).

Site :- Govt. Expt. Farm, Tharsa.

Type :- 'M'.

Object :—To study the effect of decorticated and undecorticated cotton seed cake on Paddy.

## 1. BASAL CONDITIONS :

(i) (a) Paddy after Paddy. (b) Paddy. (c) N.A. (ii) (a) Black medium soil. (b) Refer soil analysis, Tharsa. (iii) 20.6.1953, transplanting on 28.7.1953. (iv) (a) N.A. (b) Transplanting. (c) —. (d) Between rows and plants 4". (e) N.A. (v) N.A. (vi) E.B-17 (early). (vii) Unirrigated. (viii) N.A. (x) 43.72". (x) 21.10.1953.

## 2. TREATMENTS :

- 20 lb./ac. of N as G.N.C.
  - 20 lb./ac. of N as cotton seed cake decorticated (4.10% of N.)
  - 20 lb./ac. of N as cotton seed cake undecorticated (3.10% of N).
  - A/S at 20 lb./ac. of N.
  - Control.
- Manured on 24.7.1953.

## 3. DESIGN :

(i) L. Sq. (ii) (a) 5. (b) N.A. (iii) 5. (iv) (a) N.A. (b) 66' × 16½'. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) Nil. (iii) Grain yield. (iv) (a) 1951—N.A. (b) No. (c) N.A. (v) (a) and (b) N.A. (vi) No reasons are given for low yields. (vii) Nil.

## 5. RESULTS :

- (i) 778 lb./ac.  
(ii) 183.1 lb./ac.  
(iii) Treatments do not differ significantly.  
(iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	748
2.	916
3.	832
4.	786
5.	608
S.E./mean	= 81.8 lb./ac.

Crop :- Paddy (*Kharif*).

Ref :- Mh. 49(96).

Site :- Agr. Res. Stn., Vadgaon.

Type :- 'M'.

Object :—To study the effect of leguminous crop Gram grown with and without P<sub>2</sub>O<sub>5</sub> on the succeeding cereal crop Paddy.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) Gram. (c) As per treatments. (ii) (a) Medium black. (b) N.A. (iii) 6.6.1949/10.8.1949. (iv) (a) N.A. (b) Transplanting. (c) to (e) N.A. (v) N.A. (vi) N.A. (vii) Unirrigated. (viii) N.A. (ix) 34.83". (x) 23.11.1949.



## 2. TREATMENTS:

1. Control (no.  $P_2O_5$ )
2. 50 lb./ac of  $P_2O_5$  in plough furrow.
3. 100 lb./ac. of  $P_2O_5$  in plough furrow.
4. 150 lb./ac. of  $P_2O_5$  in plough furrow.
5. Fallow in *Rabi* and sown in *Kharif*.  
 $P_2O_5$  as Super applied to previous crop and its residual effect is studied on Paddy this year.

## 3. DESIGN:

- (i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 5. (iv) (a) 26'×18'. (b) 15'×9'. (v) 4½' ring round the net plot. (vi) Yes.

## 4. GENERAL:

- (i) The crop had a yellowish appearance throughout. (ii) Nil. (iii) Grain yield. (iv) (a) 1948 (*Rabi*)—1953 (*Kharif*). (b) N.A. (c) N.A. (v) (a) N.A. (b) N.A. (vi) Nil. (vii) No cross bunds between plots.

## 5. RESULTS:

- (i) 1707 lb./ac.  
 (ii) 250.0 lb./ac.  
 (iii) Treatments do not differ significantly.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	1710
2.	1714
3.	1735
4.	1557
5.	1819
S.E./mean	= 111.8 lb./ac.

Crop :- Paddy (*Kharif*).

Ref :- Mh. 50(121).

Site :- Agri. Res. Stn., Vadgaon.

Type :- 'M'.

Object .—To study the effect of leguminous crop Gram grown with and without  $P_2O_5$  on the succeeding cereal crop Paddy.

## 1. BASAL CONDITIONS:

- (i) (a) N.A. (b) Gram. (c) As per treatments. (ii) (a) Medium black. (b) N.A. (iii) 3.6.1950/1.8.1950. (iv) (a) N.A. (b) Broadcasting in seedbed and transplanting the seedlings when about a month old. (c) — (d) 9"×9". (e) N.A. (v) N.A. (vi) N.A. (vii) Irrigated. (viii) Gap filling on 10.9.1950; Weeding on 11.9.1950. (ix) 48.45". (x) 13.11.1950.

## 2. TREATMENTS:

1. Control (no  $P_2O_5$ )
2. 50 lb./ac. of  $P_2O_5$  in the plough furrow.
3. 100 lb./ac. of  $P_2O_5$  in the plough furrow.
4. 150 lb./ac. of  $P_2O_5$  in the plough furrow.
5. Fallow for gram.  
 $P_2O_5$  applied as super to previous crop gram and its residual effect is studied on Paddy this year.

## 3. DESIGN:

- (i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 5. (iv) (a) 22'×16'. (b) 18'×12'. (v) 2' ring round the net plot. (vi) Yes.

## 4. GENERAL:

- (i) Uniform and good crop. (ii) Long break in rains after sowing, which caused delay in transplanting. (iii) Grain yield. (iv) (a) 1948 (*Rabi*)—1953 (*Kharif*). (b) N.A. (c) N.A. (v) (a) N.A. (b) N.A. (vi) Nil. (vii) Nil.

## 5. RESULTS :

- (i) 1871 lb./ac.  
 (ii) 145.2 lb./ac.  
 (iii) Treatments do not differ significantly.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	1913
2.	1868
3.	1883
4.	1928
5.	1765
S.E./mean	= 64.9 lb./ac.

Crop :- Paddy (*Kharif*).

Ref :- Mh. 51(164).

Site :- Agri. Res. Stn., Vadgaon.

Type :- 'M'.

Object :- To study the effect of the leguminous crop Gram grown with and without  $P_2O_5$  on the succeeding cereal crop Paddy.

## 1. BASAL CONDITIONS :

- (i) (a) N.A. (b) Gram. (c) As per treatments. (ii) (a) Medium black. (b) N.A. (iii) 5.6.1951. (iv) (a) to (e) N.A. (v) N.A. (vi) N.A. (vii) Unirrigated. (viii) Weeding on 7.9.1951. (ix) 35.96" (x) 14.11.1951.

## 2. TREATMENTS :

- Control (no  $P_2O_5$ )
- 50 lb./ac. of  $P_2O_5$  in the plough furrow.
- 100 lb./ac. of  $P_2O_5$  in the plough furrow.
- 150 lb./ac. of  $P_2O_5$  in the plough furrow.
- Fallow in *Rabi*.

$P_2O_5$  as Super applied to the previous crop gram and its residual effect studied on Paddy this year.

## 3. DESIGN :

- (i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 5. (iv) (a)  $22' \times 16'$ . (b)  $18' \times 12'$ . (v) 2' ring round the net plot. (vi) Yes.

## 4. GENERAL :

- (i) Fairly good. (ii) Nil. (iii) Grain yield. (iv) 1948-49 (*Rabi*) to 1953-54 (*Kharif*). (b) N.A. (c) N.A. (v) (a) N.A. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 1376 lb./ac.  
 (ii) 32.88 lb./ac.  
 (iii) Treatments do not differ significantly.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	1369
2.	1408
3.	1429
4.	1419
5.	1258
S.E./mean	= 14.70 lb./ac.

Crop :- Paddy (*Kharif*).  
Site :- Agri. Res. Stn., Vadgaon.

Ref :- Mh. 52(196).  
Type :- 'M'.

Object :- To study the effect of the leguminous crop Gram grown with and without  $P_2O_5$  on the succeeding cereal crop Paddy.

#### 1. BASAL CONDITIONS

(i) (a) N.A. (b) Gram. (c) As per treatments. (ii) (a) Medium black. (b) N.A. (iii) 15.6.1952/25.7.1952. (iv) (a) N.A. (b) Seed broadcast on seed bed and then transplanted. (c) 60 lb./ac. (d)  $9'' \times 9''$ . (e) N.A. (v) N.A. (vi) N.A. (vii) Unirrigated. (viii) Weeding on 3.9.1952. (ix)  $74.90''$  (15.5.1952 to 17.11.1952). (x) 17.11.1952.

#### 2. TREATMENTS :

1. 0 lb./ac. of  $P_2O_5$  in plough furrows.
2. 50 lb./ac. of  $P_2O_5$  in plough furrows.
3. 100 lb./ac. of  $P_2O_5$  in plough furrows.
4. 150 lb./ac. of  $P_2O_5$  in plough furrows.
5. Fallow in *Rabi*.

$P_2O_5$  as Super. Treatments applied to previous crop gram and residual effect studied on paddy this year.

#### 3. DESIGN :

(i) R B.D. (ii) (a) 5. (b) N.A. (iii) 5. (iv) (a)  $22' \times 16'$ . (b)  $18' \times 12'$ . (v) 2' around the net plot. (vi) Yes.

#### 4. GENERAL :

(i) The seedlings in the seed bed suffered from the long spell of rains in Sept. affecting the crop very badly. (ii) Slight attack of Rice hoppers and blast appeared. Damage was not much. (iii) Grain yield. (iv) (a) 1948-49 (*Rabi*) to (*Kharif*) 1953-54. (b) N.A. (c) N.A. (v) (a) N.A. (b) N.A. (vi) and (vii) Experiment failed in 1953.

#### 5. RESULTS :

(i) 1530 lb./ac.  
(ii) 142.8 lb./ac.  
(iii) Treatments do not differ significantly.  
(iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	1528
2.	1573
3.	1553
4.	1573
5.	1422
S.E./mean	= 63.8 lb./ac.

Crop :- Paddy (*Kharif*).  
Site :- Agri. Res. Stn., Vadgaon.

Ref :- Mh. 49(86).  
Type :- 'M'.

Object :- To evolve an optimum dose of N and P for Paddy crop.

#### 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) 275 lb./ac. of manure mixture. (ii) (a) Medium black. (b) N.A. (iii) 6.6.1949 Transplanting on 13.8.1949. (iv) (a) N.A. (b) Transplanting. (c) 40 lb./ac. (d)  $9'' \times 9''$ . (e) 8 seedlings per bunch. (v) 5 C.L./ac. of F.Y.M. (vi) N.A. (vii) Unirrigated. (viii) One weeding on 15.9.1949. (ix)  $34.83''$ . (x) N.A.

#### 2. TREATMENTS

All combinations of (1) and (2)

- (1) 4 levels of N:  $N_0=0$ ,  $N_1=32$ ,  $N_2=64$  and  $N_3=96$  lb./ac.
  - (2) 4 levels of  $P_2O_5$ :  $P_0=0$ ,  $P_1=32$ ,  $P_2=64$  and  $P_3=96$  lb./ac.
- N applied as G.N.C. and  $P_2O_5$  as Super.

## 3. DESIGN :

(i) 4×4 Fact. in R.B.D. (ii) (a) 16. (b) N.A. (iii) 4. (iv) (a) 27'×21'. (b) 18'×12'. (v) 4.5' around the net plot. (vi) Yes.

## 4. GENERAL :

(i) Normal. (ii) Nil. (iii) Height and grain yield. (iv) (a) 1949—54 (residual effect studied from 1952 onwards) (b) N.A. (c) N.A. (v) (a) Igatpuri, Karjat, Kopergaon and Ratnagiri. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 1499 lb./ac.  
 (ii) 469.2 lb./ac.  
 (iii) Main effect of N alone 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
P <sub>0</sub>	687	1489	1553	1761	1373
P <sub>1</sub>	1158	1353	1314	2054	1470
P <sub>2</sub>	898	1500	1760	2108	1566
P <sub>3</sub>	737	1465	2124	2021	1587
Mean	870	1452	1688	1986	1499

S.E. of marginal mean of N or P = 117.3 lb./ac.  
 S.E. of body of table = 234.6 lb./ac.

Crop :- Paddy (*Kharif*).

Ref :- Mh. 50(104)/49(86).

Site :- Agri. Res. Stn., Vadgaon.

Type :- 'M'.

Object :- To evolve an optimum dose of N and P for Paddy crop.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) As per treatments. (ii) (a) Medium black. (b) N.A. (iii) 3.6.1950/3.7.1950. (iv) (a) and (b) N.A. (c) 40 lb./ac. (d) 9"×9". (e) 8 seedlings per bunch. (v) 5 C.L./ac. of F.Y.M. (vi) N.A. (vii) Unirrigated (viii) One weeding on 12.9.1950. (ix) N.A. (x) 25.11.1950.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 4 levels of N : N<sub>0</sub>=0, N<sub>1</sub>=32, N<sub>2</sub>=64 and N<sub>3</sub>=96 lb./ac.

(2) 4 levels of P<sub>2</sub>O<sub>5</sub> : P<sub>0</sub>=0, P<sub>1</sub>=32, P<sub>2</sub>=64 and P<sub>3</sub>=96 lb./ac.

N applied as G.N.C. and P<sub>2</sub>O<sub>5</sub> as Super.

## 3. DESIGN

(i) 4×4 Factorial in R.B.D. (ii) (a) 16. (b) N.A. (iii) 4. (iv) (a) 27'×21'. (b) 18'×12'. (v) 4.5' around the net plot. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Nil. (iii) Height and grain yield. (iv) (a) 1949 to 1954 (residual effect studied from 1952 onwards). (b) Yes. (c) N.A. (v) (a) Igatpuri, Karjat, Kopergaon and Ratnagiri. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 2906 lb./ac.  
(ii) 466.5 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
P <sub>0</sub>	2064	2632	3205	3819	2943
P <sub>1</sub>	1900	2650	2631	3668	2712
P <sub>2</sub>	1935	2691	3268	3649	2886
P <sub>3</sub>	1750	2678	3724	4162	3081
Mean	1914	2675	3207	3825	2'06

S.E. of marginal mean of N or P =116.6 lb./ac.  
S.E. of body of table =233.2 lb./ac.

Crop :- Paddy (*Kharif*).

Ref :- Mh. 51(142)/50(104)/49(86).

Site :- Agri. Res. Stn., Vadgaon.

Type :- 'M'.

Object :—To evolve an optimum dose of N and P for Paddy crop.

## 1. BASAL CONDITIONS :

- (i) (a) Nil. (b) Paddy. (c) As per treatments. (ii) (a) Medium black. (b) N.A. (iii) 5.6.1951/27.7.1951.  
(iv) (a) and (b) N.A. (c) 40 lb./ac. (d) 9"×9". (e) 8 seedlings per bunch. (v) 5 C.L./ac. of F.Y.M. (vi) N.A. (vii) Unirrigated. (viii) One weeding. (ix) 35.96" (x) 16.11.1951.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 4 levels of N : N<sub>0</sub>=0, N<sub>1</sub>=32, N<sub>2</sub>=64 and N<sub>3</sub>=96 lb./ac.

(2) 4 levels of P<sub>2</sub>O<sub>5</sub> : P<sub>0</sub>=0, P<sub>1</sub>=32, P<sub>2</sub>=64 and P<sub>3</sub>=96 lb./ac.

N applied as G.N.C. and P<sub>2</sub>O<sub>5</sub> as Super.

## 3. DESIGN :

- (i) 4×4 Factorial in R.B.D. (ii) (a) 16. (b) N.A. (iii) 4. (iv) (a) 27'×21'. (b) 18'×12'. (v) 4.5' around the net plot. (vi) Yes.

## 4. GENERAL :

- (i) Fairly good. (ii) Nil. (iii) Heights and grain yield. (iv) (a) 1949 to 1954 (residual effect studied from 1952 onwards.) (b) Yes. (c) N.A. (v) (a) Igatpuri, Karjat, Kopergaon and Ratnagiri. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 2280 lb./ac.  
(ii) 402.6 lb./ac.  
(iii) Main effect of N alone 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
P <sub>0</sub>	1472	2094	2767	2968	2325
P <sub>1</sub>	1530	2088	2225	2661	2126
P <sub>2</sub>	1407	2125	2697	3118	2337
P <sub>3</sub>	1347	2121	2790	3072	2333
Mean	1439	2107	2620	2955	2280

S.E. of marginal mean of N or P =100.6 lb./ac.  
S.E. of body of table =201.3 lb./ac.

Crop :- Paddy (*Kharif*). Ref :- Mh. 52(166)/51(142)/50(104)/49(86).  
 Site :- Agri. Res. Stn., Vadgaon. Type :- 'M'.

Object :- To study the effect of N and  $P_2O_5$  applied to Paddy during past three years.

### 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) As per treatments. (ii) (a) Medium black. (b) N.A. (iii) 15.6.1952/11.8.1952. (iv) (a) N.A. (b) Transplanting. (c) 40 lb./ac. (d)  $9' \times 9'$ . (e) 8 seedlings per bunch. (v) Nil. (vi) N.A. (vii) Unirrigated. (viii) One weeding on 5.9.1952. (ix) 74.70%. (15.6.1952 to 29.11.1952). (x) 29.11.1952.

### 2. TREATMENTS :

All combinations of (1) and (2)

(1) 4 levels of N :  $N_0=0$ ,  $N_1=32$ ,  $N_2=64$  and  $N_3=96$  lb./ac.

(2) 4 levels of  $P_2O_5$  :  $P_0=0$ ,  $P_1=32$ ,  $P_2=64$  and  $P_3=96$  lb./ac.

N applied as G.N.C. and  $P_2O_5$  as Super. Manures were applied during the last three years and its residual effect is studied this year.

### 3. DESIGN :

(i)  $4 \times 4$  Fact. in R.B.D. (ii) (a) 16. (b) N.A. (iii) 4. (iv) (a)  $27' \times 21'$ . (b)  $18' \times 12'$ . (v) 4.5' around the net plot. (vi) Yes.

### 4. GENERAL :

(i) Poor due to heavy rains. (ii) Nil. (iii) Height and grain yield. (iv) (a) 1949-1954 (residual effect studied from 1952 onwards). (b) Yes. (c) N.A. (v) (a) Igatpuri, Karjat, Kopergaon and Ratnagiri. (b) N.A. (vi) and (vii) Nil.

### 5. RESULTS :

(i) 1856 lb./ac.  
 (ii) 308.1 lb./ac.  
 (iii) All the main effects and interactions are not significant.  
 (iv) Av. yield of grain in lb./ac.

	$N_0$	$N_1$	$N_2$	$N_3$	Mean
$P_0$	2061	1960	1948	1708	1919
$P_1$	2029	1689	1487	1449	1664
$P_2$	1696	2187	1948	1865	1924
$P_3$	1714	1991	2086	1872	1916
Mean	1875	1957	1867	1724	1856

S.E. of any marginal mean = 154.1 lb./ac.

S.E. of body of table = 77.0 lb./ac.

Crop :- Paddy (*Kharif*). Ref :- Mh. 53(252)/52(166)/51(142)/50(104)/49(86).  
 Site :- Agri. Res. Stn., Vadgaon. Type :- 'M'.

Object :- To study the residual effect of N and  $P_2O_5$  applied to Paddy during past three years.

### 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) Nil. (ii) (a) Medium black. (b) N.A. (iii) 12.6.1953/17.8.7.1953. (iv) (a) N.A. (b) Transplanting. (c) 40 lb./ac. (d)  $9' \times 9'$ . (e) 8 seedlings per bunch. (v) Nil. (vi) N.A. (vii) Unirrigated. (viii) One weeding on 19.20.9.1953. (ix) 46.38% (12.6.1953 to 19.11.1953). (x) 19.11.1953.

### 2. TREATMENTS :

All combinations of (1) and (2)

(1) 4 levels of N :  $N_0=0$ ,  $N_1=32$ ,  $N_2=64$  and  $N_3=95$  lb./ac.

(2) 4 levels of  $P_2O_5$  :  $P_0=0$ ,  $P_1=32$ ,  $P_2=64$  and  $P_3=96$  lb./ac.

N applied as G.N.C. and  $P_2O_5$  as Super. These manures were applied during the three years and its residual effect is studied this year.

## 3. DESIGN :

(i) 4×4 Fact. in R.B D. (ii) (a) 16. (b) N.A. (iii) 4. (iv) (a) 27'×21'. (b) 18'×12'. (v) 4.5' around the net plot. (vi) Yes.

## 4. GENERAL :

(i) Poor. (ii) Nil. (iii) Height and grain yield. (iv) (a) 1949—1954 (residual effect studied from 1952 onwards). (b) Yes. (c) N.A. (v) (a) Igatpuri, Karjat, Kopergaon and Ratnagiri. (b) Nil. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 1942 lb./ac.  
 (ii) 576.3 lb./ac.  
 (iii) All the main effects and interaction 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
P <sub>0</sub>	2064	2146	1909	2322	2110
P <sub>1</sub>	2146	2008	1718	1718	1898
P <sub>2</sub>	1718	1718	2216	2209	1965
P <sub>3</sub>	1462	2004	2121	1601	1797
Mean	1848	1969	1991	1963	1942

S.E. of any marginal mean =144.1 lb./ac.  
 S.E. of body of table =288.2 lb./ac.

Crop :- Paddy.

Ref :- Complex experiments (T.C.M), 1953.

Centre :- Karjat (Maharashtra). Type :- 'M'.

Object :- I (a) To study the effect of N obtained from different sources in combination with P in non-acid soils.

## 1. BASAL CONDITIONS:

(i) (a) N.A. (b) N.A. (c) N.A. (ii) (a) Sandy to clay loam. (b) Poor in Lime, K<sub>2</sub>O and P<sub>2</sub>O<sub>5</sub>, slightly acidic; well supplied with organic matter. (iii) Transplanting on 28.7.1953. (iv) N.A. (v) N.A. (vi) K-42 (Kolaba). (vii) Unirrigated. (viii) N.A. (ix) N.A. (x) 9.11.1953.

## 2. TREATMENTS :

All combinations of (1), (2) and (3)+3 extra treatments.

(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 sources of N. S<sub>1</sub>=A/S, S<sub>2</sub>=A/N and S<sub>3</sub>=Urea.

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

and 3 extra treatments.

T<sub>1</sub>=60 lb./ac. of N+40 lb./ac. of P<sub>2</sub>O<sub>5</sub>.

T<sub>2</sub>=40 lb./ac. of N+80 lb./ac. of P<sub>2</sub>O<sub>5</sub>.

T<sub>3</sub>=60 lb./ac. of N+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.

N applied in two equal doses; half 5 days after planting and other half 20 days after planting. P<sub>2</sub>O<sub>5</sub> at puddling.

## 3. DESIGN :

(i) 3<sup>3</sup> confounded factorial with 3 extra treatments in each block. (ii) (a) 12 and 3 blocks/replication. (b) N.A. (iii) 1. (iv) (a) N.A. (b) 1/59. ac. (v) N.A. (vi) Yes.

## GENERAL :

(i) Lodging occurred in plots receiving higher doses of N. (ii) Severe attack by swarming caterpillar resulting in considerable damage to crop. (iii) Grain yield (iv) (a) 1953—56. (b) No. (c) N.A. (v) (a) Aduthurai, Sahaspur, Burdwan, Mankhanda and Chalvai. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 2789 lb./ac.  
(ii) 610.1 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>	Mean	S <sub>1</sub>	S <sub>2</sub>	S <sub>3</sub>
P <sub>0</sub>	2394	2496	2313	2401	2131	2557	2516
P <sub>1</sub>	2892	2679	2902	2827	2638	2861	2983
P <sub>2</sub>	2821	3186	3328	3111	3429	2780	3125
Mean	2706	2787	2848	2780	2733	2733	2874
S <sub>1</sub>	—	2597	2577	2587			
S <sub>2</sub>	—	3166	2679	2922			
S <sub>3</sub>	—	2597	3287	2942			

## Mean yield for extra treatments.

T<sub>1</sub> = 2313 lb./ac.T<sub>2</sub> = 3003 lb./ac.T<sub>3</sub> = 2496 lb./ac.

S.E./mean = 352.3 lb./ac.

In tables N×P and S×P.

S.E. of any marginal mean = 203.4 lb./ac.

S.E. of body of table = 352.3 lb./ac.

In table S×N

S.E. of marginal mean of S = 249.1 lb./ac.

S.E. of marginal mean of N = 203.4 lb./ac.

S.E. of body of table = 352.3 lb./ac.

Crop :- Paddy. (*Kharif*).

Ref :- Expts. on Cultivators' fields Mh. 52(276).

Site :- Mhasala Kolaba.

Type :- 'M'.

Object :- To study the effect of N and P manures on yield of Paddy.

## 1. BASAL CONDITIONS :

- (i) (a) N.A. (b) Paddy. (c) Nil. (ii) Medium black. (iii) 5 C.L./ac. of F.Y.M. (iv) Late. (v) (a), (b) and (c) N.A. (d) 12"×12" and 12"×9". (e) N.A. (vi) N.A. (vii) Unirrigated. (viii) N.A. (ix) N.A. (x) 1 and 2.11.1952.

## 2. TREATMENTS :

- 64 lb./ac. of N as A/S+G.N.C. in 1:1 ratio.
- 64 lb./ac. of N+32 lb./ac. of P<sub>2</sub>O<sub>5</sub> as Super.
- Control.

## 3. DESIGN :

- (i) and (ii) 2 villages are selected at random and 2 fields within the selected villages were selected at random.  
(iii) (a) 66'×33'. (b) 33'×33'. (iv) N.A.

## 4. GENERAL :

- (i) Poor. (ii) Nil. (iii) Grain yield. (iv) (a) to (c) Nil. (v) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 2015 lb./ac.  
(ii) 138.52 lb./ac.  
(iii) Treatments differ significantly.



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

Treatment	Av. yield
1.	2080
2.	2123
3.	1841
S.E./mean	= 69.26 lb./ac.

Crop :- Paddy (*Kharif*). Ref :- Expts. on cultivators' fields ; Mh. 52 (277).  
 Site :- Karjat (Kolaba.) Type :- 'M'.

Object :- To study the effect of N and P manures on yield of Paddy.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) Nil. (c) Nil. (ii) Medium black. (iii) Nil. (iv) Late K-42. (v) (a), (b), (c) N.A. (d) 9".  
 (e) N.A. (vi) N.A. (vii) Unirrigated. (viii) N.A. (ix) N.A. (x) 31.10.1952 and 5.11.1952.

2. TREATMENTS :

- 64 lb./ac. of N as A/S and G.N.C. in 1 : 1 ratio.
- 64 lb./ac. of N+32 lb./ac. of P<sub>2</sub>O<sub>5</sub> as Super.
- Control.

3. DESIGN :

(i), (ii) 2 villages were selected at random and 2 fields within the selected villages were selected at random.  
 (iii) (a) N.A. (b) 33'×33'. (iv) N.A.

4. GENERAL :

(i) Poor. (ii) Attack of rice skippers. (iii) Grain yield. (iv) (a) No. (b) N.A. (c) N.A. (v) N.A.  
 (vi) Nil. (vii) Nil.

5. RESULTS :

- 1353 lb./ac.
- 150.3 lb./ac.
- Treatments differ highly significantly.
- Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	1278
2.	1785
3.	995
S.E./mean	= 75.16 lb./ac.

Crop :- Paddy (*Kharif*). Ref :- Expts. on cultivators' fields ; Mh. 52 (279).  
 Site :- Pen (Kolaba.) Type :- 'M'.

Object :- To study the effect of N and P manures on yield of Paddy.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) Paddy. (c) Nil. (ii) Medium black. (iii) 5 C.L./ac. of F.Y.M. (iv) Late K-42. (v) (a) to  
 (c) N.A. (d) 9"×9". (e) N.A. (vi) Transplanting on 1.7.1952 in one village. (vii) Unirrigated.  
 (viii) N.A. (ix) N.A. (x) 26 and 29.10.1952.

2. TREATMENTS :

- 64 lb./ac. of N as A/S and G.N.C. in 1 : 1 ratio.
- 64 lb./ac. of N+32 lb./ac. of P<sub>2</sub>O<sub>5</sub> as Super.
- Control.

## 3. DESIGN

- (i), (ii) 2 villages were selected at random and 2 fields within a selected village were selected at random.  
 (iii) (a) 66'×33'. (b) 33'×33'. (iv) N.A.

## 4. GENERAL :

- (i) N.A. (ii) Nil. (iii) Grain yield. (iv) (a) No. (b) N.A. (c) N.A. (v) N.A. (vi) Nil. (vii) Nil.

## 5. RESULTS :

- (i) 2448 lb./ac.  
 (ii) 239.2 lb./ac.  
 (iii) Treatments differ highly significantly.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	2404
2.	3026
3.	1914
S.E./mean	= 119.6 lb./ac.

Crop :- Paddy (*Kharif*).

Ref :- Expts. on cultivators' fields ; Mh. 52(280).

Site :- Sudhogadh (Kolaba.)

Type :- 'M'.

Object :- To study the effect of N and P manures on yield of Paddy.

## 1. BASAL CONDITIONS :

- (i) (a) N.A. (b) Paddy. (c) Nil. (ii) Black. (iii) 5 C.L./ac. of F.Y.M. (iv) K-42. (v) (a), (b), (c), N.A. (d) 12"×9" (e) N.A. (vi) N.A. (vii) Unirrigated. (viii) N.A. (ix) N.A. (x) 22.10.1952 and 1.11.1952.

## 2. TREATMENTS :

- 64 lb./ac. of N as A/S and G.N.C. in 1 : 1 ratio.
- 64 lb./ac. of N+32 lb./ac. P<sub>2</sub>O<sub>5</sub> as Super.
- Control.

## 3. DESIGN :

- (i), (ii) 2 villages were selected at random and 2 fields within the selected village were selected at random.  
 (iii) (a) 66'×33'. (b) 33'×33'. (iv) N.A.

## 4. GENERAL :

- (i) Fair. (ii) Nil. (iii) Grain yield. (iv) (a) No. (b) N.A. (c) N.A. (v) N.A. (vi) Nil. (vii) Nil.

## 5. RESULTS :

- (i) 2226 lb./ac.  
 (ii) 446.0 lb./ac.  
 (iii) Treatments differ highly significantly.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	2458
2.	2377
3.	1843
S.E./mean	=223.0 lb./ac.

Crop :- Paddy (*Kharif*).

Ref :- Expts. on cultivators' fields ; Mh. 52(281).

Site :- Alibag (Kolaba.)

Type :- 'M'.

Object :—To study the effect of N and P manures on yield of Paddy.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) Paddy in one village. (c) Nil. (ii) Black. (iii) 5 C.L./ac. of F.Y.M. (iv) Garlei-late. (v) (a), (b) and (c) N.A. (d) 9"×9" and 12"×10". (e) N.A. (vi) N.A. (vii) Unirrigated. (viii) N.A. (ix) N.A. (x) 3.11.1952 and 7.11.1952.

2. TREATMENTS :

1. 64 lb./ac. of N as A/S and G.N.C. in 1 : 1 ratio.  
2. 64 lb./ac. of N+32 lb./ac. P<sub>2</sub>O<sub>5</sub> as Super.  
3. Control.

3. DESIGN :

(i), (ii) 2 villages were selected at random and 2 fields within the selected villages were selected at random. (iii) (a) N.A. (b) 33'×33'. (iv) N.A.

4. GENERAL :

(i) Satisfactory. (ii) Nil. (iii) Grain yield. (iv) (a) No. (b) N.A. (c) N.A. (v) N.A. (vi) Nil. (vii) Nil.

5. RESULTS :

(i) 4165 lb./ac.  
(ii) 539.2 lb./ac.  
(iii) Treatments differ highly significantly.  
(iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	4595
2.	4550
3.	3351
S.E./mean	=269.6 lb./ac.

Crop :-Paddy (*Kharif*).

Ref :-Expts. on cultivators' fields ; Mh. 52(283).

Site :-Murud (Kolaba.)

Type :-'M'.

Object :—To study the effect of N and P manures on yield of Paddy.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) *Wal* in one field. (c) Nil. (ii) Medium black. (iii) 5 C.L./ac. of F.Y.M. (iv) N.A. (v) (a), (b), (c) N.A. (d) 12"×10" and 9"×9". (e) N.A. (vi) N.A. (vii) Unirrigated. (viii) N.A. (ix) N.A. (x) 28,29,30 and 31.10.1952.

2. TREATMENTS :

1. 64 lb./ac. of N as A/S and G.N.C. in 1 : 1 ratio.  
2. 64 lb./ac. of N+32 lb./ac. of P<sub>2</sub>O<sub>5</sub> as Super.  
3. Control.

3. DESIGN :

(i), (ii) 2 villages were selected at random and 2 fields within selected village were selected at random. (iii) (a) N.A. (b) 33'×33'. (iv) N.A.

4. GENERAL :

(i) and (ii) N.A. (iii) Grain yield. (iv) (a) No. (b) and (c) N.A. (v) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 3163 lb./ac.  
(ii) 152.6 lb./ac.  
(iii) Treatments differ highly significantly.

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

Treatment	Av. yield
1.	3112
2.	3469
3.	2907
S.E./mean	=76.30 lb./ac.

Crop :- Paddy (*Kharif*). Ref :- Expts. on cultivators fields ; Mh. 52(284);  
 Site :- Mangaon, (Kolaba.) Type :- 'M'.

Object :- To study the effect of N and P manures on yield of Paddy.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) and (c) Nil. (ii) Medium and loamy medium. (iii) 5 C.L./ac. of F.Y.M. (iv) Late variety. (v) (a), (b), (c) (d) 9"×9" and 10"×12". (e) N.A. (vi) N.A. (vii) Unirrigated. (viii) N.A. (ix) N.A. (x) 29.10.1952 and 3.11.1952.

## 2. TREATMENTS :

- 64 lb./ac. of N as A/S and G.N.C. in 1 : 1 ratio.
- 64 lb./ac. of N+32 lb./ac. of P<sub>2</sub>O<sub>5</sub> as Super.
- Control.

## 3. DESIGN :

(i), (ii) 2 villages were selected at random and 2 fields within the selected village were selected at random. (iii) (a) N.A. (b) 33'×33'. (iv) N.A.

## 4. GENERAL :

(i) Satisfactory. (ii) Nil. (iii) Grain yield. (iv) (a) No. (b) and (c) N.A. (v) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- 1934 lb./ac.
- 198.6 lb./ac.
- Treatments differ highly significantly.
- Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	1992
2.	2103
3.	1710
S.E./mean	=89.30 lb./ac.

Crop :- Paddy (*Kharif*). Ref :- Expts. on cultivators' fields ; Mh. 52 (285).  
 Site :- Poladpur (Kolaba.) Type :- 'M'.

Object :- To study the effect of N and P manures on yield of Paddy.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) Paddy. (c) Nil. (ii) Medium black. (iii) 5 C.L./ac. of F.Y.M. (iv) Late variety. (v) (a), (b), (c) N.A. (d) 9"×6" and 6"×6". (e) N.A. (vi) N.A. (vii) Unirrigated. (viii) N.A. (ix) N.A. (x) 5 and 6.11.1952.

## 2. TREATMENTS :

- 64 lb./ac. of N as A/S and G.N.C. in 1 : 1 ratio.
- 64 lb./ac. of N+32 lb./ac. of P<sub>2</sub>O<sub>5</sub> as Super.
- Control.

## 3. DESIGN :

- (i), (ii) 2 villages were selected at random and 2 fields within the selected villages were selected at random.  
 (iii) (a) N.A. (b) 33'×33'. (iv) N.A.

## 4. GENERAL :

- (i) Poor. (ii) Nil. (iii) Grain yield. (iv) (a) No. (b) N.A. (c) N.A. (v) N.A. (vi) Nil. (vii) Nil.

## 5. RESULTS :

- (i) 1110 lb./ac.  
 (ii) 327.3 lb./ac.  
 (iii) Treatments do not differ significantly.  
 (iv) Av. yield of grain in lb./ac.]

Treatment	Av. yield
1.	1004
2.	1322
3.	1005
S.E./mean	= 163.66 lb /ac.

Crop :- Paddy (*Kharif*).

Ref :- Expts. on cultivators' fields ; Mh. 52 (286).

Site :- Uran (Kolaba.)

Type :- 'M'.

Object :—To study the effect of N and P manures on yield of Paddy.

## 1. BASAL CONDITIONS :

- (i) (a) N.A. (b) Paddy. (c) Nil. (ii) Medium black. (iii) 5 C.L./ac. of F.Y.M. (iv) Late to medium late. (v) (a), (b), (c) N.A. (d) 12'×9" and 9'×9". (e) N.A. (vi) N.A. (vii) Unirrigated. (viii) N.A. (ix) N.A. (x) 31.10.1952, 2.11.1952, 4.11.1952 and 5.11.1952.

## 2. TREATMENTS :

- 64 lb./ac. of N as A/S and G.N.C. in 1 : 1 ratio.
- 64 lb./ac. of N+32 lb./ac. of P<sub>2</sub>O<sub>5</sub> as Super.
- Control.

## 3. DESIGN :

- (i), (ii) 2 villages were selected at random and 2 fields within the selected villages were selected at random.  
 (iii) (a) N.A. (b) 33'×33'. (iv) N.A.

## 4. GENERAL :

- (i) Satisfactory. (ii) Slight attack of rice skippers. (iii) Grain yield. (iv) (a) No. (b) N.A. (c) N.A. (v) N.A. (vi) Nil. (vii) Nil.

## 5. RESULTS :

- (i) 3552 lb./ac.  
 (ii) 660.8 lb./ac.  
 (iii) Treatments differ highly significantly.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	3375
2.	4859
3.	2421
S.E./mean	= 330.4 lb./ac.

Crop :- Paddy (*Kharif*). Ref :- Expt. on cultivators' fields ; Mh. 52(287).  
 Site :- Roha (Kolaba.) Type :- 'M'.

Object :- To study the effect of N and P manures on yield of Paddy.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) Paddy. (c) Nil. (ii) Medium black. (iii) 5 C.L./ac. of F.Y.M. (iv) Late. (v) (a) to (c) N.A. (d) 12'×9'. (e) N.A. (vi) N.A. (vii) Unirrigated. (viii) N.A. (ix) N.A. (x) 4.11.1952 and 7.11.1952.

2. TREATMENTS :

1. 64 lb./ac. of N as A/S and G.N.C. in 1 : 1 ratio.
2. 64 lb./ac. of N+32 lb./ac. of P<sub>2</sub>O<sub>5</sub> as Super.
3. Control.

3. DESIGN :

(i), (ii) 2 villages were selected at random and 2 fields within the selected villages were selected at random.  
 (iii) (a) N.A. (b) 33'×33'. (iv) N.A.

4. GENERAL :

(i) Satisfactory. (ii) Nil. (iii) Grain yield. (iv) (a) No. (b) N.A. (c) N.A. (v) N.A. (vi) and (vii) Nil.

5. RESULTS :

- (i) 2346 lb./ac.
- (ii) 204.9 lb./ac.
- (iii) Treatments differ highly significantly.
- (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	2312
2.	2731
3.	1995
S.E./mean	= 102.4 lb./ac.

Crop :- Paddy (*Kharif*). Ref :- Expt. on cultivators' fields ; Mh. 52 (288).  
 Site :- Shrivardham (Kolaba.) Type :- 'M'.

Object :- To study the effect of N and P manures on yield of Paddy.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) Paddy. (c) Nil. (ii) Medium black. (iii) 5 C.L./ac. of F.Y.M. (iv) Late. (v) (a) to (c) N.A. (d) 10'×10'. (e) N.A. (vi) N.A. (vii) Unirrigated. (viii) N.A. (ix) N.A. (x) 22 23 and 27.10.1952 and 3.11.1950.

2. TREATMENTS :

1. 64 lb./ac. of N as A/S and G.N.C. in 1 : 1 ratio.
2. 64 lb./ac. of N+32 lb./ac. of P<sub>2</sub>O<sub>5</sub> as Super.
3. Control.

3. DESIGN :

(i), (ii) 2 villages were selected at random and 2 fields within the selected villages were selected at random.  
 (iii) (a) N.A. (b) 33'×33'. (iv) N.A.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) Grain yield. (iv) (a) No. (b) N.A. (c) N.A. (v) N.A. (vi) and (vii) Nil.

5. RESULTS :

- (i) 3118 lb./ac.
- (ii) 1104.80 lb./ac.
- (iii) Treatments do not differ significantly.

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

Treatment	Av. yield
1.	3096
2.	3381
3.	2877
S.E./mean	= 552.4 lb./ac.

Crop :- Paddy (*Kharif*). Ref :- Expts. on cultivators' fields ; Mh. 52(289)  
 Site :- Mahad (Kolaba.) Type :- 'M'.

Object :—To study the effect of N and P manures on yield of Paddy.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) Paddy. (c) Nil. (ii) Medium black. (iii) 5 C.L./ac. of F.Y.M. (iv) Late. (v) (a) (b) and (c) N.A. (d) 6"×6". (e) N.A. (vi) N.A. (vii) Unirrigated. (viii) N.A. (ix) N.A. (x) 30.10.1952 to 11.11.1952.

## 2. TREATMENTS :

- 64 lb./ac. of N as A/S and G.N.C in 1 : 1 ratio.
- 64 lb./ac. of N+32 lb./ac. of P<sub>2</sub>O<sub>5</sub> as Super.
- Control.

## 3. DESIGN :

(i), (ii) 2 villages were selected at random and 2 fields within the selected villages were selected at random.  
 (iii) (a) N.A. (b) 33'×33' (iv) N.A.

## 4. GENERAL :

(i) Good. (ii) Nil. (iii) Grain yield. (iv) (a) No. (b) N.A. (c) N.A. (v) N.A. (vi) Nil. (vii) Nil.

## 5. RESULTS :

- 2954 lb./ac.
- 172.9 lb./ac.
- Treatments differ highly significantly.
- Av. yield of grain lb./ac.

Treatment	Av. yield
1.	3067
2.	3435
3.	2362
S.E./mean	=86.46 lb./ac.

Crop :- Paddy (*Kharif*). Ref :- Expts. on cultivators' fields ; Mh. 52(258).  
 Site :- Bavala (Kolhapur.) Type :- 'M'.

Object :—To study the response of Paddy to application of N and P.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) Paddy. (c) Nil. (ii) Medium black. (iii) 5 C.L./ac. of F.Y.M in one village. (iv) Local (medium). (v) (a) to (c) N.A. (d) 9"×9". (e) N.A. (vi) N.A. (vii) Unirrigated. (viii) N.A. (ix) N.A. (x) 21 and 25.10.1952.

## 2. TREATMENTS :

1. Control.
2. 96 lb./ac. of  $P_2O_5$  as Bonemeal.
3. 32 lb./ac. of N as A/S and G.N.C in 1 : 1 ratio + 32 lb./ac. of  $P_2O_5$  as Bonemeal.

## 3. DESIGN :

(i), (ii) 2 villages were selected at random and 2 fields within a village were selected at random. (iii) (a) and (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) Nil.

## 5. RESULTS :

- (i) 813 lb./ac.
- (ii) 37.12 lb./ac.
- (iii) N.A.
- (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	760
2.	850
3.	830
S.E./mean	= 18.56 lb./ac

Crop :- Paddy (*Kharif*).

Ref :- Expts. on cultivators' fields ; Mh.53 (259).

Site :- Ajara (Kolhapur.)

Type :- 'M'.

Object :- To study the response of Paddy to application of N and P.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) Paddy. (c) Nil. (ii) Medium reddish and black. (iii) 5 C.L./ac. of F.Y.M. (iv) *Yedsal* (medium), *Somsal* (late), *Havala* (medium) and *Panwel* (medium) one in each field. (v) (a) to (c) N.A. (d) 6' x 4' and 9' x 9'. (e) N.A. (vi) 9.6.1952. (vii) Unirrigated. (viii) N.A. (ix) N.A. (x) 14.10.1952, 22.10.1952, 9.11.1952 and 22.11.1952.

## 2. TREATMENTS :

1. Control.
2. 96 lb./ac. of  $P_2O_5$  as Bonemeal.
3. 32 lb./ac. of N as A/S and G.N.C. + 32 lb./ac. of  $P_2O_5$  as Bonemeal.

## 3. DESIGN :

(i), (ii) 2 villages were selected at random and 2 fields within a village were selected at random. (iii) (a) N.A. (b) 33' x 33'. (iv) N.A.

## 4. GENERAL :

(i) N.A. (ii) N.A. (iii) Grain yield. (iv) (a) For one year only. (b) and (c) N.A. (v) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 2388 lb./ac.
- (ii) 526.8 lb./ac.
- (iii) N.A.



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

Treatment	Av. yield
1.	2095
2.	2237
3.	2834
S.E./mean	= 263.4 lb./ac.

Crop :- Paddy (*Kharif*). Ref :-Expts. on cultivators' fields ; Mh. 52(260).  
 Site :- Bhudargadh (Kolhapur.) Type :- 'M'.

Object :—To study the response of Paddy to application of N and P.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) Paddy. (c) Nil. (ii) Medium and black. (iii) 5 C.L./ac. of F.Y.M. (iv) Medium and Warangal. (v) (a) to (c) N.A. (d) 6"×6". (e) N.A. (vi) N.A. (vii) Unirrigated. (viii) N.A. (ix) N.A. (x) 12.11.1952 for one field only.

2. TREATMENTS :

1. Control.
2. 96 lb./ac. of P<sub>2</sub>O<sub>5</sub> as Bonemeal.
3. 32 lb./ac. of N as A/S and G.N.C. in 1 : 1 ratio + 32 lb./ac. of P<sub>2</sub>O<sub>5</sub> as Bonemeal.

3. DESIGN :

(i), (ii) 2 villages were selected at random and 2 fields within these villages were selected at random. (iii) (a) N.A. (b) 33'×33'. (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) and (vii) Nil.

5. RESULTS :

- (i) 1520 lb./ac.
- (ii) 528.0 lb./ac.
- (iii) N.A.
- (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	1115
2.	1866
3.	1586
S.E./mean	= 264.0 lb./ac.

Crop :- Paddy (*Kharif*). Ref :-Expts. on cultivators' fields ; Mh. 52(261).  
 Site :- Gadhinglaj (Kolhapur.) Type :- 'M'.

Object :—To study the response of Paddy to application of N and P.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) Grain in one village Paddy in other two villages. (c) Nil and 4-6 C.L./ac. of F.Y.M. in two villages. (ii) Medium to deep black. (iii) 5 C.L./ac. of F.Y.M. (iv) *Khavanisal* (late), *Motusal* (medium) and *Dharwoar* (medium). (v) (a) to (c) N.A. (d) 9"×9". (e) N.A. (vi) N.A. (vii) Unirrigated. (viii) N.A. (ix) N.A. (x) 27.10.1952, 3.11.1952, 10.11.1952 and 18.11.1952.

2. TREATMENTS :

1. Control.
2. 96 lb./ac. of P<sub>2</sub>O<sub>5</sub> as Bonemeal.
3. 32 lb./ac. of N as A/S and G.N.C. in 1 : 1 ratio+32 lb./ac. of P<sub>2</sub>O<sub>5</sub> as Bonemeal.

## 3. DESIGN :

- (i) and (ii) 3 villages were selected at random and within these villages 2 fields were selected at random.  
 (iii) (a) N.A. (b) 33'×33'. (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) and (vii) Nil.

## 5. RESULTS :

- (i) 1567 lb./ac.  
 (ii) 397.4 lb./ac.  
 (iii) Treatment differences are significant.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	1288
2.	1510
3.	1904
S.E./mean	= 162.3 lb./ac

Crop :- Paddy (*Kharif*). Ref :- Experiments on cultivators' fields ; Mh. 52(262).  
 Site :- Paubala (Kolhapur.) Type :- 'M'.

Object :- To study the response of Paddy to the applications of N and P.

## 1. BASAL CONDITIONS :

- (i) (a) N.A. (b) Paddy, (c) Nil. (ii) Reddish, medium black and black. (iii) 5 C.L./ac. of F.Y.M.  
 (iv) Medium and late. (v) (a) to (c) N.A. (d) 6"×6". (e) N.A. (vi) N.A. (vii) Unirrigated. (viii) N.A.  
 (ix) N.A. (x) 6 to 27.10,1952.

## 2. TREATMENTS :

- Control.
- 96 lb./ac. of  $P_2O_5$  as Bonemeal.
- 32 lb./ac. of N as A/S and G.N.C. in 1 : 1 ratio + 32 lb./ac. of  $P_2O_5$  as Bonemeal.

## 3. DESIGN :

- (i) and (ii) 3 villages were selected at random and within these villages 2 fields were selected at random.  
 (iii) (a) N.A. (b) 33'×33'. (iv) N.A.

## 4. GENERAL :

- (i) Poor. (ii) N.A. (iii) Grain yield. (iv) (a) For one year only. (b) N.A. (c) N.A. (v) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 616 lb./ac.  
 (ii) 101.5 lb./ac.  
 (iii) Treatment differences are not significant.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	531
2.	621
3.	692
S.E./mean	= 41.44 lb./ac.

Crop :- Paddy (*Kharif*). Ref :- Experiments on cultivators' fields ; Mh. 52(263).

Site :- Radhanagari (Kolhapur.) Type :- 'M'.

Object :- To study the response of Paddy to the applications of N and P.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) Sugarcane in one field and Paddy in others. (c) 2 bags/ac. of A/S and 4 C.L./ac. of F.Y.M. and 8 C.L./ac. of F.Y.M. in three fields and nil in other three. (ii) Reddish medium, medium black, sandy reddish and reddish. (iii) 5 C.L./ac. of F.Y.M. (iv) *Havala*, big aviste, medium and early. (v) (a) to (c) N.A. (d) 6" x 6" and 5" x 5". (e) N.A. (vi) N.A. (vii) Unirrigated. (viii) N.A. (ix) N.A. (x) 15.10.1952 to 3.11.1952.

2. TREATMENTS :

1. Control.
2. 96 lb./ac. of  $P_2O_5$  as Bonemeal.
3. 32 lb./ac. of N as A/S and G.N.C. in 1 : 1 ratio + 32 lb./ac. of  $P_2O_5$  as Bonemeal.

3. DESIGN :

(i) and (ii) 3 villages were selected at random and 2 fields within the selected villages were selected at random. (iii) (a) N.A. (b) 33' x 33'. (iv) N.A.

4. GENERAL :

(i) N.A. (ii) N.A. (iii) Grain yield. (iv) (a) For one year only. (b) and (c) N.A. (v) N.A. (vi) and (vii) Nil.

5. RESULTS :

- (i) 1825 lb./ac.
- (ii) 269.8 lb./ac.
- (iii) Treatment differences are not significant.
- (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	1768
2.	1782
3.	1924
S.E./mean	= 110.2 lb./ac.

Crop :- Paddy (*Kharif*).

Ref :- Expts. on cultivators' fields ; Mh. 52(1).

Site :- Dindori (Nasik.)

Type :- 'M'.

Object -- To study the response of Paddy to the application of N and P.

1. BASAL CONDITIONS :

(i) (a) and (b) Paddy in 2 villages. No previous crop in 1 village. (c) 1 bag of G.N.C. in paddy villages. (ii) Medium black. (iii) 5 C.L./ac. of F.Y.M. (iv) Local (early). (v) (a) to (c) N.A. (d) Between plants 8" to 6". (e) N.A. (vi), (vii) and (viii) N.A. (ix) 23.48". (x) Last two weeks of Nov. 1952.

2. TREATMENTS :

1. Control.
2. 64 lb./ac. of N as (A/S+G.N.C).
3. 64 lb./ac. of N+32 lb./ac. of  $P_2O_5$  (as bonemeal).  
Nitrogen as a mixture of G.N.C. and A/S in 1 : 1 ratio of N. Phosphate was applied after ploughing. Nitrogen was applied in two equal doses one at transplanting and the other at the tillering stage.

3. DESIGN :

(i), (ii) A list of villages randomly selected from all the villages in the taluka is formed and 3 villages were randomly selected from the list. Two fields in each village were located by randomly selected numbers. (iii) (a) 15' x 50'. (b) 33' x 33'. (iv) N.A.

## 4. GENERAL:

(i) At 1 village due to scarcity of water, development of grain was poor. (ii) No. (iii) Straw and grain yield. (iv) (a) No. (b) N.A. (c) N.A. (v) N.A. (vi) Nil.

## 5. RESULTS:

- (i) 1149 lb./ac.  
 (ii) 62.8 lb./ac.  
 (iii) Treatments differences are significant.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	930
2.	1211
3.	1306
S.E./mean	= 25.6 lb./ac.

Crop :- Paddy.

Ref :- Expts. on cultivators' fields ; Mh. 52(2).

Site :- Igatpuri (Nasik.)

Type :- 'M'.

Object :- To study the response of Paddy to the application of N and P.

## 1. BASAL CONDITIONS:

(i) (a) N.A. (b) *Kadwa wal* at one village. *Harbhare* (gram) at 2 villages. (c) No. (i) Medium black. (iii) 5 C.L./ac. of F.Y.M. (iv) Local *kolpi*. (v) (a) to (c) N.A. (d) Between plants 7" to 10". (e) N.A. (vi) N.A. (vii) N.A. (viii) N.A. (ix) 123.88". (x) 20th October to 10 November 1952 and 4th of Nov, 1952.

## 2. TREATMENTS:

- Control.
- 64 lb./ac. of N.
- 64 lb./ac. of N+32 lb./ac. of P<sub>2</sub>O<sub>5</sub> as Bonemeal.

Nitrogen as a mixture of G.N.C. and A/S; phosphate dose was applied after ploughing. Nitrogen was applied in 2 equal doses one at transplanting and the other at tillering.

## 3. DESIGN:

(i), (ii) A list of villages, randomly selected from all the villages in the taluka was formed and 2 villages were randomly selected from the list retaining the order of the list. The site in a village was located randomly from each selected village two fields were randomly selected. (iii) 72' x 33'. (b) 33' x 33'. (iv) N.A.

## 4. GENERAL:

(i) Good. (ii) No. (iii) Straw and grain yield. (iv) (a) No. (b) N.A. (c) N.A. (v) N.A. (vi) and (vii) Nil.

## 5. RESULTS:

- (i) 2227 lb./ac.  
 (ii) 56.40 lb./ac.  
 (iii) Treatment differences are not significant.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	1786
2.	2066
3.	2828
S.E./mean	= 40.0 lb./ac.

Crop :- Paddy (*Kharif*). Ref :- Expts. on cultivators' fields ; Mh. 52(3).  
 Site :- Nasik (Nasik.) Type :- 'M'.

Object :—To study the response of Paddy to the application of N and P.

1. BASAL CONDITIONS :

(i) (a) and (b) N.A. (c) No. (ii) Medium black. (iii) 5 C.L./ac. of F.Y.M. (iv) Local (late). (v) (a) N.A. (b) Sowing is not done in rows. (c) N.A. (d) Between plants 3' to 4". (e) N.A. (vi) N.A. (vii) N.A. (viii) N.A. (ix) 12.83". (x) 10.11.1952 at one village and 23.11.1952 at the other.

2. TREATMENTS :

1. Control.
2. 64 lb./ac. of N.
3. 64 lb./ac. of N+32 lb./ac. of  $P_2O_5$  as bonemeal.  
 Nitrogen as a mixture of G.N.C. and A/S. Phosphate was applied after ploughing Nitrogen in two equal doses one at transplanting and the other at tillering.

3. DESIGN :

(i), (ii) A list of villages randomly selected from all the villages in the taluka was formed and necessary no. of suitable villages were taken from the list retaining the order of the list. The site in a village was located by a randomly selected survey number. No. of exptal. site 2. (iii) (a) N.A. (b) 66' x 33'. (iv) N.A.

4. GENERAL :

(i) The crop affected by late rains at one village. (ii) No. (iii) Straw and grain yield. (iv) (a) No. (b) N.A. (c) N.A. (v) N.A. (vi) Nil. (vii) In one trial the yield of treatment 3 was very high and was treated as a missing value.

5. RESULTS :

- (i) 1502 lb./ac.
- (ii) 179.6 lb./ac.
- (iii) Treatment differences are not significant.
- (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield	
1.	1272	
2.	1713	
3.	1521	
S.E. of mean of (1 and 2)		= 89.6 lb./ac.
Treatment 3 vs 1 or 2		= 141.9 lb./ac.

Crop :- Paddy (*Kharif*). Ref :- Expts. on cultivators' fields ; Mh. 52(4).  
 Site :- Haveli (Poona.) Type :- 'M'.

Object :—To study the response of Paddy to the application of N and P.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) Paddy. (c) 3 to 7 C.L./ac. of F.Y.M. (ii) Reddish black. (iii) 280 lb./plot of F.Y.M. (iv) *Ambe-Mohor* (early). (v) (a) to (c) N.A. (d) Between plants 9". (e) N.A. (vi) N.A. (vii) N.A. (viii) N.A. (ix) 20.74". (x) 16 11.1952 to 27.11.1952.

2. TREATMENTS :

1. Control.
2. 64 lb./ac. of N.
3. 64 lb./ac. of N+32 lb./ac. of  $P_2O_5$ .  
 N was applied as a mixture of G.N.C. and A/S in 1 : 1 ratio of N.  $P_2O_5$  (as Super) was applied after ploughing. Nitrogen in two equal doses, one at transplanting and the other at tillering.

3. DESIGN :

(i), (ii) A list of villages randomly selected from all the villages in the taluka was formed and a necessary no. of suitable villages were taken from the list retaining the serial order of the list. The site in a village was located by randomly selected survey no. No. of exptal. site 3. (iii) (a) Varies from village to village and site to site. (b) 36' x 30'. (iv) N.A.

## 4. GENERAL :

(i) Good. (ii) Nil. (iii) Straw and grain yield. (iv) (a) 1952-1953. (b) N.A. (c) N.A. (v) (a) N.A. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 1918 lb./ac.

(ii) 42.40 lb./ac.

(iii) N.A.

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

Treatment	Av. yield
1.	944
2.	1931
3.	2880
S.E./mean	= 24.40 lb./ac.

Crop :- Paddy (Kharif). Ref :- Expts. on cultivators' fields ; Mh. 52(5).

Site :- Mulshi (Poona.) Type :- 'M'.

Object :- To study the response of Paddy to the application of N and P.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) Paddy. (c) No. (ii) Medium black. (iii) 280 lb./plot of F.Y.M. (iv) *Ambe-Mohor* no. 157. (v) (a) to (c) N.A. (d) Between plants 12". (e) N.A. (vi) N.A. (vii) N.A. (viii) N.A. (ix) 59.53". (x) 8.11.1952 to 14.11.1952.

## 2. TREATMENTS :

1. Control.

2. 64 lb./ac. of N.

3. 64 lb./ac. of N+32 lb./ac. of  $P_2O_5$ .

N was applied as a mixture of G.N.C. and A/S in 1 : 1 ratio of N.  $P_2O_5$  as Super was applied after ploughing. Nitrogen was applied in two doses one at transplanting and the other at tillering.

## 3. DESIGN :

(i), (ii) A list of villages, randomly selected from all the villages in the taluka is formed and a necessary number of suitable villages were taken from the list retaining the order of the list. The site in a village was located by a randomly selected survey no. No. of exptal. sites 4. (iii) (a) 72' x 36'. (b) 33' x 33'. (iv) N.A.

## 4. GENERAL :

(i) Good. (ii) No. (iii) Straw and grain yield. (iv) (a) No. (b) N.A. (c) N.A. (v) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 2070 lb./ac.

(ii) 122.0 lb./ac.

(iii) N.A.

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

Treatment	Av. yield
1.	1480.0
2.	2214.5
3.	2516.8
S.E./mean	= 60.80 lb./ac.

Crop :-Paddy (*Kharif*).

Ref :-Expts. on cultivators' fields ; Mh. 52(6).

Site :-Bhor (Poona.)

Type :-'M'.

Object :—To study the response of Paddy to N and P.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) Gram in one village and sugarcane in the other. (c) No manure for gram. Two bags/ac. of F.Y.M for sugarcane.(ii) Black at 3 sites, loamy at 1 site and reddish at 2 sites. (iii) 280 lb./plot of F.Y.M. (iv) *Ambe-mohor* no. 157. (v) (a), (b) and (c) N.A. (d) Between rows 9" to 1' and between plants 6" to 9". (vi), (vii) and (viii) N.A. (ix) 35.33". (x) 12.11.1952 and 23.11.1952.

## 2. TREATMENTS :

1. Control.
2. 64 lb./ac. of N.
3. 64 lb./ac. of N+32 lb./ac. of  $P_2O_5$ .

N was applied as a mixture of G.N.C. and A/S in 1 : 1 ratio of N. Phosphate as Super was applied after ploughing. Nitrogen was applied in two equal doses one at transplanting and the other at tillering.

## 3. DESIGN

(i), (ii) A list of villages, randomly selected from all the villages in a taluka was made and a necessary number of suitable villages were taken from the list retaining the order of the list. The site in a village was located by a randomly selected survey no. No. of exptl. sites 4. (iii) (a) Varies from site to site. (b) 33'×33'. (iv) N.A.

## 4. GENERAL

(i) Good. (ii) No. (iii) Straw and grain yield. (iv) (a) 1952—1953 for 1 year only. (b) and (c) N.A. (v) N.A. (vi) and (vii) Nil.

## 5. RESULTS

For village Nasarpur		For village Hathashi	
(i) 3536 lb./ac.		(i) 3889 lb./ac.	
(ii) 196.8 lb./ac.		(ii) 31.2 lb./ac.	
(iii) Treatment differences are not significant.		(iii) Treatment differences are not significant.	
(iv) Av. yield of grain in lb./ac.		(iv) Av. yield of grain in lb./ac.	
Treatment	Av. yield	Treatment	Av. yield
1.	2342	1.	3862
2.	3835	2.	3891
3.	4430	3.	3912
S.E./mean	=139.6 lb./ac.	S.E./mean	=22.0 lb./ac.

Crop :-Paddy (*Kharif*).

Ref :-Expt. on cultivators' field ; Mh. 52(7).

Site :-Maval (Poona.)

Type :-'M'.

Object :—To study the response of Paddy to the application of N and P.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) Paddy. (c) No. (ii) Loamy at one village ; loamy and black at other village. (iii) 280 lb./plot of F.Y.M. (iv) Local. (late) (v) (a), (b) and (c) N.A. (d) Between rows 12" ; between plants 9". (e) N.A. (vi), (vii) and (viii) N.A. (ix) 73.84". (x) 29.10.1952 and 5.11.1952.

## 2. TREATMENTS :

1. Control.
2. 64 lb./ac. of N.
3. 64 lb./ac. of N+32 lb./ac. of  $P_2O_5$ .

N was applied as a mixture of G.N.C. and A/S in 1 : 1 ratio of N. Phosphate was applied after ploughing. Nitrogen was applied in two doses one at transplanting and the other at tillering.

## 3. DESIGN :

(i) and (ii) A list of villages, randomly selected from all the villages in a taluka is formed and a necessary no. of suitable villages were taken from the list retaining the serial order of the list. The site in a village was located by a randomly selected survey no. No. of exptl. sites 4. (iii) Varies from site to site. (b) 33'×33'. (iv) N.A.

## 4. GENERAL :

(i) Good. (ii) No. (iii) Straw and grain yield. (iv) (a) 1952—1953 (one year). (b) and (c) N.A. (v) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 2265 lb./ac.  
 (ii) 56.40 lb./ac.  
 (iii) N.A.  
 (iv) Av. yield of grain in lb./ac.
- | Treatment | Av. yield      |
|-----------|----------------|
| 1.        | 1340           |
| 2.        | 2084           |
| 3.        | 3371           |
| S.E./mean | =28.80 lb./ac. |

Crop :- Paddy (*Kharif*).

Ref :- Expts. on cultivators' fields Mh. 52(8).

Site :- Vahle Petha (Poona.)

Type :- 'M'.

Object :—To study the response of Paddy to the application of N and P.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) Paddy. (c) No. (ii) Reddish. (iii) 280 lb./plot of F.Y.M. (iv) *Amme-Mohor* no. 157. (v) (a) to (c) N.A. (d) Between rows 9" and between plants 9". (e) N.A. (vi) N.A. (vii) N.A. (viii) N.A. (ix) N.A. (x) 22.11.1952.

## 2. TREATMENTS :

- Control.
- 64 lb./ac. of N.
- 64 lb./ac. of N+32 lb./ac. of  $P_2O_5$ .

N was applied as a mixture of G.N.C. and A/S in 1 : 1 ratio of N  $P_2O_5$  as Super was applied after ploughing. Nitrogen in two equal doses one at transplanting and the other at tillering.

## 3. DESIGN :

(i), (ii) A list of villages randomly selected from all the villages in a taluka is formed and necessary no. of suitable villages were taken from the list retaining the serial order of the list. The site in a village was located by randomly selected survey no. No. of exptal. sites 4. (iii) (a) N.A. (b) 33'×33'. (iv) N.A.

## 4. GENERAL :

(i) Good. (ii) No. (iii) Straw and grain yield. (iv) (a) No. (b) N.A. (c) N.A. (v) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 2022 lb./ac.  
 (ii) 284.8 lb./ac.  
 (iii) Treatment differences are significant.  
 (iv) Av. yield of grain in lb./ac.
- | Treatment | Av. yield      |
|-----------|----------------|
| 1.        | 1616           |
| 2.        | 2060           |
| 3.        | 2389           |
| S.E./mean | =142.4 lb./ac. |



Crop :- Paddy (*Kharif*). Ref :- Expts. on cultivators' fields ; Mh. 52(342).  
 Site :- Rajapur (Ratnagiri.) Type :- 'M'.

Object :—To study the response of Paddy to application of N and P.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) Paddy in all villages. (c) Nil. (ii) Sandy. (iii) Nil. (iv) *Lavesal*. (v) (a) to (e) N.A. (vi) N.A. (vii) Unirrigated. (viii) N.A. (ix) N.A. (x) 14.10.1952 and 21.10.1952.

2. TREATMENTS :

1. Control.
2. 96 lb./ac. of  $P_2O_5$  as B.M.
3. 32 lb./ac. of N + 32 lb./ac. of  $P_2O_5$ .  
N as A/S and G.N.C. in 1 : 1 ratio.

3. DESIGN :

(i), (ii) Villages were selected at random from among the Paddy growing villages and 2 fields were selected at random within each village (iii) (a) N.A. (b) 33'×33'. (iv) N.A.

4. GENERAL :

(i) N.A. (ii) N.A. (iii) Grain and straw yield. (iv) (a) No. (b) N.A. (c) N.A. (v) N.A. (vi) and (vii) Nil.

5. RESULTS :

- (i) 1624 lb./ac.
- (ii) 128.4 lb./ac.
- (iii) Treatments differ highly significantly.
- (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	1028
2.	1690
3.	2154
S.E./mean	= 64.20 lb./ac.

Crop :- Paddy (*Kharif*). Ref :- Expts. on cultivators' fields ; Mh. 52(343).  
 Site :- Lanja (Ratnagiri.) Type :- 'M'.

Object :—To study the response of Paddy to application of N and P.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) Paddy—Paddy. (c) 5 to 10 C.L./ac. of F.Y.M. (ii) Sandy laterite. (iii) 5 C.L./ac. of F.Y.M. (iv) *Patani waksal* (mid late) and *Bhadas*. (v) (a) to (e) N.A. (vi) N.A. (vii) Unirrigated. (viii) N.A. (ix) N.A. (x) 1.10.1952, 20.10.1952 and 28.10.1952.

2. TREATMENTS :

1. Control.
2. 96 lb./ac. of  $P_2O_5$  as B.M.
3. 32 lb./ac. of N + 32 lb./ac. of  $P_2O_5$ .  
N as A/S and G.N.C. in 1 : 1 ratio.

3. DESIGN :

(i) and (ii) Villages were selected at random from among the Paddy growing villages and 2 fields were selected at random within each village. (iii) (a) N.A. (b) 33'×33'. (iv) N.A.

4. GENERAL :

(i) N.A. (ii) Nil. (iii) Grain and straw yield. (iv) (a) N.A. (b) N.A. (c) N.A. (v) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 1761 lb./ac.  
 (ii) 139.6 lb./ac.  
 (iii) Treatments differ highly significantly.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	1352
2.	2054
3.	1877
S.E./mean	= 69.80 lb./ac.

Crop :- Paddy (*Kharif*).

Ref :- Expts. on cultivators' fields ; Mh. 52(344).

Site :- Ratnagiri (Ratnagiri.)

Type :- 'M'.

Object :—To study the response of Paddy to application of N and P.

## 1. BASAL CONDITIONS :

- (i) (a) N.A. (b) Nil. (c) Nil. (ii) Laterite. (iii) 5 C.L./ac. of F.Y.M. (iv) *Patani* (early). (v) (a) to (c) N.A. (d) 9' × 6'. (e) N.A. (vi) N.A. (vii) Unirrigated. (viii) N.A. (ix) N.A. (x) 19 to 25.9.1952.

## 2. TREATMENTS :

1. Control.  
 2. 96 lb./ac. of P<sub>2</sub>O<sub>5</sub> as B.M.  
 3. 32 lb./ac. of N + 32 lb./ac. of P<sub>2</sub>O<sub>5</sub>.  
 N as A/S and G.N.C. in 1 : 1 ratio.

## 3. DESIGN :

- (i), (ii) Villages were selected at random from among the Paddy growing villages and 2 fields were selected at random within each village. (iii) (a) N.A. (b) 33' × 33'. (iv) N.A.

## 4. GENERAL :

- (i) N.A. (ii) Nil. (iii) Grain and straw yield. (iv) (a) N.A. (b) and (c) N.A. (v) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 1834 lb./ac.  
 (ii) 998.8 lb./ac.  
 (iii) Treatments do not differ significantly.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	1576
2.	1892
3.	2035
S.E./mean	= 499.4 lb./ac.

Crop :- Paddy (*Kharif*).

Ref :- Expts. on cultivators' fields ; Mh. 52(345).

Site :- Sangameshwer (Ratnagiri.)

Type :- 'M'.

Object :—To study the response of Paddy to application of N and P.

## 1. BASAL CONDITIONS :

- (i) (a) N.A. (b) Paddy. (c) 5 baskets/*Guntha* of F.Y.M. (ii) Laterite. (iii) 5 baskets/*Guntha* of F.Y.M. (iv) *Bhadas* (midlate) ; *Potani* (early) and *Kolamba* (midlate). (v) (a) to (c) N.A. (vi) N.A. (vii) Unirrigated. (viii) N.A. (ix) N.A. (x) 28.10.1952.

## 2. TREATMENTS :

1. Control.
2. 96 lb./ac. of  $P_2O_5$  as B.M.
3. 32 lb./ac. of N+32 lb./ac. of  $P_2O_5$ .  
N as A/S and cake in 1 : 1 ratio.

## 3. DESIGN :

(i), (ii) Villages were selected at random from among the paddy growing villages and 2 fields were selected at random within each village. (iii) (a) N.A. (b) 33'×33'. (iv) N.A.

## 4. GENERAL :

(i) N.A. (ii) Nil. (iii) Grain and straw yield. (iv) (a) N.A. (b) N.A. (c) N.A. (v) N.A. (vi) Nil. (vii) Nil.

## 5. RESULTS :

- (i) 2214 lb./ac.
- (ii) 214.5 lb./ac.
- (iii) Treatments differ significantly.
- (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	1937
2.	2416
3.	2290
S.E./mean	=107.3 lb./ac.

Crop :- Paddy (*Kharif*). Ref :- Expts. on cultivators' fields ; Mh. 52(268).

Site :- Dahanu (Thana.) Type :- 'M'

Object :- To study the response of Paddy to application of N and P.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) Paddy. (c) N.A. (ii) Clayey soft, medium black and reddish clayey. (iii) 5 C.L./ac. F.Y.M. (iv) *Kolamba* (mid late) and Local (medium). (v) (a), (b) and (c) N.A. (d) 9"×9". (e) N.A. (vi) N.A. (vii) Unirrigated. (viii) N.A. (ix) N.A. (x) 12.10.1952 and 24.10.1952.

## 2. TREATMENTS :

1. Control.
2. 64 lb./ac. of N as A/S and G.N.C. in 1 : 1 ratio.
3. 64 lb./ac. of N+32 lb./ac. of  $P_2O_5$  as Super.

## 3. DESIGN :

(i), (ii) 2 villages were selected at random within the taluka and within each village 2 fields were selected at random. (iii) (a) N.A. (b) 33'×33'. (iv) N.A.

## 4. GENERAL :

(i) Normal. (ii) Nil. (iii) Grain yield. (iv) (a) N.A. (b) N.A. (c) N.A. (v) N.A. (vi) Nil. (vii) Nil.

## 5. RESULTS :

- (i) 1827 lb./ac.
- (ii) 37.20 lb./ac.
- (iii) Treatments differ highly significantly.
- (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	1674
2.	1842
3.	1966
S.E./mean	=18.60 lb./ac.

Crop :-Paddy (*Kharif*). Ref :-Expts. on cultivators' fields ; Mh. 52(269).  
 Site :-Javhar (Thana.) Type :-'M'.

Object :—To study the response of Paddy to application of N and P.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) Paddy. (c) Nil. (ii) Black. (iii) 5 C.L./ac. of F.Y.M. (iv) Z-149. (v) (a), (b) and (c) N.A. (d) 9'×9'. (e) N.A. (vi) N.A. (vii) Unirrigated. (viii) and (ix) N.A. (x) 1 to 5.11.1951.

2. TREATMENTS :

1. Control.
2. 64 lb./ac. of N as A/S and G.N.C. 1 : 1 ratio.
3. 64 lb./ac. of N+32 lb./ac. of P<sub>2</sub>O<sub>5</sub> as Super.

3. DESIGN :

(i) and (ii) 2 villages were selected at random within the taluka and within each village 2 fields were selected at random. (iii) (a) N.A. (b) 33'×33'. (iv) N.A.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) Grain yield. (iv) (a) No. (b) and (c) N.A. (v) N.A. (vi) and (vii) Nil.

5. RESULTS :

- (i) 1745 lb./ac.
- (ii) 45.60 lb./ac.
- (iii) Treatments differ highly significantly.
- (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	1150
2.	1747
3.	2337
S.E./mean	=22.80 lb./ac.

Crop :-Paddy (*Kharif*). Ref :-Expts. on cultivators' fields ; Mh. 52(270).  
 Site :-Borivali (Thana.) Type :-'M'.

Object :—To study the response of Paddy to application of N and P.

1. BASAL CONDITIONS :

(i) (a) and (b) N.A. (c) 20 C.L./ac. of F.Y.M. in one village only. (ii) Laterite. (iii) 5 C.L./ac. of F.Y.M. (iv) E.K. 70 (early) and 2149 (late). (v) (a), (b) and (c) N.A. (d) 10'×10'. (e) N.A. (vi) N.A. (vii) Unirrigated. (viii) and (ix) N.A. (x) 29 and 30.10.1952.

2. TREATMENTS :

1. Control.
2. 64 lb./ac. of N as A/S and cake in 1 : 1 ratio.
3. 64 lb./ac. of N+32 lb./ac. of P<sub>2</sub>O<sub>5</sub> as Super.

3. DESIGN :

(i) and (ii) 2 villages were selected at random within the taluka and within each village 2 fields were selected at random. (iii) (a) N.A. (b) 33'×33'. (iv) N.A.

4. GENERAL :

(i) and (ii) N.A. (iii) Grain yield. (iv) (a) No. (b) and (c) N.A. (v) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 967 lb./ac.  
 (ii) 47.16 lb./ac.  
 (iii) Treatments differ highly significantly.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	800
2.	982
3.	1120
S.E./mean	=23.58 lb./ac.

Crop :- Paddy (*Kharif*). Ref :- Expts. on cultivators' fields ; Mh 52(271).  
 Site :- Wada, (Thana.) Type :- 'M'.

Object :—To study the response of Paddy to application of N and P.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) Gram and *wal*. (c) Nil. (ii) Black clayey. (iii) 5 C.L./ac. of F.Y.M. (iv) *Garwal* (late); *chali*; *Ziniya* (late); *Kolamba* 226. (v) (a) to (c) N.A. (d) 9"×9". (e) Nil. (vi) N.A. (vii) Unirrigated. (viii) N.A. (ix) N.A. (x) 14 to 17.11.1952.

## 2. TREATMENTS :

- Control.
- 64 lb./ac. of N as A/S and G.N.C. 1: 1 ratio.
- 64 lb./ac. of N+32 lb./ac. of P<sub>2</sub>O<sub>5</sub> as super.

## 3. DESIGN :

(i), (ii) 2 villages were selected at random within the taluka and 2 fields were selected within a village. (iii) (a) N.A. (b) 33'×33'. (iv) N.A.

## 4. GENERAL :

(i) N.A. (ii) Nil. (iii) Grain yield. (iv) (a) No. (b) N.A. (c) N.A. (v) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 3473 lb./ac.  
 (ii) 146.4 lb./ac.  
 (iii) Treatments differ highly significantly.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	3138
2.	3823
3.	3459
S.E./mean	= 73.18 lb./ac.

Crop :- Paddy (*Kharif*). Ref :- Expts. on cultivators' fields ; Mh. 52(274).  
 Site :- Thana (Thana.) Type :- 'M'.

Object :—To study the response of Paddy to application of N and P.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) Paddy, (c) Nil. (ii) Black loamy, reddish black. (iii) 5. C.L./ac. of F.Y.M. (iv) Mid-late. (v) (a) to (c) N.A. (d) 10"×10" and 9"×9". (e) N.A. (vi) N.A. (vii) Unirrigated. (viii) N.A. (ix) N.A. (x) 28.10.1952 ; 2.11.1952 and 7.11.1952.

## 2. TREATMENTS :

- Control.
- 64 lb./ac. of N as A/S and G.N.C. in 1:1 ratio.
- 64 lb./ac. of N+32 lb./ac. of P<sub>2</sub>O<sub>5</sub> as Super.

## 3. DESIGN :

(i), (ii) 2 villages were selected at random within the taluka and 2 fields were selected at random within the selected village. (iii) (a) N.A. (b) 33'×33'. (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) and (vii) Nil.

## 5. RESULTS :

- (i) 2275 lb./ac.  
 (ii) 90.92 lb./ac.  
 (iii) Treatments differ highly significant.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	1652
2.	2281
3.	2891
S.E./mean	= 45.46 lb./ac.

Crop :- Paddy (*Kharif*).

Ref :- Expts. on cultivators' fields ; Mh. 52(275).

Site :- Murhad (Thana.)

Type :- 'M'.

Object :—To study the response of Paddy to application of N and P.

## 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 (e) N.A. (vi) N.A. (vii) N.A. (viii) N.A. (ix) N.A. (x) N.A.

## 2. TREATMENTS :

- Control.
  - 64 lb./ac. of N as A/S and G.N.C. in 1 : 1 ratio.
  - 64 lb./ac. of N+32 lb./ac. of  $P_2O_5$  as Super.
- Basal dose of 5 C.L./ac. of F.Y.M.

## 3. DESIGN :

(i), (ii) 2 villages were selected at random within the taluka and within each village, 2 fields were selected at random. (iii) (a) N.A. (b) 33'×33'. (iv) N.A.

## 4. GENERAL :

(i) N.A. (ii) Nil. (iii) Grain yield. (iv) (a) No. (b) N.A. (c) N.A. (v) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 2849 lb./ac.  
 (ii) 236.7 lb./ac.  
 (iii) Treatments do not differ significantly.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	2777
2.	2988
3.	2784
S.E./mean	= 118.3 lb./ac.

Crop :- Paddy.

Ref :- Complex experiments (T.C.M.), 1953.

Centre :- Karjat (Maharashtra).

Type :- 'MV'.

Object :- VIII, To study the effect of N and P on yield of different varieties of Paddy.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) N.A. (c) N.A. (ii) (a) Sandy loam to clay loam. (b) Poor in lime,  $K_2O$  and  $P_2O_5$ , slightly acidic, well supplied with organic matter. (iii) Transplanting on 25.7.1953. (iv) N.A. (v) N.A. (vi) As under treatments. (vii) Unirrigated. (viii) N.A. (ix) N.A. (x) 30.10.1953.

## 2. TREATMENTS :

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

(1) 3 levels of N :  $N_0=0$ ,  $N_1=20$  and  $N_2=40$  lb./ac.(2) 3 levels of  $P_2O_5$  as Super :  $P_0=0$ ,  $P_1=20$  and  $P_2=40$  lb./ac.(3) 3 varieties :  $V_1=IB12-11$ ,  $V_2=Z-31$  and  $V_3=K-540$  (Improved).

N applied in two equal doses ; half dose 5 days after planting and half dose 20 days after planting.  $P_2O_5$  applied at puddling.

## 3. DESIGN :

(i)  $3^3$  Confounded. (ii) (a) 9 plots/block and 3 blocks/replication. (b) N.A. (iii) 1. (iv) (a) N.A. (b) 1/60.5 acre. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) Lodging occurred in plots receiving higher doses of N. (ii) Considerable damage to crop by swarming caterpillar. (iii) Grain yield. (iv) (a) 1953 to 1956. (b) No. (c) N.A. (v) (a) Ponnampet, Sahaspur, Burdwan, Mankhanda, Maruteru and Chavai. (b) N.A. (vi) Nil. (vii) Nil.

## 5. RESULTS :

(i) 2050 lb./ac.  
 (ii) 592.2 lb./ac.  
 (iii) Main effects and interactions are not significant.  
 (iv) Av. yield of grain in lb./ac.

	$N_0$	$N_1$	$N_2$	Mean	$V_1$	$V_2$	$V_3$
$P_0$	2074	1608	1608	1763	1825	1929	1535
$P_1$	1971	2178	2572	2240	3008	1473	2240
$P_2$	2261	2054	2126	2147	2033	2188	2219
Mean	2102	1916	2102	2050	2289	1863	1998
$V_1$	2054	2966	1846				
$V_2$	2137	1182	2271				
$V_3$	2116	1691	2188				

S.E. of any marginal mean = 197.4 lb./ac.

S.E. of body of table = 341.9 lb./ac.

Crop :- Paddy (Kharif).

Ref :- Mh. 50(146).

Site :- Agri. Res. Stn., Chiplun.

Type :- 'C'.

Object :- To study the effect of spacing and number of seedlings per bunch on yield of Paddy.

## 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Laterite soil. (b) Refer soil analysis, Chiplun. (iii) N.A. (iv) (a) N.A. (b) Transplanting. (c) —. (d) As per treatments. (e) As per treatments. (v) Nil. (vi) Warangal—487. (vii) Unirrigated. (viii) to (x) N.A.

## 2. TREATMENTS :

All combinations of (1) and (2)+4 selective treatments

- (1) No. of seedlings/bunch :  $R_1=1$ ,  $R_2=2$  and  $R_3=3$ .  
 (2) 4 spacings :  $S_1=4''$ ,  $S_2=6''$ ,  $S_3=9''$  and  $S_4=12''$ .

And 4 selective treatments are :

- (a) 9" spacing with 6 seedlings/bunch.  
 (b) 12" spacing with 6 seedlings/bunch.  
 (c) 9" spacing with 9 seedlings/bunch.  
 (d) 12" spacing with 9 seedlings/bunch.

## 3. DESIGN :

- (i) R.B.D. (ii) (a) 16. (b) N.A. (iii) 4. (iv) (a) 20'×12'. (b) 18'×12'. (v) N.A. (vi) Yes.

## 4. GENERAL :

- (i) N.A. (ii) N.A. (iii) Grain and straw yield. (iv) (a) 1950 to 1951. (b) No. (c) Nil. (v) (a) Igatpuri, Ratnagiri and Vadgaon. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 1476 lb./ac.  
 (ii) 343.9 lb./ac.  
 (iii) Main effects of spacing, seedlings and selective vs others are highly significant ;  
 Spacing × seedlings, and selective treatments are not significant.  
 (iv) Av. yield of grain in lb./ac.

- (a) = 1610 lb./ac.  
 (b) = 1806 lb./ac.  
 (c) = 1834 lb./ac.  
 (d) = 1632 lb./ac.

	$S_1$	$S_2$	$S_3$	$S_4$	Mean
$R_1$	1421	1276	1201	788	1171
$R_2$	1670	1576	1185	1059	1372
$R_3$	1796	1796	1875	1100	1642
Mean	1629	1549	1420	982	

- S.E. of marginal mean of S = 99.3 lb./ac.  
 S.E. of marginal mean of R = 86.0 lb./ac.  
 S.E. of body of table = 172.0 lb./ac.

Crop :- Paddy (*Khariif*).

Ref :- Mh. 51 (214).

Site :- Agri. Res. Stn., Chiplun.

Type :- 'C'.

Object :- To study the effect of spacing and number of seedlings per bunch on the yield of Paddy.

## 1. BASAL CONDITIONS :

- (i) (a) and (b) Paddy. (c) N.A. (ii) (a) Laterite soil. (b) Refer soil analysis, Chiplun. (iii) N.A. (iv) (a) N.A. (b) Transplanting. (c) —. (d) and (e) As per treatments. (v) Nil. (vi) Warangal-487. (vii) Unirrigated. (viii) to (x) N.A.

## 2. TREATMENTS :

All combinations of (1) and (2)+4 selective treatments

- (1) No. of seedlings bunch :  $R_1=1$ ,  $R_2=2$  and  $R_3=3$ .  
 (2) 4 spacings :  $S_1=4''$ ,  $S_2=6''$ ,  $S_3=9''$  and  $S_4=12''$ .

And 4 selective treatments are :

- (a) 9" spacing with 6 seedlings/bunch.  
 (b) 12" spacing with 6 seedlings/bunch.  
 (c) 9" spacing with 9 seedlings/bunch.  
 (d) 12" spacing with 9 seedlings/bunch.



## 3. DESIGN :

(i) R.B.D. (ii) (a) 16. (b) N.A. (iii) 4. (iv) (a) 20'×12'. (b) 18'×12'. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) and (ii) N.A. (iii) Grain and straw yield. (iv) (a) 1950 to 1951. (b) No. (c) Nil. (v) (a) Igatpuri, Vadgaon, Ratnagiri. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 1311 lb./ac.  
 (ii) 226.0 lb./ac.  
 (iii) Main effects of spacing and selective vs others are highly significant. Main effect of seedlings, spacing×seedlings and selective treatments are not significant.  
 (iv) Av. yield of grain in lb./ac.

(a) = 1642 lb./ac.  
 (b) = 1308 lb./ac.  
 (c) = 1418 lb./ac.  
 (d) = 1613 lb./ac.

	S <sub>1</sub>	S <sub>2</sub>	S <sub>3</sub>	S <sub>4</sub>	Mean
R <sub>1</sub>	1213	1349	1090	1046	1174
R <sub>2</sub>	1339	1339	1138	1147	1241
R <sub>3</sub>	1279	1648	1156	1245	1332
Mean	1277	1445	1128	1146	

S.E. of marginal mean of S = 65.2 lb./ac.  
 S.E. of marginal mean of R = 56.5 lb./ac.  
 S.E. of body of table = 113.0 lb./ac.

Crop :- Paddy (*Kharif*).

Ref :- Mh. 48 (14).

Site :- Agri. Res. Stn., Igatpuri.

Type :- 'C'.

Object :- To find out the optimum spacing and number of seedlings/bunch to get maximum yield.

## 1. BASAL CONDITIONS :

(i) (a) Paddy after paddy. (b) Paddy. (c) Nil. (ii) (a) Medium black. (b) Refer soil analysis, Igatpuri.  
 (iii) 8.6.1948/18 to 20.7.1948. (iv) (a) 2 ploughings. (b) transplanting. (c) —. (d) As per treatments.  
 (e) N.A. (v) Nil. (vi) K-226 (late). (vii) Unirrigated. (viii) Puddling and planting on 18 and 20.7.1948 ;  
 interculturing from 1 to 5.9.1948. (ix) 115.69°. (x) 4 and 6.11.1948.

## 2. TREATMENTS :

Main-plot treatments :

3 spacings : S<sub>1</sub>=8"×8", S<sub>2</sub>=10"×10" and S<sub>3</sub>=12"×12".

Sub-plot treatments :

Seedlings/bunch : R<sub>1</sub>=4, R<sub>2</sub>=6, R<sub>3</sub>=8 R<sub>4</sub>=10 and R<sub>5</sub>=12.

## 3. DESIGN :

(i) Split-plot. (ii) (a) 3 main-plots/block ; 5 sub-plots/main-plot. (b) N.A. (iii) 5. (iv) (a) sub-plot 22'-5"×20' ; 23'-4"×20' ; 24'×20' for 8",10" and 12" spacings respectively. (b) Sub-plot 20'×10'. Main-plot 22'-8"×100' ; 23'-4"×100' ; 24'×100' for 8",10" and 12" spacings respectively. (v) 5' at either end, 2 rows on either side. (vi) Yes.

## 4. GENERAL :

(i) Normal. (ii) Greatly affected by crabs. (iii) Grain and straw yield. (iv) (a) 1948 to 1951. (b) Yes. (c) N.A. (v) (a) Chiplun, Karjat, Ratnagiri and Vadgaon. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 1449 lb./ac.  
 (ii) (a) 274.0 lb./ac. \\  
 (b) 222.6 lb./ac.  
 (iii) Only main-plot treatment effects are 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>	1542	1480	1101	1374
R <sub>2</sub>	1599	1405	1370	1458
R <sub>3</sub>	1582	1533	1381	1499
R <sub>4</sub>	1691	1404	1331	1475
R <sub>5</sub>	1515	1522	1274	1437
Mean	1586	1469	1291	1449

## S.E. of difference of two

1. S marginal means = 77.5 lb./ac.  
 2. R marginal means = 81.2 lb./ac.  
 3. R means at a level of S = 147.7 lb./ac.  
 4. S means at a level of R = 140.7 lb./ac.

Crop :- Paddy (*Kharif*).

Ref :- Mh. 49(24)/48(14).

Site :- Agri. Res. Stn., Igatpuri.

Type :- 'C'.

Object :- To find out the optimum spacing and number of seedlings per bunch to get maximum yield.

## 1. BASAL CONDITIONS :

(i) (a) Paddy after paddy. Fallow in *Rabi*. (b) Paddy. (c) Nil. (ii) (a) Medium black. (b) Refer soil analysis, Igatpuri. (iii) 4.6.1949/24, 25 and 27.7.1949. (iv) (a) 2 ploughings. (b) Transplanting. (c) —. (d) and (e) As per treatments. (v) Nil. (vi) K-226 (late). (vii) Unirrigated. (viii) Puddling and planting on 24 to 26.7.1949, interculturing on 16.9.1949. (ix) 125.68". (x) 10.11.1949 ; 13.11.1949.

## 2. TREATMENTS :

## Main-plot treatments :

3 spacings : S<sub>1</sub>=8"×8", S<sub>2</sub>=10"×10" and S<sub>3</sub>=12"×12".

## Sub-plot treatments :

Seedlings/bunch : R<sub>1</sub>=4, R<sub>2</sub>=6, R<sub>3</sub>=8, R<sub>4</sub>=10 and R<sub>5</sub>=12.

## 3. DESIGN :

(i) Split-plot. (ii) (a) 3 main-plots/block ; 5 sub-plots/main-plot. (b) N.A. (iii) 6. (iv) (a) 22'-8"×20' ; 23'-4"×20' ; 24'×20' for 8", 10" and 12" spacings respectively ; main-plot (8" spacing—22'-8"×100' ; 10" spacing—23'-33"×100' ; 12" spacing—24'×100'). (b) 20'×10'. (v) 5 rows at either end, 2 rows on either side. (vi) Yes.

## 4. GENERAL :

(i) Normal. (ii) Few border plants eaten away by crab. (iii) Grain and fodder yield. (iv) (a) 1948—1951. (b) Yes. (c) N.A. (v) (a) Chiplun, Karjat, Ratnagiri and Vadgaon (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 1016 lb./ac.  
 (ii) (a) 150.6 lb./ac.  
 (b) 136.2 lb./ac.  
 (iii) Only main-plot treatment effects are 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>	982	979	975	979
R <sub>2</sub>	1189	850	945	995
R <sub>3</sub>	1230	1050	854	1045
R <sub>4</sub>	1154	1102	873	1043
R <sub>5</sub>	1158	1001	894	1018
Mean	1143	996	908	1016

S.E. of difference of two

1. S marginal means = 38.9 lb./ac.
2. R marginal means = 45.4 lb./ac.
3. R means at a level of S = 78.6 lb./ac.
4. S means at a level of R = 80.4 lb./ac.

Crop :- Paddy (*Kharif*).

Ref :- Mh. 50(33)/49(24)/48(14).

Site :- Agri. Res. Stn., Igatpuri.

Type :- 'C'.

Object :- To find out the optimum spacing and number of seedlings per bunch for getting maximum yield.

## 1. BASAL CONDITIONS :

(i) (a) Paddy after paddy (fallow in *Rabi*). (b) Paddy. (c) Nil. (ii) (a) Coarse to medium black soil. (b) Refer soil analysis, Igatpuri. (iii) 12.6.1950/30.7.1950. (iv) (a) N.A. (b) Transplanting. (c) —. (d) and (e) As per treatments. (v) Nil. (vi) K-226 (late). (vii) Unirrigated. (viii) Hand weeding 1st week of Sept. 1950. (ix) 147.25". (x) 15.11.1950 to 17.11.1950.

## 2. TREATMENTS :

Main-plot treatments :

3 spacings : S<sub>1</sub>=8" × 8", S<sub>2</sub>=10" × 10" and S<sub>3</sub>=12" × 12".

Sub-plot treatments :

Seedlings/bunch : R<sub>1</sub>=4, R<sub>2</sub>=6, R<sub>3</sub>=8, R<sub>4</sub>=10 and R<sub>5</sub>=12.

## 3. DESIGN :

(i) Split-plot. (ii) (a) 3 main-plots/block ; 5 sub plots/main-plot. (b) N.A. (iii) 6. (iv) (a) 22'-8" × 20' ; 23'-4" × 20' ; 24' × 20' for 8", 10" and 12" spacings respectively ; main-plot :—22'-8" × 100' ; 23'-4" × 100' ; 24' × 100' for 8", 10" and 12" spacing respectively. (b) 20' × 10'. (v) 5' at either end and 2 rows on either side (vi) Yes.

## 4. GENERAL :

(i) The general growth of the crop was fairly good. (ii) Nil. (iii) Grain and fodder yield. (iv) (a) 1948—1951. (b) Yes. (c) N.A. (v) (a) Chiplun, Karjat, Ratnagiri, Vadgaon. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 1032 lb./ac.
- (ii) (a) 366.8 lb./ac.
- (b) 202.6 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>	1081	1002	978	1020
R <sub>2</sub>	1057	994	918	990
R <sub>3</sub>	1155	975	1054	1061
R <sub>4</sub>	1087	1061	884	1011
R <sub>5</sub>	1179	1097	952	1076
Mean	1112	1026	957	1032

S E. of difference of two

1. S marginal means = 94.7 lb./ac.
2. R marginal means = 67.4 lb./ac.
3. R means at a level of S = 117.0 lb./ac.
4. S means at a level of R = 141.1 lb./ac.

Crop :- Paddy (*Kharif*).

Ref :- Mh. 51 (37)/50(33)/49(24)/48(14).

Site :- Agri. Res. Stn., Igatpuri.

Type :- 'C'.

Object :- To find out the optimum spacing and number of seedlings per bunch for getting maximum yield.

## 1. BASAL CONDITIONS :

(i) (a) Paddy after Paddy (fallow in *Rabi*). (b) Paddy. (c) Nil. (ii) (a) Coarse to medium black soil. (b) Refer soil analysis, Igatpuri. (iii) 6.6.1951/16.7.1951. (iv) (a) N.A. (b) Transplanting. (c) —. (d) and (e) As per treatments. (v) Nil. (vi) K-226 (late). (vii) Unirrigated. (viii) Hand weeding on 1st week of Sept. 1951. (ix) 116.88". (x) 7.11.1951.

## 2. TREATMENTS :

Main-plot treatments :

3 spacings : S<sub>1</sub> = 8" × 8", S<sub>2</sub> = 10" × 10" and S<sub>3</sub> = 12" × 12".

Sub-plot treatments :

Seedlings/bunch : R<sub>1</sub> = 4, R<sub>2</sub> = 6, R<sub>3</sub> = 8, R<sub>4</sub> = 10 and R<sub>5</sub> = 12.

## 3. DESIGN :

(i) Split-plot. (ii) (a) 3 main-plots/block ; 5 sub-plots/main-plot. (b) N.A. (iii) 6. (iv) (a) 22'-8" × 22'. 23'-4" × 20' ; 24' × 20' for 8", 10" and 12" spacings respectively. (b) 20' × 10'. (v) 5' on either end and 2 rows on either side. (vi) Yes.

## 4. GENERAL :

(i) The general growth of the crop was fairly good. (ii) Nil. (iii) Grain yield. (iv) (a) 1948—1951. (b) Yes. (c) N.A. (v) (a) Chiplun, Karjat, Ratnagiri and Vadgaon. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 1543 lb./ac.
- (ii) (a) 300.7 lb./ac.
- (b) 134.9 lb./ac.
- (iii) Effect of R is significant, interaction S × R is highly significant. Effect of S is not 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>	1470	1619	1470	1520
R <sub>2</sub>	1632	1530	1271	1478
R <sub>3</sub>	1549	1561	1472	1527
R <sub>4</sub>	1695	1587	1537	1606
R <sub>5</sub>	1601	1572	1574	1582
Mean	1589	1574	1465	1543

S.E. of difference of two

1. S marginal means = 77.6 lb./ac.
2. R marginal means = 45.0 lb./ac.
3. R means at a level of S = 77.9 lb./ac.
4. S means at a level of R = 104.3 lb./ac.

Crop:- Paddy (*Khari*).

Ref :- Mh. 49(16).

Site :- Agri. Res. Stn., Karjat.

Type :- 'C'.

Object :—To find out the optimum spacing and bunch size required for Paddy crop.

## 1. BASAL CONDITIONS :

(i) (a) No. (b) Paddy. (c) Nil. (ii) (a) Sandy loam (medium black) derived from trap rock. (b) Refer soil analysis, Karjat. (iii) 6.6.1949/6 to 11.8.1949 (iv) (a) 2 ploughings. (b) Transplanting. (c) —. (d) and (e) As per treatments. (v) Nil. (vi) K-42 (late). (vii) Unirrigated. (viii) No. (ix) 133°. (x) 27 to 30.11.1949.

## 1. TREATMENTS :

Main-plot treatments

3 spacings : S<sub>1</sub>=8"×8", S<sub>2</sub>=10"×10" and S<sub>3</sub>=12"×12".

Sub-plot treatments :

Seedlings/bunch : R<sub>1</sub>=4, R<sub>2</sub>=6, R<sub>3</sub>=8, R<sub>4</sub>=10 and R<sub>5</sub>=12.

## 3. DESIGN :

(i) Split-plot. (ii) (a) 3 main-plots/block ; 5 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 22'-8"×20' 23'-4"×20' ; 24'×20' for 8", 10" and 12" spacings respectively ; Gross main-plot : 22'-8"×100', 23'-4"×100' and 24'×100' respectively. (b) 20'×10'. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) Good. Flowering started from 6.10.1949. (ii) Seedlings were affected by b'ast disease but were treated with perenox (2½ lb. in 100 galls.) at the time of transplanting. (iii) Grain and fodder yield. (iv) (a) 1947—51. (b) Yes. (c) N.A. (v) (a) Chiplun, Igatpuri, Ratnagiri and Vadgaon. (b) N.A. (vi) Nil. (vii) Two replications have been dropped from statistical analysis. In all there were 6 replications.

## 5. RESULTS :

- (i) 1771 lb./ac.
- (ii) (a) 386.7 lb./ac.
- (b) 188.6 lb./ac.
- (iii) Effect of S is not significant, effect of R and interaction S×R are 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>	1521	1769	1531	1607
R <sub>2</sub>	1857	1669	1615	1714
R <sub>3</sub>	1965	1865	1789	1873
R <sub>4</sub>	2073	1765	1758	1865
R <sub>5</sub>	1745	1911	1741	1799
Mean	1832	1796	1687	1771

S.E. of difference of two

1. S marginal means = 122.2 lb./ac.
2. R marginal means = 77.0 lb./ac.
3. R means at a level of S = 133.4 lb./ac.
4. S means at a level of R = 170.3 lb./ac.

Crop :-Paddy (*Kharif*).

Ref :-Mh. 50(25)/49(16).

Site :-Agri. Res. Stn., Karjat.

Type :-'C'.

Object :-To find out the optimum spacing and bunch size required for Paddy crop.

## 1. BASAL CONDITIONS :

(i) (a) No. (b) Paddy. (c) Nil. (ii) (a) Sandy loam, medium black derived from trap rock. (b) Refer soil analysis, Karjat. (iii) 11.6.1950/4-9.8.1950. (iv) (a) 2 ploughings. (b) Transplanting. (c) —. (d) and (e) As per treatments. (v) Nil. (vi) K-42 (late). (vii) Unirrigated. (viii) Transplanting was done about 3 weeks late. Weeding was done twice in September. threshing was done on the next day of harvest. (ix) 124". (x) 26.11.1950, 29.11.1950, 30.11.1950 and 1.12.1950.

## 2. TREATMENTS :

Main-plot treatments :

3 spacings : S<sub>1</sub>=8" × 8", S<sub>2</sub>=10" × 10" and S<sub>3</sub>=12" × 12".

Sub-plot treatments :

Seedlings/bunch : R<sub>1</sub>=4, R<sub>2</sub>=6, R<sub>3</sub>=8, R<sub>4</sub>=10 and R<sub>5</sub>=12.

## 3. DESIGN :

(i) Split-plot. (ii) (a) 3 main-plots/block ; 5 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 22'-8" × 20' ; 23'-4" × 20' ; 24' × 20' for 8", 10" and 12" spacings respectively ; gross main-plot 22'-8" × 100' ; 23'-4" × 100' ; 24' × 100' (b) 20' × 10'. (v) 5' at either end and 2 rows on either side. (vi) Yes.

## 4. GENERAL :

(i) Long break of rains affected the growth. Difference in height and growth due to different spacings. (ii) At flowering, attack of rice mealy bugs. Slight attack of blast. (iii) Dates of flowerings and grain yield. (iv) (a) 1947—1951. (b) Yes. (c) N.A (v) Chiplun, Igatpuri, Ratnagiri and Vadgaon. (b) N.A (vi) Nil. (vii) Two replications were dropped as the yield were very low. The expt. was laid out with 6 replications.

## 5. RESULTS :

(i) 1351 lb./ac.

(ii) (a) 523.8 lb./ac.

(b) 471.8 lb./ac.

(iii) Main effect of S alone is highly 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>	1442	1503	1350	1432
R <sub>2</sub>	1956	1510	962	1476
R <sub>3</sub>	1673	1241	1010	1308
R <sub>4</sub>	1654	735	1388	1259
R <sub>5</sub>	1456	1207	1180	1281
Mean	1636	1239	1178	1351

S.E. of difference of two

1. S marginal means = 165.6 lb./ac.
2. R marginal means = 191.8 lb./ac.
3. R means at a level of S = 333.6 lb./ac.
4. S means at a level of R = 341.3 lb./ac.

Crop :-Paddy (Kharif).

Ref :-Mh. 51(32)/50(25)/49(16).

Site :-Agri. Res. Stn., Karjat.

Type :-'C'.

Object :-To find out the optimum spacing and bunch size required for Paddy crop.

**1. BASAL CONDITIONS :**

(i) (a) No. (b) Paddy. (c) Nil. (ii) (a) Sandy loam, medium black derived from trap rock. (b) Refer soil analysis, Karjat. (iii) 13.6.1951/7.8.1951. to 14.8.1951. (iv) (a) 2 ploughings. (b) Transplanting (c) (d) and (e) As per treatments. (v) Nil. (vi) K-42 late. (vii) Unirrigated. (viii) N.A. (ix) 109". (x) 27.11 1951 to 30.11.1951.

**2. TREATMENTS :**

Main-plot treatments :

3 spacings : S<sub>1</sub>=8"×8", S<sub>2</sub>=10"×10" and S<sub>3</sub>=12"×12".

Sub-plot treatments :

Seedlings/bunch : R<sub>1</sub>=4, R<sub>2</sub>=6, R<sub>3</sub>=8, R<sub>4</sub>=10 and R<sub>5</sub>=12.**3. DESIGN :**

(i) Split-plot. (ii) (a) 3 main-plots/blocks ; 5 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 22'-8"×20' ; 23'-4"×20' ; 24'×20' for 8", 10" and 12" spacings respectively ; gross main-plot. 22'-8"×100' ; 23'-4"×100' ; 24'×100' (b) 20'×10'. (v) 5' at either end, 2 rows on either side. (vi) Yes.

**4. GENERAL :**

(i) Normal. (ii) Nil. (iii) Grain yield alone. (iv) 1947-1951. (b) Yes. (c) N.A. (v) Chiplun, Igatpuri, Ratnagiri and Vadgaon. (b) N.A. (vi) Nil. (vii) Originally there were 6 replications. Two of them were dropped from analysis as these were vitiated.

**5. RESULTS :**

- (i) 1413 lb./ac.
- (ii) (a) 466.0 lb./ac.
- (b) 249.1 lb./ac.
- (iii) Effect of R alone 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>	1326	1204	696	1075
R <sub>2</sub>	1568	1449	1231	1416
R <sub>3</sub>	1936	1497	1289	1574
R <sub>4</sub>	1588	1374	1462	1474
R <sub>5</sub>	1562	1496	1527	1528
Mean	1596	1404	1241	1413

S.E. of difference of two

1. S marginal means = 147.3 lb./ac.
2. R marginal means = 101.7 lb./ac.
3. R means at a level of S = 176.1 lb./ac.
4. S means at a level of R = 216.3 lb./ac.

Crop :- Paddy (Kharif).

Ref :- Mh. 52(59).

Site :- Agri. Res. Stn., Karjat.

Type :- 'C'.

Object :- To study the effect of keeping seedlings for few days before transplanting on yield of Paddy.

## 1. BASAL CONDITIONS :

(i) (a) No. (b) N.A. (c) N.A. (ii) (a) Sandy loam, medium black derived from trap rock. (b) Refer soil analysis, Karjat. (iii) 10.6.1952/28.7.1952. (iv) (a) 2 ploughings, (b) Transplanting. (c) —. (d) 8" × 8". (e) N.A. (v) Nil. (vi) K-42. (vii) Unirrigated. (viii) N.A. (ix) 109°. (x) 18.11.1952.

## 2. TREATMENTS :

Transplanting seedlings after being kept for

1. 2 days.
2. 4 days.
3. 6 days.
4. 8 days.
5. 10 days.
6. Fresh seedlings (control).

## 3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 8. (iv) (a) N.A. (b) 16' × 1'-4", (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) Nil. (iii) Grain yield, height and no. of tillers. (iv) (a) 1951-54. (b) No. (c) N.A. (v) (a) Nil. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 811.4 lb./ac.
- (ii) 238.3 lb./ac.
- (iii) Treatments differ significantly.
- (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	965
2.	728
3.	1024
4.	622
5.	678
6.	851
S.E./mean	= 84.3 lb./ac.



Crop :- Paddy (*Kharif*).

Ref :- Mh. 53(123).

Site :- Agri. Res. Stn., Karjat.

Type :- 'C'.

Object :- To study the effect of keeping seedlings for few days before transplanting on yield of Paddy.

1. BASAL CONDITIONS :

(i) (a) No. (b) Paddy. (c) N.A. (ii) (a) Sandy loam ; medium black derived from trap rock. (b) Refer soil analysis, Karjat. (iii) 14.6.1953/3.8.1953. (iv) (a) N.A. (b) Transplanting. (c) —. (d) 8"×8". (e) N.A. (v) Nil. (vi) K-42 (late). (vii) Unirrigated. (viii) 1 weeding. (ix) 133". (x) N.A.

2. TREATMENTS :

Transplanting seedlings after being kept for

1. 2 days.
2. 4 days.
3. 6 days.
4. 8 days.
5. 10 days.
6. Fresh seedlings (control).

3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 6. (iv) (a) 20'×2'. (b) 16'×2'. (v) 2' on either side (3 lines). (vi) Yes.

4. GENERAL :

(i) Growth in the beginning was less vigorous. (ii) N.A. (iii) Grain and straw yield. (iv) (a) 1951—54. (b) No. (c) N.A. (v) (a) Nil. (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

- (i) 1149 lb./ac.
- (ii) 255.1 lb./ac.
- (iii) Treatments do not differ significantly.
- (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	1262
2.	1312
3.	1156
4.	1113
5.	837
6.	1212
S.E./mean	=104.1 lb./ac.

Crop :- Paddy (*Kharif*).

Ref :- Mh. 53(281).

Site :- Agri. Res. Stn., Karjat.

Type :- 'C'.

Object :- To compare slant with straight method of transplanting seedlings.

1. BASAL CONDITIONS :

(i) (a) No. (b) N.A. (c) N.A. (ii) (a) Sandy loam, medium black derived from trap rock. (b) Refer soil analysis, Karjat. (iii) N.A. (iv) (a) N.A. (b) Transplanting. (c) —. (d) 8"×8". (e) N.A. (v) 5 C.L./ac. of F.Y.M. (vi) K-42. (vii) Unirrigated. (viii) N.A. (ix) 134.02". (x) N.A.

2. TREATMENTS :

1. Slant method of transplanting.
2. Straight transplanting.

3. DESIGN :

(i) R.B.D. (ii) (a) 2. (b) N.A. (iii) 6. (iv) (a) N.A. (b) 60'×18'. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) N.A. (iii) Grain yield. (iv) (a) 1953—1955. (b) No. (c) N.A. (v) (a) Ratnagiri and Vadgaon. (b) N.A. (vi) Nil. (vii) Nil.

5. RESULTS :

- (i) 1373 lb./ac.
- (ii) 191.8 lb./ac.
- (iii) Treatments do not differ significantly.

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

Treatment	Av. yield
1.	1306
2.	1440
S.E./mean	= 78.31 lb./ac.

Crop :- Paddy (*Kharif*).

Ref :- Mh. 53(144).

Site :- Agri. Res. Stn., Karjat.

Type :- 'C'.

Object :- To study the effect of early harvesting of crop on the yield and germination quality of the produce.

### 1. BASAL CONDITIONS :

(i) (a) No. (b) Paddy. (c) No manuring is given. (ii) (a) Sandy loam, medium black derived from trap rock. (b) Refer soil analysis, Karjat. (iii) 25.6.1953/28.7.1953. (iv) (a) Two ploughings and one puddling for transplanting. (b) Transplanting. (c) 40 lb./ac. (d) 8" x 8". (e) N.A. (v) Nil. (vi) K-42 (late). (vii) Unirrigated. (viii) One weeding. (ix) 133". (x) A. per treatments between 3.11.1953 and 27.11.1953.

### 2. TREATMENTS :

1. Harvesting 20 days after flowering.
2. Harvesting 25 days after flowering.
3. Harvesting 30 days after flowering.
4. Harvesting 35 days after flowering.
5. Harvesting 40 days after flowering.

### 3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 3. (iv) (a) 30' x 25'. (b) 30' x 25'. (v) Nil. (vi) Yes.

### 4. GENERAL :

(i) Normal. (ii) Moderate attack of severing caterpillars. (iii) Grain yield. (iv) (a) 1952-1956. (b) Yes. (c) N.A. (v) (a) Nil. (b) N.A. (vi) and (vii) Nil.

### 5. RESULTS :

(i)	1635 lb./ac.	
(ii)	2586 lb./ac.	
(iii)	Treatments differ significantly.	
(iv)	Av. yield of grain in lb./ac.	
	Treatment	Av. yield
	1.	1431
	2.	1942
	3.	1825
	4.	1326
	5.	1650
	S.E./mean	= 149.3 lb./ac.

Crop :- Paddy (*Kharif*).

Ref :- Mh. 52(231).

Site :- Agri. Res. Stn., Karjat.

Type :- 'C'.

Object :- To study the effect of broadcast vs dibble method of planting on the yield of Paddy.

### 1. BASAL CONDITIONS :

(i) (a) N.A. (b) Paddy. (c) N.A. (ii) (a) Medium black. (b) Refer soil analysis, Karjat. (iii) 22.6.1952/12.8.1952. (iv) (a) 2 ploughings. (b) and (c) As per treatments. (d) and (e) N.A. (v) Nil. (vi) K-42 (late). (vii) Unirrigated. (viii) One weeding. (ix) 95". (x) 15.11.1952.

### 2. TREATMENTS :

1. 320 lb./ac. of seed broadcast.
2. 160 lb./ac. of seed broadcast.
3. 80 lb./ac. of seed broadcast.
4. 40 lb./ac. of seed dibbled.
5. 20 lb./ac. of seed dibbled.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 4. (iv) (a) and (b) 7.5'×7.5'. (v) Nil. (vi) Yes.

## 4. GENERAL :

(i) Sowing was much delayed. As the soil was cold the seedlings did not show proper growth in seedbed, they showed yellowing appearance. (ii) Nil. (iii) Initial weights, weight of straw and weight of grain. (iv) (a) 1952—N.A. (b) N.A. (c) Nil. (v) (a) and (b) N.A. (vi) Nil. (vii) Nil.

## 5. RESULTS :

- (i) 542 lb./ac.  
 (ii) 128.0 lb./ac.  
 (iii) Treatments do not differ significantly.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	431
2.	603
3.	595
4.	594
5.	439
S.E./mean	= 64.0 lb./ac.

Crop :- Paddy (*Kharif*).

Ref :- Mh. 52(33).

Site :- Agri. Res. Stn., Panavel.

Type :- 'M'.

Object :- To find the best seed-rate for Paddy.

## 1. BASAL CONDITIONS :

(i) (a) No. (b) Paddy. (c) N.A. (ii) (a) Salt land from moderately saline to highly saline. (b) Refer soil analysis, Panavel. (iii) 28.6.1952. (iv) (a) N.A. (b) *Rahu*. (c) As per treatments. (d) N.A. (e) N.A. (v) Nil. (vi) *Kala Rata* 1—24. (vii) Unirrigated. (viii) N.A. (ix) 98". (x) 24.10.1952.

## 2. TREATMENTS :

Seed-rates :—

1. 25 lb./ac.  
 2. 30 lb./ac.  
 3. 35 lb./ac.  
 4. 40 lb./ac.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 15'×20'. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) One replication was withered to some extent. The crop was varying from poor to fairly good in different plots. (ii) Nil. (iii) Grain and straw yield. (iv) (a) 1952—N.A. (b) Yes. (c) N.A. (v) (a) and (b) No. (vi) Nil. (vii) Yield data N.A. and hence not analysed.

## 5. RESULTS :

- (i) 444.4 lb./ac.  
 (ii) N.A.  
 (iii) N.A.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	408.4
2.	471.9
3.	462.0
4.	435.6
S.E./mean	N.A.

Crop :- Paddy (*Kharif*).  
Site :- Agri. Res. Stn., Panavel.

Ref :- Mh. 53(116)/52(33).  
Type :- 'C'.

Object :- To find the best seed-rate for Paddy.

### 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) Nil. (ii) (a) Salt land from moderately saline to highly saline. (b) Refer soil analysis, Panaval. (iii) 25.6.1953. (iv) (a), (b) N.A. (c) As per treatments. (d) and (e) N.A. (v) Nil. (vi) *Kala Rata* 1-24. (vii) Unirrigated. (viii) Pruning 1.8.1953 and flowering 13.9.1953. (ix) 128°. (x) 27.10.1953.

### 2. TREATMENTS :

Seed-rates :-

1. 25 lb./ac.
2. 30 lb./ac.
3. 35 lb./ac.
4. 40 lb./ac.

### 3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 15' x 20'. (v) N.A. (vi) Yes.

### 4. GENERAL :

(i) N.A. (ii) Nil. (iii) Grain and straw yield. (iv) (a) 1952-N.A. (b) Yes. (c) N.A. (v) (a) and (b) No. (vi) and (vii) Nil.

### 5. RESULTS :

- (i) 889 lb./ac.  
(ii) 219.8 lb./ac.  
(iii) The treatments do not differ significantly.  
(iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	815
2.	926
3.	944
4.	853
S.E./mean	=109.9 lb./ac.

Crop :- Paddy (*Kharif*).  
Site :- Agri. Res. Stn., Ratnagiri.

Ref :- Mh. 48 (2).  
Type :- 'C'.

Object :- To find out the optimum number of seedlings per bunch and spacings for getting maximum yield of Paddy.

### 1. BASAL CONDITIONS :

(i) (a) No. (b) Replication I vegetables, replication II, III and IV pine-apples and replication V and VI paddy. (c) Rep. I 800 lb. of G.N.C., Rep. II, III and IV  $\frac{1}{2}$  lb. of G.N.C.  $\frac{1}{2}$  lb. of fish and  $\frac{1}{2}$  lb. of F.Y.M./plant. Rep. VI and VI 560 lb./ac. of G.N.C. (ii) (a) Laterite. (b) N.A. (iii) From 9 to 11.6.1948/19 to 29.7.1948. (iv) (a) N.A. (b) Transplanting. (c) -. (d), (e) As per treatments. (v) 5 C.L./ac. of F.Y.M. (vi) *Patni-6* (early). (vii) Unirrigated. (viii) Nil. (ix) 141.51°. (x) Between 7 and 9.10.1948.

### 2. TREATMENTS :

Main-plot treatments :

3 spacings :  $S_1=8' \times 8'$ ,  $S_2=10' \times 10'$  and  $S_3=12' \times 12'$ .

Sub-plot treatments :

No. of seedlings/bunch :  $R_1=4$ ,  $R_2=6$ ,  $R_3=8$ ,  $R_4=10$  and  $R_5=12$ .

### 3. DESIGN :

(i) Split-plot. (ii) (a) 3 main-plots/block ; 5 sub-plots/main-plot. (b) N.A. (iii) 6. (iv) (a) Main-plot : 24' x 100', 23' 4" x 100' and 22' 8" x 100' and sub-plot 24' x 20', 23' 4" x 20' and 22' 8" x 20' for spacings 12", 10" and 8" respectively. (b) Sub-plot 20' x 10'. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) Satisfactory ; late transplanting. Lodging due to late harvest and because of heavy rains. (ii) Nil. (iii) Grain and straw yield. (iv) (a) 1947 to 1953. (b) Yes. (c) N.A. (v) (a) Chiplun, Igatpuri, Karjat and Vadgaon (b) N.A. (vi) Nil. (vii) Nil.

## 5. RESULTS :

- (i) 2004 lb./ac.  
 (ii) (a) 394.4 lb./ac.  
 (b) 269.0 lb./ac.  
 (iii) Effect of R alone 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>	2003	1749	1618	1790
R <sub>2</sub>	2153	1786	1799	1913
R <sub>3</sub>	2187	2126	2117	2143
R <sub>4</sub>	2262	2060	1804	2042
R <sub>5</sub>	2078	2055	2260	2131
Mean	2137	1955	1920	2004

S.E. of difference of two

1. S marginal means = 101.8 lb./ac.
2. R marginal means = 89.6 lb./ac.
3. R means at the same level of S = 155.3 lb./ac.
4. S means at the same level of R = 172.2 lb./ac.

Crop :- Paddy (*Kharif*).

Ref :- Mh. 49 (2)/48 (2).

Site :- Agri. Res. Stn., Ratnagiri.

Type :- 'C'.

Object :- To find out the optimum no. of seedlings per bunch and spacing for getting the maximum yield.

## 1. BASAL CONDITIONS :

(i) (a) No definite rotation. (b) Replication I, II, III and IV cabbage ; replication VI—fallow. (c) 5 C.L./ac. of F.Y.M. and 800 lb./ac. of G.N.C. (ii) (a) *Mala* (low lying.) (b) N.A. (iii) 3, 4.6.1949, 8 to 24.7.1949. (iv) (a) N.A. (b) Transplanting. (c) N.A. (d) and (e) As per treatments. (v) 5 C.L./ac. of F.Y.M. in June. (vi) *Patni* (early) . (vii) Unirrigated. (viii) Top dressing of 6 lb./*guntha* manure mixture on 27.7.1949 2nd dose of 2 lb./*guntha* on 5.8.1949. (ix) 105.90". (x) 6, to 8 .8.1949.

## 2. TREATMENTS :

Main-plot treatments :

3 spacings : S<sub>1</sub>=8" × 8", S<sub>2</sub>=10" × 10" and S<sub>3</sub>=12" × 12".

Sub-plot treatments :

No. of seedlings/bunch : R<sub>1</sub>=4, R<sub>2</sub>=6, R<sub>3</sub>=8, R<sub>4</sub>=10 and R<sub>5</sub>=12.

## 3. DESIGN :

(i) Split-plot. (ii) (a) 3 main-plots/block ; 5 sub-plots/main-plot. (b) N.A. (iii) 6. (iv) (a) main-plot : 24' × 100', 23'-4" × 100' and 22'-8" × 100' and sub-plot : 24' × 20', 23'-4" × 20', and 22'-8" × 20' for spacings 12", 10" and 8" respectively. (b) Sub-plot : 20' × 10'. (v) Guard ring for each sub-plot of 10" × 10" and 12" × 12" spacing would consist of two rows on either side ; 5' of rows on either end. In case of 8" × 8" spacing, however, a ring of 2 rows on either side and 7 plants at one end and 8 plants at the other end (vi) Yes.

## 4. GENERAL :

(i) Normal ; satisfactory growth. (ii) Nil. (iii) Grain and straw yield. (iv) (a) 1947 to 1953. (b) Yes. (c) N.A. (v) (a) Chiplun, Igatpuri, Karjat and Vadgaon. (b) N.A. (vi) Nil. (vii) Nil.

## 5. RESULTS :

- (i) 2980 lb./ac.  
 (ii) (a) 709.1 lb./ac.  
 (b) 349.8 lb./ac.  
 (iii) None of the effects and interaction 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>	3184	3141	2688	3004
R <sub>2</sub>	3286	2995	2986	3089
R <sub>3</sub>	2627	3116	3079	2941
R <sub>4</sub>	3079	3051	2905	3012
R <sub>5</sub>	2801	2955	2814	2857
Mean	2995	3052	2894	2980

S.E. of difference of two

- |                                   |                |
|-----------------------------------|----------------|
| 1. S marginal means               | =183.0 lb./ac. |
| 2. R marginal means               | =116.5 lb./ac. |
| 3. R means at the same level of S | =201.9 lb./ac. |
| 4. S means at the same level of R | =257.2 lb./ac. |

Crop :-Paddy (*Kharif*).

Ref :-Mh. 50(2)/49(2)/48(2).

Site :-Agri. Res. Stn., Ratnagiri.

Type :-'C'.

Object :—To find out the optimum number of seedlings per bunch and spacing for getting maximum yield of Paddy.

## 1. BASAL CONDITIONS :

(i) (a) No. (b) Paddy. (c) As per treatments. (ii) (a) Laterite. (b) N.A. (iii) 2, 4.6.1950/29.6.1950 to 25.7.1950. (iv) (a) N.A. (b) Transplanting. (c) N.A. (d) and (e) As per treatments. (v) 5 C.L./ac. of F.Y.M. and top-dressing of manure mixture at the rate of 8 lb./*guntha* (vi) *Patni-6* (early). (vii) Unirrigated. (viii) Top-dressing in 3rd week of July. (ix) 97.65" (x) 27.9.1950 to 18.10.1950.

## 2. TREATMENTS :

Main-plot treatments :

3 spacings : S<sub>1</sub>=8" × 8", S<sub>2</sub>=10" × 10" and S<sub>3</sub>=12" × 12".

Sub-plot treatments :

No. of seedlings/bunch : R<sub>1</sub>=4, R<sub>2</sub>=6, R<sub>3</sub>=8, R<sub>4</sub>=10 and R<sub>5</sub>=12.

## 3. DESIGN :

(i) Split-plot. (ii) (a) 3 main-plots/block ; 5 sub-plots/main plot. (b) N.A. (iii) 6. (iv) (a) Main-plot : 24' × 100', 23'4" × 100' and 22'8" × 100' and sub-plot : 24' × 20', 23'4" × 20' and 22'8" × 20' for spacings 12", 10" and 8" respectively. (b) 20' × 10'. (v) Guard ring of each sub-plot for 10' × 10" and 12" × 12" spacing would consist of two rows on either side and 5' of rows on either end. In case of 8" × 8" spacing, however, guard ring would be of two rows on either side and 7 plants at one end and 8 at the other. (vi) Yes.

## 4. GENERAL :

(i) Germination was fairly good. Normal growth. (ii) Nil. (iii) Grain and straw yield. (iv) (a) 1947—1953. (b) Yes. (c) N.A. (v) (a) Chiplun, Igatpuri, Karjat and Vadgaon. (b) N.A. (vi) and (vii) Nil

## 5. RESULTS :

- (i) 2389 lb./ac.  
 (ii) (a) 389.4 lb./ac.  
 (b) 183.6 lb./ac.  
 (iii) Effect of S alone 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>	2496	2369	2124	2330
R <sub>2</sub>	2432	2505	2251	2396
R <sub>3</sub>	2632	2487	2114	2411
R <sub>4</sub>	2568	2491	2242	2434
R <sub>5</sub>	2541	2360	2223	2375
Mean	2534	2443	2191	2389

S.E. of difference of two

1. S marginal means = 100.5 lb./ac.
2. R marginal means = 61.2 lb./ac.
3. R means at the same level of S = 105.9 lb./ac.
4. S means at the same level of R = 138.3 lb./ac.

Crop :- Paddy (*Kharif*).

Ref :- Mh. 51(2)/50(2)/49(2)/48(2).

Site :- Agri. Res. Stn., Ratnagiri.

Type :- 'C'.

Object :- To find out the optimum number of seedlings per bunch and spacing for getting maximum yield of Paddy.

## 1. BASAL CONDITIONS :

(i) (a) No. (b) Paddy. (c) 32 lb./ac. of N as [A/S+G.N.C. mixed in 1 : 1 ratio +64 lb./ac. of P<sub>2</sub>O<sub>5</sub> as B.M. (ii) (a) Laterite. (b) N.A. (iii) 3.6.1951/30.6.1951 to 11.7.1951. (iv) (a) 4 to 12 ploughings. (b) Transplanting. (c) N.A. (d) and (e) As per treatments. (v) 5 C.L. of F.Y.M. between 28th June to mid July 1951. Top-dressing of manure mixture at 8 lb./*guntha* applied in 3rd week of July 1951. (vi) *Patni-6* (early). (vii) Unirrigated. (viii) N.A. (ix) 129.08°. (x) 5.10.1951 to 9.10.1951.

## 2. TREATMENTS :

Main-plot treatments :

3 spacings : S<sub>1</sub>=8' × 8', S<sub>2</sub>=10' × 10' and S<sub>3</sub>=12' × 12'.

Sub-plot treatments :

No. of seedlings/bunch : R<sub>1</sub>=4, R<sub>2</sub>=6, R<sub>3</sub>=8, R<sub>4</sub>=10 and R<sub>5</sub>=12.

## 3. DESIGN :

(i) Split-plot design. (ii) (a) 3 main-plots/block ; 5 sub-plots/main-plot. (b) N.A. (iii) 6. (iv) (a) Main-plot : 24' × 100', 23'4" × 100' and 22'8" × 100' ; and sub-plot : 24' × 20', 23'4" × 20' and 22'8" × 20' for spacings 12', 10' and 8' respectively (b) 70' × 10'. (v) The guard ring of each sub-plot for 10' × 10' and 12' × 12' spacings would consists of 2 rows on either side and 5' of rows on either end. In case of 8' × 8' spacing the guard ring would be 7 plants at one end and 8 plants at the other. (vi) Yes.

## 4. GENERAL :

(i) Crop growth normal. (ii) Nil. (iii) Grain and straw yield. (iv) (a) 1947—1953. (b) Yes. (c) N.A. (v) (a) Chiplun, Igatpuri, Karjat and Vadgaon. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 2899 lb./ac.
- (ii) (a) 700.3 lb./ac.
- (b) 411.3 lb./ac.
- (iii) Effect of S alone 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>	3085	3206	2291	2861
R <sub>2</sub>	2727	3364	2543	2878
R <sub>3</sub>	2904	3485	2686	3025
R <sub>4</sub>	2682	3235	2580	2832
R <sub>5</sub>	2940	3138	2616	2898
Mean	2868	3285	2543	2899

S.E. of difference of two

1. S marginal means = 180.6 lb./ac.
2. R marginal means = 137.0 lb./ac.
3. R means at the same level of S = 237.3 lb./ac.
4. S means at the same level of R = 277.7 lb./ac.

Crop :- Paddy (*Kharif*).

Ref :- Mh. 52(308).

Site :- Agri. Res. Stn., Ratnagiri.

Type :- 'C'.

Object :- To ascertain whether drilling Paddy seed is better than transplanting.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) N.A. (c) N.A. (ii) (a) Laterite soil. (b) N.A. (iii) Drilling 28.5.1942, Transplanting 27,29.6.1952. (iv) (a), (b), (c) and (d) As per treatments. (e) 8 seedlings/bunch. (v) Nil. (vi) *Panael-61* (mid-late). (vii) Unirrigated. (viii) As per treatments. (ix) N.A. (x) 15.10.1952.

## 2. TREATMENTS :

- 1 Drilling : 2 ploughings, 1 harrowing and weeding once, spacing 9" × 4" and seed rate 25 lb./ac.
- 2 Transplanting : 4 ploughings, sowing on raised seed bed, spacing 10" × 10" and seed rate 30 lb./ac.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 2. (b) N.A. (iii) 8. (iv) (a) 33' × 33'. (b) 25' × 25'. (v) 4' ring. (vi) Yes.

## 4. GENERAL :

(i) Satisfactory. (ii) Nil. (iii) Grain and fodder yield. (iv) (a) 1952—1955. (b) N.A. (c) Nil. (v) (a) Karjat and Padegaon. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 3650 lb./ac.
- (ii) 271.4 lb./ac.
- (iii) Treatments differ highly significantly.
- (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	2352
2.	4948
S.E./mean	= 95.6 lb./ac.



Crop :- Paddy (*Kharif*).

Ref :- Mh. 51(120).

Site :- Govt. Seed and Demonstration Farm, Sindewahi.

Type :- 'C'.

Object :—To compare different methods of planting Paddy.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) N.A. (c) N.A. (ii) (a) Sandy loam. (b) N.A. (iii) Transplanting 19.8.1951 ; Drilling 29.6.1951 and Broadcasting 29.6.1951. (iv) (a) 1 ploughing, 3 *bakharings*. (b) As per treatments (c) Transplanting—80 lb./ac., broadcasting—100 lb./ac. and drilling—60 lb./ac. (d) and (e) N.A. (v) 100 lb./ac. of N as A/S. (vi) N.A. (vii) Unirrigated. (viii) 1 interculturing. (ix) N.A. (x) 28.11.1951.

## 2. TREATMENTS :

Methods of planting Paddy :

1. Transplanting.
2. Broadcasting the seed.
3. Drilling the seed.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 3. (b) N.A. (iii) 2. (iv) (a) N.A. (b) 33'×33'. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) N.A. (iii) Heights, tillers, grain and straw yield. (iv) (a) 1951-1952. (b) No. (c) N.A. (v) (a) N.A. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 1403 lb./ac.  
 (ii) 462.8 lb./ac.  
 (iii) Treatments do not differ significantly.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	1070
2.	1710
3.	1430
S.E./mean	=327.3 lb./ac.

Crop :- Paddy (*Kharif*).

Ref :- Mh. 52(142)-

Site :- Govt. Seed and Demonstration Farm, Sindewahi.

Type :- 'C'.

Object :—To compare different methods of planting Paddy.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) N.A. (ii) (a) Sandy loam. (b) N.A. (iii) 4.7.1952/8.8.1952. (iv) (a) 1 ploughing and 3 *bakharings*. (b) As per treatments. (c) Transplanting 80 lb./ac., broadcasting—100 lb./ac. and drilling—60 lb./ac. (d) and (e) N.A. (v) Nil. (vi) R.8 (*luchai*). (vii) Unirrigated. (viii) N.A. (ix) 44.07%. (x) 29.11.1952.

## 2. TREATMENTS :

1. Paddy transplanted.
2. Paddy broadcast.
3. Paddy drilled.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 3. (b) N.A. (iii) 2. (iv) (a) N.A. (b) 1/40<sup>th</sup> ac. (v) Nil. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) Nil. (iii) Grain and straw yield. (iv) (a) 1951-1952. (b) No. (c) N.A. (v) (a) and (b) N.A. (vi) and (vii) Nil.

**5. RESULTS :**

- (i) 1570 lb./ac.  
(ii) 369.2 lb./ac.  
(iii) Treatments do not differ significantly.  
(iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	1530
2.	1230
3.	1950
S.E./mean	= 261.1 lb./ac.

Crop :- Paddy (*Rabi*).

Ref :- Mh. 48(54).

Site :- Govt. Seed and Demonstration Farm, Sindewahi. Type :- 'C'.

Object :- To find out the best method of taking a second crop of Paddy.

**1. BASAL CONDITIONS :**

- (i) (a) Nil. (b) Paddy. (c) Nil. (ii) (a) Sandy loam. (b) N.A. (iii) 26.12.1948./29.2.1949. (iv) (a) 2 ploughings and 2 *bakharings*. (b) As per treatments. (c) to (e) N.A. (v) 100 lb./ac. of N as A/S. (vi) N.A. (vii) Irrigated. (viii) Nil. (ix) 53.97". (x) N.A.

**2. TREATMENTS :**

1. Transplanting.
2. *Lehi*.
3. Broadcast.
4. Broadcast *biasi*.

**3. DESIGN :**

- (i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 2. (iv) (a) N.A. (b) 33' x 33'. (v) N.A. (vi) Yes.

**4. GENERAL :**

- (i) Satisfactory. (ii) Nil. (iii) Grain and straw yield. (iv) (a) 1948-1949. (b) No. (c) N.A. (v) (a) and (b) Nil. (vi) As it is a second crop (winter paddy) the yields are low. (vii) Nil.

**4. RESULTS :**

- (i) 285 lb./ac.  
(ii) 178.9 lb./ac.  
(iii) Treatments do not differ significantly.  
(iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	380
2.	380
3.	280
4.	100
S.E./mean	= 126.5 lb./ac.

Crop :- Paddy (*Rabi*).

Ref :- Mh. 49(79).

Site :- Govt. Seed and Demonstration Farm, Sindewahi. Type :- 'C'.

Object :- To find out the best method of growing winter Paddy.

**1. BASAL CONDITIONS :**

- (i) (a) Nil. (b) Paddy. (c) N.A. (ii) (a) Sandy loam. (b) N.A. (iii) 21.12.1949. (iv) (a) N.A. (b) As per treatments. (c), (d) and (e) N.A. (v) 145 lb./ac. of A/S on 3.2.1950. (vi) N.A. (vii) Irrigated. (viii) Nil. (ix) 80.13". (x) 21.5.1950.

## 2. TREATMENTS :

1. Transplanted.
2. *Lehi*.
3. Broadcast.
4. *Biasi*.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 2. (iv) (a) N.A. (b) 33'×33'. (v) Nil. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) Nil. (iii) Grain and straw yield. (iv) (a) 1948—1949. (b) No. (c) N.A. (v) (a) N.A. (b) N.A. (vi) As it is second crop, namely winter paddy the yields are low. (vii) Nil.

## 5. RESULTS :

- (i) 65 lb./ac.
- (ii) 17.9 lb./ac.
- (iii) Treatments do not differ significantly.
- (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	70
2.	60
3.	60
4.	70
S.E./mean	=12.7 lb./ac.

Crop :- Paddy (*Kharif*).

Ref :- Mh. 50(92).

Site :- Govt. Seed and Demonstration Farm, Sindewahi. Type :- 'C'.

Object :- To find out the effect of early and late harvesting on grain formation of Paddy.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) N.A. (c) N.A. (ii) (a) Sandy loam. (b) N.A. (iii) N.A. (iv) (a) to (e) N.A. (v) N.A. (vi) Paddy-116. (vii) Irrigated. (viii) N.A. (ix) 51.86°. (x) As per treatments.

## 2. TREATMENTS :

Dates of harvest.

1. 15 days early harvesting (1.11.1950).
2. 8 days early harvesting (8.11.1950).
3. Right time harvesting (15.11.1950).
4. 8 days late harvesting (22.11.1950).
5. 15 days late harvesting (29.11.1950).

## 3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 2. (iv) (a) N.A. (b) 66'×33'. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) N.A. (iii) Grain yield. (iv) (a) 1950—N.A. (b) N.A. (c) N.A. (v) (a) N.A. (b) N.A. (vi) Nil. (vii) Nil.

## 5. RESULTS :

- (i) 1672 lb./ac.
- (ii) 515.4 lb./ac.
- (iii) Treatments do not differ significantly.
- (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	1870
2.	2130
3.	2210
4.	1900
5.	250
S.E./mean	=364.5 lb./ac.

Crop :-Paddy (*Kharif*).  
Site :-Agri. Res. Stn., Kopergaon.

Ref :-Mh. 53(177).  
Type :-'CV'.

Object:—To study the performance of transplanting in Deccan-canal areas.

### 1. BASAL CONDITIONS :

(i) (a) N.A. (b) Wheat in *Rabi*. (c) 3 bags of G.N.C. +75 lb./ac. of A/S. (ii) (a) A—type soil. (b) Refer soil analysis, Kopergaon. (iii) 25 and 26.7.1953. (iv) (a) N.A. (b) As per treatments. (c) 40 lb./ac. (d) Drilling 12" and transplanting 9"×9". (e) 4 plants at each spot. (v) 64 lb./ac. of N in the form of G.N.C. and A/S in 1 : 1 ratio, 32 lb./ac. of N at sowing ; 16 lb./ac. of N 21 days after and 16 lb./ac. of N 50 days after sowing ; 10 C.L./ac. of F.Y.M. and 32 lb./ac. of  $P_2O_5$  at sowing. (vi) As per treatments. (vii) Irrigated. (iiiiv) N.A. (ix) 17.22 . (x) 24.10.1953 to 29.10.1953.

### 2. TREATMENTS :

Main-plot treatments :

2 methods of planting :  $P_1$ =Transplanting and  $P_2$ =Drilling.

Sub-plot treatments :

3 varieties :  $V_1$ =Koda 6-8-1,  $V_2$ =Early kolky 70 and  $V_3$ =Mahade 8-2.

### 3. DESIGN :

(i) Split-plot. (ii) (a) 2 main-plots/block ; 3 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) 28'×20'. (b) 20'×12'. (v) 4' ring around the plot. (vi) Yes.

### 4. GENERAL :

(i) Normal. (ii) Nil. (iii) Grain yield. (iv) (a) No. (b) No. (c) N.A. (v) (a) Nil. (b) N.A. (vi) and (vii) Nil.

### 5. RESULTS :

- (i) 2151 lb./ac.  
(ii) (a) 388.6 lb./ac.  
(b) 406.0 lb./ac.  
(iii) None of the effects and interaction is significant.  
(iv) Av. yield of grain in lb./ac.

	$P_1$	$P_2$	Mean
$V_1$	2009	1659	1834
$V_2$	2240	2418	2329
$V_3$	2174	2405	2289
Mean	2141	2161	2151

S.E. of difference of two

1. P marginal means = 183.1 lb./ac.  
2. V marginal means = 234.4 lb./ac.  
3. V means at the same level of P = 331.5 lb./ac.  
4. P means at the same level of V = 326.7 lb./ac.

Crop :-Paddy (*Kharif*).  
Site :-Agri. Res. Stn., Padegaon.

Ref :-Mh. 51(215).  
Type :-'CV'.

Object:—To study the effect of drilling and transplanting on the yield of different varieties of Paddy.

### 1. BASAL CONDITIONS :

(i) (a) N.A. (b) Cotton. (c) 20 lb./ac. of A/S+G.N.C. in 1 : 2. (ii) (a) B—type soil. (b) Refer soil analysis, Padegaon. (iii) 20.6.1951/16.7.1951. (iv) (a) N.A. (b) As per treatments. (c) 40 lb./ac. for drilled. (d) 12" drilled and 6"×6" transplanted. (e) 8 seedings/bunch for transplanted. (v) 96 lb./ac. of N,  $\frac{2}{3}$  dose at sowing as G.N.C. +  $\frac{1}{3}$  dose at flowering as A/S. (vi) As per treatments. (vii) Irrigated. (viii) 2 weedings. (ix) 14.68". (x) 6.10.1951 to 29.11.1951.

## 2. TREATMENTS :

## Main-plot treatments :

8 varieties :  $V_1=K-540$  ;  $V_2=Pankharia$  ;  $V_3=Jiresal$  ;  $V_4=A-90$  ;  $V_5=M-81$  ;  $V_6=M-249$  ;  
 $V_7=Krishnasal$  and  $V_8=Dodki$ .

## Sub-plot treatments :

2 methods of planting :  $P_1=Drilling$  and  $P_2=Transplanting$ .

## 3. DESIGN :

(i) Split-plot. (ii) (a) 8 main-plots/block ; 2 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 24'×36'.  
 (b) 20'×27.2'. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) Normal. (ii) Mild attack of blast and *papdi* which was controlled by spraying Perenox. (iii) Grain yield. (iv) (a) 1951—N.A. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 1209 lb./ac.  
 (ii) (a) 431.6 lb./ac.  
 (b) 215.5 lb./ac.  
 (iii) Effect of V and interaction V×P are highly significant. Effect of P is not significant.  
 (iv) Av. yield of grain in lb./ac.

	$V_1$	$V_2$	$V_3$	$V_4$	$V_5$	$V_6$	$V_7$	$V_8$	Mean
$P_1$	930	973	685	1423	1031	1355	1373	1944	1214
$P_2$	925	620	1078	1470	1540	1203	1339	1462	1204
Mean	927	797	881	1447	1285	1279	1356	1703	1209

## S.E. of difference of two

1. V marginal means =215.8 lb./ac.  
 2. P marginal means = 53.9 lb./ac.  
 3. P means at a level of V =152.4 lb./ac.  
 4. V means at a level of P =241.2 lb./ac.

Crop :- Paddy (*Kharif*).

Site :- Agri. Res. Stn., Padegaon.

Ref :- Mh. 52(324).

Type :- 'CV'.

Object :- To study the effect of drilling and transplanting on the yield of different varieties of Paddy.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) Sugarcane. (c) 375 lb./ac. of N. (ii) (a) 'B' type. (b) Refer soil analysis, Padegaon.  
 (iii) 18.6.1952/26.7.1952. (iv) (a) N.A. (b) As per treatments. (c) 40 lb./ac. for drilled paddy. (d) 12"  
 for drilling and 6"×6" for transplanting. (e) 8 seedlings/bunch for dibbling. (v) 96 lb./ac. of N :  
 $\frac{1}{3}$ rd at sowing as G.N.C. and  $\frac{1}{4}$ rd at flowering as A/S. (vi) As per treatments. (vii) Irrigated. (viii)  
 3 weedings. (ix) 11.01". (x) 17.11.1952 to 1.12.1952.

## 2. TREATMENTS :

## Main-plot treatments :

8 varieties :  $V_1=K-540$ ,  $V_2=Pankharia$ ,  $V_3=Jiresal$ ,  $V_4=A-90$ ,  $V_5=M-81$ ,  $V_6=M-249$ ,  $V_7=Krishnasal$   
 and  $V_8=Dodki$ .

## Sub-plot treatments :

2 methods of planting :  $P_1=Drilling$  and  $P_2=Transplanting$ .

## 3. DESIGN :

(i) Split-plot. (ii) (a) 8 main-plots/block ; 2 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 30'×26'. (b)  
 24'×20'. (v) 3' ring. (vi) Yes.

## 4. GENERAL :

(i) Normal. (ii) Nil. (iii) Grain yield. (iv) (a) 1951—N.A. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 1967 lb./ac.  
 (ii) (a) 269.0 lb./ac.  
 (b) 248.0 lb./ac.  
 (iii) All effects and interactions are 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>6</sub>	V <sub>7</sub>	V <sub>8</sub>	Mean
P <sub>1</sub>	1774	1669	2119	2756	2334	2551	2729	2790	2340
P <sub>2</sub>	1618	1016	1635	1169	1645	1422	2187	2059	1594
Mean	1696	1342	1877	1962	1989	1986	2458	2424	1967

## S E. of difference of two

1. V marginal means = 134.6 lb./ac.
2. P marginal means = 62.1 lb./ac.
3. P means at a level of V = 175.4 lb./ac.
4. V means at a level of P = 182.9 lb./ac.

Crop :- Paddy (*Kharif*).

Ref :- Mh. 53(349).

Site :- Agri. Res. Stn., Padegaon.

Type :- 'CV'.

Object :- To study the effect of drilling and transplanting on the yield of different varieties of Paddy.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) Sugarcane. (c) 375 lb./ac. of N. (ii) (a) 'B' type. (b) Refer soil analysis, Padegaon. (iii) 20.6.1953/1.8.1953. (iv) (a) N.A. (b) As per treatments. (c) 40 lb./ac. for drilled. (d) 12" drilled and 6" x 6" transplanting. (e) 8 seedlings/bunch for transplanting. (v) 96 lb./ac. of N. 2/3rd dose at sowing as G.N.C. + 1/3rd dose at flowering as A/S. (vi) As per treatments. (vii) Irrigated. (viii) 3 weedings and 2 interculturings. (ix) 16.35°. (x) 6.10.1952 to 22.11.1953.

## 2. TREATMENTS :

## Main-plot treatments :

12 varieties : V<sub>1</sub>=*Dodki*, V<sub>2</sub>=*Krishnasal*, V<sub>3</sub>=*Jiresal*, V<sub>4</sub>=*A-90*, V<sub>5</sub>=*Bhavadi*, V<sub>6</sub>=*Patni No. 6*, V<sub>7</sub>=*K. 184*, V<sub>8</sub>=*E.K. 7*, V<sub>9</sub>=*Early Kolum-161-62*, V<sub>10</sub>=*Sathi 44-51*, V<sub>11</sub>=*Waner-1*, V<sub>12</sub>=*Sorta*.

## Sub-plot treatments :

2 methods of planting : P<sub>1</sub>=Drilling and P<sub>2</sub>=Transplanting.

## 3. DESIGN :

(i) Split-plot (ii) (a) 12 main-plots/block ; 2 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 36' x 22' ; main-plot size : 72' x 22'. (b) 32' x 17'. (v) 2' x 2.5' ring. (vi) Yes.

## 4. GENERAL :

(i) Normal. (ii) Mild attack of blast was noticed which was controlled by spraying Perenox. (iii) Grain yield. (iv) (a) 1951—N.A. (b) No. (c) Nil (v) (a) and (b) N.A. (vi) Nil. (vii) V<sub>10</sub> was omitted from statistical analysis as the yield data was not available for one sub treatment viz transplanting under V<sub>10</sub> for all the four replications.

## 5. RESULTS :

- (i) 1600 lb./ac.  
 (ii) (a) 242.6 lb./ac.  
 (b) 195.9 lb./ac.  
 (iii) Effect of V and interaction V x P are highly significant. Effect of P is not significant.

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

	P <sub>1</sub>	P <sub>2</sub>	Mean
V <sub>1</sub>	2413	2089	2251
V <sub>2</sub>	2022	2286	2154
V <sub>3</sub>	632	1069	851
V <sub>4</sub>	1574	1406	1490
V <sub>5</sub>	2496	1900	2198
V <sub>6</sub>	1278	1101	1190
V <sub>7</sub>	1187	1678	1433
V <sub>8</sub>	1049	1548	1299
V <sub>9</sub>	2234	939	1587
V <sub>11</sub>	1792	2045	1919
V <sub>12</sub>	1114	1353	1234
Mean	1617	1583	1600

S E. of difference of two

1. V marginal means = 121.3 lb./ac.
2. P marginal means = 41.8 lb./ac.
3. P means at the same level of V = 138.5 lb./ac.
4. V means at the same level of P = 66.5 lb./ac.

Crop :- Paddy (*Kharif*).

Ref :- Mh. 52(171).

Site :- Rice Breeding Station, Chiplun.

Type :- 'CM'.

Object :- To study the effect of different combinations of N and P and spacings on the yield of Paddy.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) N.A. (ii) (a) N.A. (b) Refer soil analysis, Chiplun. (iii) 7.6.1952/8 to 10.8.1952. (iv) (a) N.A. (b) Transplanting. (c) —. (d) As per treatments. (e) 8 seedlings/bunch. (v) Nil. (vi) Warangal-487. (vii) N.A. (viii) 5 weedings. (ix) N.A. (x) 7 to 9.11.1952.

## 2. TREATMENTS :

All combinations of (1), (2), (3) and (4).

- (1) 2 levels of F.Y.M. : F<sub>1</sub>=5 C.L. and F<sub>2</sub>=10 C.L./ac.
- (2) 2 levels of spacings : S<sub>1</sub>=8"×8" and S<sub>2</sub>=10"×10".
- (3) 2 levels of N : N<sub>0</sub>=0 and N<sub>1</sub>=32 lb./ac.
- (4) 3 levels of P<sub>2</sub>O<sub>5</sub> : P<sub>1</sub>=64, P<sub>2</sub>=96 and P<sub>3</sub>=128 lb./ac.

## 3. DESIGN :

(i) 2<sup>3</sup>×3 factorial in R.B.D. (ii) (a) 24. (b) N.A. (iii) 3. (iv) (a) 36'8"×16'8". (b) 30'×10'. (v) 3'-4" ring round the net plot. (vi) Yes.

## 4. GENERAL :

(i) Below normal; break in rains in the month of Sept. had a very bad effect on growth of Paddy. (ii) Heavy attack of kapra during 1st and 2nd weeks of August, crop was dusted with Gammoxene and plants were shaken mechanically to disturb the beetles. (iii) Grain and straw yield. (iv) (a) to (c) No. (v) (a) Igatpuri, Karjat, Kopergaon, Ratnagiri and Vadgaon. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 885 lb./ac.
- (ii) 146.4 lb./ac.
- (iii) Main effects of N and S are highly significant and that of P<sub>2</sub>O<sub>5</sub> is significant. All two factor interactions are significant. Other effects and interactions are not significant.

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

	N <sub>0</sub>	N <sub>1</sub>	F <sub>1</sub>	F <sub>2</sub>	S <sub>1</sub>	S <sub>2</sub>	Mean
P <sub>1</sub>	712	971	828	854	899	783	841
P <sub>2</sub>	726	1006	857	875	977	755	866
P <sub>3</sub>	812	1079	926	966	1067	824	946
Mean	750	1019	870	898	981	787	885
S <sub>1</sub>	805	1158	956	1006			
S <sub>2</sub>	695	880	785	790			
F <sub>1</sub>	724	1017					
F <sub>2</sub>	776	1020					

S.E. of marginal mean of N,F or S = 24.4 lb./ac.

S.E. of marginal mean of P = 29.9 lb./ac.

S.E. of body of N×P, F×P or S×P table = 42.3 lb./ac.

S.E. of body of N×F, N×S or F×S table = 34.5 lb./ac.

Crop:- Paddy(Kharif).

Ref :- Mh. 52(63).

Site :- Agri. Res. Stn., Igatpuri

Type :- 'CM'.

Object :-To study the effect of different combinations of N and P and spacings on the yield of Paddy.

**1. BASAL CONDITIONS :**

(i) (a) Fallow in *Rabi*. (b) Paddy. (c) Nil. (ii) (a) Coarse to medium black. (b) N.A. (iii) 9.6.1952/23.7.1952. (iv) (a) 1 ploughing before sowing and 2 ploughings after sowing. (b) Transplanting. (c) 40 lb./ac. (d) As per treatments. (e) N.A. (v) Nil. (vi) K-226 (late). (vii) Unirrigated. (viii) Hand weeding—3rd week of Sept. 1952. (ix) 127.91". (x) 9.11.1952.

**2. TREATMENTS :**

All combinations of (1), (2), (3) and (4)  
 (1) 3 levels of N : N<sub>1</sub>=96, N<sub>2</sub>=128 and N<sub>3</sub>=160 lb./ac.  
 (2) 2 levels of F.Y.M. : F<sub>1</sub>=5 C.L. and F<sub>2</sub>=10 C.L./ac.  
 (3) 2 levels of spacings : S<sub>1</sub>=6'×6" and F<sub>2</sub>=8'×8".  
 (4) 2 levels of P<sub>2</sub>O<sub>5</sub> : P<sub>0</sub>=0 lb./ac. and P<sub>1</sub>=32 lb./ac.  
 N as A/S and P<sub>2</sub>O<sub>5</sub> as Super.

**3. DESIGN :**

(i) 3×2<sup>3</sup> factorial in R.B.D. (ii) (a) 24. (b) N.A. (iii) 3. (iv) (a) 24'×14'. (b) 20'×10'. (v) 2' ring round the net plot. (vi) Yes.

**4. GENERAL :**

(i) Normal. (ii) Slight crab attack. (iii) Grain yield. (iv) (a) 1952—N.A. (b) and (c) N.A. (v) (a) and (b) N.A. (vi) and (vii) Nil.

**5. RESULTS :**

(i) 3448 lb./ac.  
 (ii) 314.9 lb./ac.  
 (iii) Ncne of the effects and interctions is significant.



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

	N <sub>1</sub>	N <sub>2</sub>	N <sub>3</sub>	S <sub>1</sub>	S <sub>2</sub>	P <sub>0</sub>	P <sub>1</sub>	Mean
F <sub>1</sub>	3380	3435	3535	3476	3424	3424	3476	3450
F <sub>2</sub>	3458	3471	3408	3388	3503	3433	3457	3446
Mean	3419	3453	3471	3432	3463	3429	3466	3448
P <sub>0</sub>	3362	3403	3521	3379	3479			
P <sub>1</sub>	3476	3503	3421	3485	3449			
S <sub>1</sub>	3444	3448	3403					
S <sub>2</sub>	3458	3458	3539					

S.E. of marginal mean of N

=64.3 lb./ac.

S.E. of marginal mean of P, F or S

=52.5 lb./ac.

S.E. of body of N×F, N×P or N×S table

=90.9 lb./ac.

S.E. of body of F×P, F×S or P×S table

=74.2 lb./ac.

Crop :- Paddy (*Kharif*).

Ref :- Mh. 53(4)/52(63).

Site :- Agri. Res. Stn., Igatpuri.

Type :- 'CM'.j

Object :- To find out the optimum dose of N and P required for Paddy, combined with the optimum spacing to be adopted at the time of transplanting.

## 1. BASAL CONDITIONS :

(i) (a) Paddy in *Kharif* and Pulses in *Rabi*. (b) Gram in *Rabi*. (c) Nil. (ii) (a) Shallow coarse soil derived from Deccan trap rock. (b) N.A. (iii) 15.6.1953/17.7.1953. (iv) (a) 3 ploughings Puddling and planting on 17th, 18th and 19th July, 1953. (b) Transplanting. (c) —. (d) and (e) N.A. (v) Nil. (vi) K-226 (late). (vii) Rainfed. (viii) Transplanting and interculturing done as per departmental method. (ix) 123". (x) 2nd week of November 1953.

## 2. TREATMENTS :

All possible combinations of (1), (2), (3) and (4)

(1) 3 levels of N : N<sub>1</sub>=96, N<sub>2</sub>=128 and N<sub>3</sub>=160 lb./ac. of N.(2) 2 levels of P<sub>2</sub>O<sub>5</sub> : P<sub>0</sub>=0, P<sub>1</sub>=32 lb./ac. of P<sub>2</sub>O<sub>5</sub>.(3) 2 levels of F.Y.M. : F<sub>1</sub>=5 and F<sub>2</sub>=10 C.L./ac. of F.Y.M.(4) 2 spacings : S<sub>1</sub>=6"×6" and S<sub>2</sub>=8"×8".N as A/S and P<sub>2</sub>O<sub>5</sub> as Super.

## 3. DESIGN :

(i) 3×2<sup>3</sup> Fact. in R.B.D. (ii) (a) 24. (b) N.A. (iii) 3. (iv) (a) 24'×14'. (b) 20'×10'. (v) 2' ring around. (vi) Yes.

## 4. GENERAL :

(i) Paddy crop was fairly good throughout the season. (ii) Two months after transplanting the crop was affected by Jassids and then followed by severe attack of army-worms. (iii) Height, no. of tillers, date of flowering and yield data. (iv) (a) 1952-1954. (b) Yes. (c) N.A. (v) (a) Kumtha, Ratnagiri, Karjat. (b) N.A. (vi) and (vii) Nil

## 5. RESULTS :

(i) 2864 lb./ac.

(ii) 315.8 lb./ac.

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

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

	N <sub>1</sub>	N <sub>2</sub>	N <sub>3</sub>	S <sub>1</sub>	S <sub>2</sub>	P <sub>0</sub>	P <sub>1</sub>	Mean
F <sub>1</sub>	2784	2896	2781	2680	2961	2832	2809	2820
F <sub>2</sub>	2977	2852	2898	2848	2970	3019	2800	2909
Mean	2881	2874	2839	2764	2965	2926	2804	2864
P <sub>0</sub>	2899	2971	2906	2769	3082			
P <sub>1</sub>	2862	2777	2773	2760	2849			
S <sub>1</sub>	2780	2894	2619					
S <sub>2</sub>	2982	2855	3060					

S.E. of marginal mean of N	=52.9 lb./ac.
S.E. of marginal mean of P, F or S	=64.9 lb./ac.
S.E. of body of N×P, N×F or N×S table	=91.5 lb./ac.
S.E. of body of F×P, F×S or P×S table	=74.1 lb./ac.

Crop :- Paddy (*Kharif*).

Ref :- Mh. 53(6).

Site : Agri. Res. Stn., Igatpuri.

Type :- 'CM'.

Object :- To compare the Japanese method of Paddy cultivation with the Departmental method.

## 1. BASAL CONDITIONS :

(i) (a) Pulses in *Rabi* and Paddy in *Kharif*. (b) Gram in *Rabi*. (c) Nil. (ii) (a) Shallow and coarse soil derived from Deccan trap rock. (b) N.A. (iii) 16.6.1953/31.7.1953. (iv) (a) 3 ploughings puddling and planting. Interculturing in August and September. (b) N.A. (c) 5 lb./*guntha*. (d) and (e) N.A. (v) Nil. (vi) Z-31 (mid-late). (vii) Rainfed. (viii) Weeding, interculturing as per treatments. (ix) 123°. (x) 31.10.1953.

## 2. TREATMENTS :

All combinations of the following

Departmental	Japanese
A <sub>0</sub> =Flat bed with 1 C.L./ac. of F.Y.M.	A <sub>1</sub> =Raised seed bed with 1 C.L./ac. of F.Y.M.
B <sub>0</sub> =8 lb./ <i>guntha</i> of A/S	B <sub>1</sub> =16 lb./ <i>guntha</i> of Super + layer of ash.
C <sub>0</sub> =Spacing 10'×10"	C <sub>1</sub> =Spacing 9'×9".
D <sub>0</sub> =8 seedlings/bunch	D <sub>1</sub> =4 seedlings/bunch.
E <sub>0</sub> =5 C.L./ac. of F.Y.M.+Green manuring +64 lb./ac. of N as A/S+32 lb./ac. of P <sub>2</sub> O <sub>5</sub> as Super	E <sub>1</sub> =5 C.L./ac. of F.Y.M.+Green manuring+100 lb./ac. of N as A/S+80 lb./ac. of P <sub>2</sub> O <sub>5</sub> as Super.
F <sub>0</sub> =1 hand weeding	F <sub>1</sub> =1 hand weeding+3 intercultures.

Note : A and B are seed bed treatments while others are field treatments.

## 3. DESIGN :

(i) 2<sup>nd</sup> Fact. Confd. (ii) (a) 8 plots/block ; 8 blocks/replication. (b) N.A. (iii) 2. (iv) (a) For spacing 9'×9"—18'×10.5' ; for spacing 10'×10"—18'-4"×10'. (b) For spacing 9'×9"—15'×7.5' for spacing 10'×10"—15'×7.5'. (v) Two lines on each side. (vi) Yes.

## 4. GENERAL :

(i) Growth fairly good till flowering and harvesting. (ii) Crop severely affected by Jassids and Army-worms. Spraying of 50% D.D.T. was done at intervals. (iii) Height, no. of tillers, date of flowering, yield data noted for 10 plants in each treatment. (iv) (a) 1953-N.A. (b) Yes. (c) N.A. (iv) (a) Ratnagiri, Karjat, Kosbad, Kopergaon, Khopoli, Phondaghat and Padegaon. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 1644 lb./ac.

(ii) 363.9 lb./ac.

(iii) Main effects of D, E and interactions AE, BE, are significant while other effects and interactions are not significant.

(iv) Table of mean and differential responses :

Factor	Mean Response	A		B		C		D		E		F	
		-	+	-	+	-	+	-	+	-	+	-	+
A	-166	-	-	-180	-152	1	-333	-21	-311	-490	158	-241	-91
B	-36	-50	-22	-	-	-179	107	-99	27	232	-304	-65	-7
C	+33	200	-134	-110	176	-	-	101	-35	200	-134	-64	130
D	+417	562	272	354	480	485	349	-	-	617	217	453	381
E	+274	-50	598	542	6	441	107	474	74	-	-	345	203
F	-74	-149	1	-103	-45	-171	23	-38	-110	-3	-145	-	-

S.E. of mean response = 64.35 lb./ac.

S.E. of differential response = 90.99 lb./ac.

Crop :- Paddy (*Kharif*).

Ref :- Mh. 49(120).

Site :- Agri. Res. Stn., Igatpuri.

Type :- 'CM'.

Object :—To evolve a suitable substitute for method of rabbing for Paddy crop.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) N.A. (c) N.A. (ii) (a) Shallow and coarse soil. (b) N.A. (iii) 6.6.1949/1, 3.7.1949.  
 (iv) (a) 2 ploughings. (b) Transplanting. (c) —. (d) 10" × 10". (e) 8 seedlings/bunch. (v) Nil.  
 (vi) Z-31. (vii) Unirrigated. (viii) 1 weeding. (ix) 125.68". (x) 27, 28.10.1949.

## 2. TREATMENTS :

Main-plot treatments :

2 levels of F.Y.M. :  $F_0=0$  and  $F_1=5$  C.L./ac. of F.Y.M.

Sub-plot treatments :

- Rabbing every year.
- Village compost every year at 10000 lb./ac.
- A/S every year at 30 lb./ac. of N.
- G.N.C. every year at 30 lb./ac. of N.
- Rabbing in 1st year and 10,000 lb./ac. of compost in 2nd year.
- 10000 lb./ac. of compost in 1st year and rabbing in 2nd year.
- Rabbing in 1st year and 30 lb./ac. of N as A/S in 2nd year.
- 30 lb./ac. of N as A/S in 1st year and rabbing in 2nd year.
- Rabbing in 1st year and 30 lb./ac. of N as G.N.C. in 2nd year.
- 30 lb./ac. of N as G.N.C. in 1st year and rabbing in 2nd year.
- Proper tillage (deep ploughing and clod crushing so that the plot is maintained in a good condition for sowing seed).
- Sterilizing the soil with Formaldehyde (40% formaline).

As this happens to be the 1st year of the expt., there are only 6 independent sub-plot treatments *i.e.* $T_1$  = Rabbing 1,5,7 and 9). $T_4$  = G.N.C. at 30 lb./ac. of N (4 and 10). $T_2$  = Compost at 10000 lb./ac. (2 and 6). $T_5$  = Proper tillage (11). $T_3$  = A/S at 30 lb./ac. of N (3 and 8). $T_6$  = Sterilizing the soil (12).

## 3. DESIGN :

(i) Split-plot. (ii) (a) 2 main-plots/block ; 12 sub-plots/main-plot. (b) N.A. (iii) 6. (iv) (a) 18'-4" × 13'-4".  
 (b) 15' × 10'. (v) 1'-8" ring. (vi) Yes.

## 4. GENERAL :

(i) Normal. (ii) Nil. (iii) Grain yield. (iv) (a) 1949—1954. (b) No. (c) Nil. (v) (a) Karjat, Ratnagir and Vadgaon. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 648 lb./ac.  
 (ii) (a) 158.7 lb./ac.  
 (b) 218.8 lb./ac.  
 (iii) None of the effects and interaction is significant.  
 (iv) Av. yield of grain in lb./ac.

	F <sub>0</sub>	F <sub>1</sub>	Mean
T <sub>1</sub>	614	638	627
T <sub>2</sub>	737	598	667
T <sub>3</sub>	694	665	679
T <sub>4</sub>	706	628	667
T <sub>5</sub>	639	583	611
T <sub>6</sub>	554	720	637
Mean	657	639	648

S.E. of marginal mean of F = 18.7 lb./ac.  
 S.E. of marginal mean of T<sub>1</sub> = 31.6 lb./ac.  
 S.E. of marginal mean of T<sub>2</sub>, T<sub>3</sub> or T<sub>4</sub> = 44.7 lb./ac.  
 S.E. of marginal mean of T<sub>5</sub> or T<sub>6</sub> = 63.2 lb./ac.

Crop :- Paddy (*Kharif*).

Ref :- Mh. 50(34)/49(120).

Site :- Agri. Res. Stn., Igatpuri.

Type :- 'CM'.

Object :- To evolve a suitable substitute for method of rabbing for Paddy crop.

## 1. BASAL CONDITIONS :

(i) (a) Paddy after paddy (fallow in *Rabi*). (b) Paddy. (c) As per treatments. (ii) (a) Coarse to medium black soil. (b) N.A. (iii) 12.6.1950/20.7.1950. (iv) (a) Two ploughings. (b) Transplanting. (c) —. (d) 10' × 10'. (e) N.A. (v) Nil. (vi) Z-31 (mid-late). (vii) Unirrigated. (viii) Hand weeding in 3rd week of September 1950. (ix) 147.25'. (x) 29.10.1950.

## 2. TREATMENTS :

Main-plot treatments :

2 levels of F.Y.M. : F<sub>0</sub>=0 and F<sub>1</sub>=5 C.L./ac. of F.Y.M.

Sub-plot treatments :

T<sub>1</sub>=Rabbing every year.

T<sub>2</sub>=Compost every year (10000 lb./ac.).

T<sub>3</sub>=A/S every year (30 lb./ac. of N).

T<sub>4</sub>=G.N.C. every year (30 lb./ac. of N).

T<sub>5</sub>=Rabbing in first year and 10000 lb./ac. of compost in the second year.

T<sub>6</sub>=10000 lb./ac. of compost in the first year and rabbing in second year.

T<sub>7</sub>=Rabbing in the first year and 30 lb./ac. of N as A/S in second year.

T<sub>8</sub>=30 lb./ac. of N as A/S in the first year and rabbing in second year.

T<sub>9</sub>=Rabbing in the 1st year and 30lb./ac. of N as G.N.C. in second year.

T<sub>10</sub>=30 lb./ac. of N as G.N.C. in 1st year and rabbing in second year.

T<sub>11</sub>=Proper tillage.

T<sub>12</sub>=Sterlizing the soil with formaline.

## 3. DESIGN:

(i) Split-plot. (ii) (a) 2 main-plots/block; 12 sub-plots/main-plot. (b) N.A. (iii) 5 (originally with 6 replications). (iv) (a) (main-plot) 73'-4" × 40', (sub-plot) 18'-4" × 13'-4". (b) (sub-plot) 15' × 10'. (v) With two rows on either side and 1'-8" at either end. (vi) Yes.

## 4. GENERAL :

(i) The general growth of the crop was fairly good. (ii) Nil. (iii) Grain and straw yield. (iv) (a) 1949-1954. (b) Yes. (c) N.A. (v) (a) Karjat, Ratnagiri and Vadgaon. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 1308 lb./ac.  
 (ii) (a) 390.4 lb./ac.  
 (b) 336.6 lb./ac.  
 (iii) Main effect of F.Y.M. alone is significant.  
 (iv) Av. yield of grain in lb./ac.

	F <sub>0</sub>	F <sub>1</sub>	Mean
T <sub>1</sub>	1215	1356	1285
T <sub>2</sub>	1470	1307	1389
T <sub>3</sub>	1083	1547	1315
T <sub>4</sub>	1178	1461	1319
T <sub>5</sub>	1083	1428	1255
T <sub>6</sub>	1383	1165	1274
T <sub>7</sub>	1404	1462	1433
T <sub>8</sub>	1230	1476	1353
T <sub>9</sub>	1036	1579	1307
T <sub>10</sub>	1166	1330	1248
T <sub>11</sub>	872	1295	1084
T <sub>12</sub>	1151	1729	1440
Mean	1189	1428	1308

## S.E of difference of two

1. main-plot treatment means. = 50.4 lb./ac..
2. sub-plot treatment means. = 106.4 lb./ac.
3. sub-plot treatment means at a level of main-plot treatment = 213.0 lb./ac..
4. main-plot treatment means at a level of sub-plot treatment = 216.1 lb./ac..

Crop :-Paddy (Kharif).

Ref :-Mh. 51(213)/50(34)/49(120).

Site :-Agri. Res. Stn., Igatpuri.

Type :-'CM'.

Object :-To evolve a suitable substitute for method of rabbing for Paddy crop.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) Fallow. (c) Nil. (ii) (a) Shallow and coarse soil. (b) N.A. (iii) 5.6.1951/6.7.1951.  
 (iv) (a) 2 ploughings. (b) Broadcasting in the raised seed beds. (c) 40 lb./ac. (d) 10" × 10". (e) 8 seedlings/bunch. (v) Nil. (vi) Z-31. (vii) Unirrigated. (viii) 3 interculturings. (ix) 116.88". (x) 21, 22, 23 and 26.10.1951.

## 2. TREATMENTS :

## Main-plot treatments :

2 levels of F.Y.M. :  $F_0=0$  and  $F_1=5$  C.L./ac. of F.Y.M.

## Sub-plot treatments : (Seed bed treatments)

$T_1$  = Rabbing every year.

$T_2$  = Village compost every year at 10000/ac. of F.Y.M.

$T_3$  = A/S every year at 30 lb./ac. of N.

$T_4$  = G.N.C. every year at 30 lb./ac. of N.

$T_5$  = Rabbing first year and 10000 lb./ac. of compost in 2nd year.

$T_6$  = 10000 lb./ac. of compost in 1st year and rabbing in 2nd year.

$T_7$  = Rabbing in 1st year and 30 lb./ac. of N as A/S in 2nd year.

$T_8$  = 30 lb./ac. of N as A/S in 1st year and rabbing in 2nd year.

$T_9$  = Rabbing in 1st year and 30 lb./ac. of N as G.N.C. in 2nd year.

$T_{10}$  = 30 lb./ac. of N as G.N.C. in 1st year and rabbing in 2nd year.

$T_{11}$  = Proper tillage (deep ploughing and clod-crushing so that the plot is maintained in good condition for sowing seed).

$T_{12}$  = Sterilizing the soil with Formaldehyde (50% formaline).

## 3. DESIGN :

(i) Split-plot. (ii) (a) 2 main-plots/replication ; 12 sub-plot/main-plot. (b) N.A. (iii) 6. (iv) (a)  $18'4'' \times 13'4''$ . (b)  $15' \times 10'$ . (v)  $1'8''$  ring around. (vi) Yes.

## 4. GENERAL :

(i) Normal. (ii) Attack of crabs. (iii) Grain yield. (iv) (a) 1949—54. (b) Yes. (c) Nil. (v) (a) Karjat, Ratnagiri, Vadgaon. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 1321 lb./ac.

(ii) (a) 480.6 lb./ac.

(b) 394.9 lb./ac.

(iii) Main-plot treatments, sub-plot treatments and their interactions are not significant.

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

	$F_0$	$F_1$	Mean
$T_1$	1366	1358	1362
$T_2$	1254	1394	1324
$T_3$	1269	1430	1349
$T_4$	1252	1391	1321
$T_5$	1310	1474	1392
$T_6$	1331	1229	1280
$T_7$	1255	1500	1377
$T_8$	1461	1263	1362
$T_9$	1236	1618	1427
$T_{10}$	1175	1308	1241
$T_{11}$	733	1198	965
$T_{12}$	1163	1732	1447
Mean	1233	1408	1321

## S.E. of difference of two

1. main-plot treatment means = 80.1 lb./ac.
2. sub-plot treatment means = 161.2 lb./ac.
3. sub-plot treatment means at a level of main-plot treatment = 228.0 lb./ac.
4. main-plot treatment means at a level of sub-plot treatment = 232.4 lb./ac.

Crop :- Paddy (*Kharif*).

Ref :- Mh. 52(65)/51(213)/50(34)/49(120).

Site :- Agri. Res. Stn., Igatpuri.

Type :- 'CM'.

Object :- To evolve a suitable substitute for method of rabbing for Paddy crop.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) As per treatments. (ii) (a) Medium black. (b) N.A. (iii) 8.6.1952 and 9.6.1952/16,17 and 18.7.1952. (iv) (a) Two ploughings. (b) Transplanting. (c) —. (d)  $10'' \times 10''$ . (e) 8 seedings/bunch (v) Nil. (vi) Paddy Z-31. (vii) Unirrigated. (viii) 3 interculturings on 4, 12, and 16.9.1952. (ix) 127.91". (x) 1 and 2.11.1952.

## 2. TREATMENTS :

## Main-plot treatments :

2 levels of F.Y.M. :  $F_0=0$ ,  $F_1=5$  C.L./ac. of F.Y.M.

## Sub-plot treatments :

## Seed bed treatments

 $T_1$  = Rabbing every year. $T_2$  = Village compost every year at 10,000 lb./ac. of F.Y.M. $T_3$  = A/S every year at 30 lb./ac. of N. $T_4$  = G.N.C. every year at 30 lb./ac. of N $T_5$  = Rabbing in the first year and 10,000 lb./ac. of compost in the 2nd year. $T_6$  = 10,000 lb./ac. of compost in the first year and rabbing in the 2nd year. $T_7$  = Rabbing in the 1st year and 30 lb./ac. of N as A/S in the 2nd year. $T_8$  = 30 lb./ac. of N as A/S in the 1st year and rabbing in the 2nd year. $T_9$  = Rabbing in the 1st year and 30 lb./ac. of N as G.N.C. in the 2nd year. $T_{10}$  = 30 lb./ac. of N as G.N.C. in the 1st year and rabbing in the 2nd year. $T_{11}$  = Proper tillage (deep ploughing and clod crushing so that the plot is maintained in a good condition for sowing seed). $T_{12}$  = Sterilizing the soil with phenol.

## 3. DESIGN :

(i) Split-plot. (ii) (a) 2 main-plots/block ; 12 sub-plots/main-plot. (b) N.A. (iii) 4 (planned with 6 replications). (iv) (a) 18'.4" x 13'.4". (b) 15' x 10'. (v) A ring of 20" kept round the net plot. (vi) Yes.

## 4. GENERAL :

(i) The growth of the crop was, in general, quite good. (ii) The common crab pest of the paddy tract had created a large number of gaps. (iii) Grain yield. (iv) (a) 1949-1954. (b) Yes. (c) N.A. (v) (a) Karjat, Ratnagiri and Vadgaon. (b) N.A. (vi) Nil. (vii) N.A.

## 5. RESULTS :

(i) 1234 lb./ac.

(ii) (a) 239.8 lb./ac.

(b) 393.4 lb./ac.

(iii) Effect of main-plot treatments and interaction main x sub are significant.

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

	$F_0$	$F_1$	Mean
$T_1$	1360	1046	1203
$T_2$	1156	1143	1149
$T_3$	1074	1594	1334
$T_4$	1212	1144	1178
$T_5$	1208	1687	1447
$T_6$	1205	960	1082
$T_7$	1254	1473	1363
$T_8$	1289	1178	1233
$T_9$	961	1817	1389
$T_{10}$	1254	1194	1224
$T_{11}$	720	1120	920
$T_{12}$	915	1652	1283
Mean	1134	1334	1234

## S.E. of difference of two

- main-plot treatment means = 48.9 lb./ac.
- sub-plot treatment means = 191.7 lb./ac.
- sub-plot treatment means at a level of main-plot treatment = 278.4 lb./ac.
- main-plot treatment means at a level of sub-plot treatment = 270.8 lb./ac.

Crop :- Paddy (*Kharif*).

Ref :- Mh. 53(7)/52(65)/51(213)/50(34)/49(120).

Site :- Agri. Res. Stn., Igatpuri.

Type :- 'CM'.

Object :- To find out a suitable substitute to replace the method of rabbing which is particularly followed in the Konkan tract for raising the seedlings.

## 1. BASAL CONDITIONS :

(i) (a) Pulse in *Rabi* and Paddy in *Kharif*. (b) Gram in *Rabi*. (c) Nil. (ii) (a) Shallow and coarse derived from Deccan tract. (b) N.A. (iii) 15.6.1953/18.7.1953. (iv) (a) 3 ploughings. (b) Broadcasting in seed bed. (c) 30 lb./ac. (d) 10" × 10". (e) 8 seedlings/bunch. (v) Nil. (vi) Paddy-Z-31 (mid-late). (vii) Rainfed. (viii) Puddling and planting in July, 1953 weeding and interculturing done as per treatments. (ix) 123°. (x) 28.10.1953.

## 2. TREATMENTS :

Main-plot treatments :

2 levels of F.Y.M. :  $F_0=0$  and  $F_1=5$  C.L./ac. of F.Y.M.

Sub-plot treatments :

Seed bed treatments :

$T_1$  = Rabbing every year.

$T_2$  = Compost at 10 C.L./ac. every year.

$T_3$  = A/S at 30 lb./ac. of N every year.

$T_4$  = G.N.C. at 30 lb./ac. of N every year.

$T_5$  = Rabbing in the 1st year and compost at 10 C.L./ac in the 2nd year.

$T_6$  = Compost at 10 C.L./ac. in the 1st year and rabbing in the 2nd year.

$T_7$  = Rabbing in 1st year and A/S at 30 lb./ac. of N in 2nd year.

$T_8$  = A/S at 30 lb./ac. of N in 1st year and rabbing in 2nd year.

$T_9$  = Rabbing in 1st year and G.N.C. at 30 lb./ac. of N in 2nd year.

$T_{10}$  = G.N.C. at 30 lb./ac. of N in 1st year and rabbing in 2nd year.

$T_{11}$  = Proper tillage.

$T_{12}$  = Sterilizing the seed bed with formaline.

## 3. DESIGN :

(i) Split-plot. (ii) (a) 2 main-plots/block ; 12 sub-plots/main-plot. (b) N.A. (iii) 6. (iv) (a) 18'.4" × 13'.4". (b) 15 × 10'. (v) 2 rows on each side. (vi) Yes.

## 4. GENERAL :

(i) Crop was poor throughout the season. (ii) The experiment was affected by the pests Jassids followed by Army-worms. The growth was affected. (iii) Height, no. of tillers, date of flowering and yield. (iv) (a) 1949-54. (b) Yes. (c) N.A. (v) (a) Karjat and Vadgaon. (b) N.A. (vi) Rains started late. Heavy rains in the beginning. Seedlings of all the treatments were poor at the time of transplanting. (vii) Nil.

## 5. RESULTS :

- (i) 767.2 lb./ac.  
 (ii) (a) 209.1 lb./ac.  
 (b) 139.4 lb./ac.  
 (iii) None of the effects and interaction is significant.  
 (iv) Av. yield of grain in lb./ac.

	$F_0$	$F_1$	Mean
$T_1$	694.5	742.5	718.5
$T_2$	802.0	783.6	792.8
$T_3$	742.5	761.3	751.9
$T_4$	856.7	896.4	876.5
$T_5$	718.7	745.4	732.1
$T_6$	734.2	781.7	757.9
$T_7$	822.3	760.9	791.6
$T_8$	805.9	759.4	782.6
$T_9$	682.9	785.5	734.2
$T_{10}$	773.4	754.6	764.0
$T_{11}$	729.9	774.9	752.4
$T_{12}$	699.9	809.7	754.8
Mean	755.2	779.6	767.2

S.E. of difference of two

1. main-plot treatment means = 34.9 lb./ac.  
 2. sub-plot treatment means = 56.9 lb./ac.  
 3. sub-plot treatment means at a level of main-plot treatment. = 80.5 lb./ac.  
 4. main-plot treatment means at a level of sub-plot treatment = 84.6 lb./ac.



Crop :- Paddy (*Kharif*).

Ref :- Mh. 49(18).

Site :- Agri. Res. Stn., Karjat.

Type :- 'CM'.

Object :—To find out a suitable substitute for method of rabbing.

### 1. BASAL CONDITIONS :

(i) (a) Nil. (b) N.A. (c) N.A. (ii) (a) Sandy loam, medium black soil derived from trap rock 6" to 2½' deep pH=6.5 to 7. (b) Refer soil analysis, Karjat. (iii) 10.6.1949/23 to 27.7.49. (iv) (a) 2 ploughings before puddlings and one after puddlings. (b) Transplanting (c) — (d) 10"×10". (e) 6 seedlings/bunch. (v) Nil. (vi) K-42 (late). (vii) Unirrigated. (viii) One weeding in 3rd week of August. (ix) 133°. (x) 21 to 24.11.1949,

### 2. TREATMENTS :

Main-plot treatments :

2 levels of F.Y.M. :  $F_0=0$  and  $F_1=5$  C.L./ac. of F.Y.M.

Sub-plot treatments :

1. Rabbing every year.
2. 10 C.L./ac. of compost every year.
3. 30 lb./ac of N as A/S every year.
4. 30 lb./ac. of N as G.N.C. every year.
5. Proper tillage alone every year.
6. 3300 lb./ac. of formaline every year.
7. Rabbing in the first year and 10 C.L./ac. of compost in the second year.
8. First year 10 C.L./ac. of compost and rabbing in the second year.
9. Rabbing in the first year and 30 lb./ac. of N as A/S in the second year.
10. 30 lb./ac. of N as A/S in the first year and rabbing in the second year.
11. Rabbing in the first year and 30 lb./ac. of N as G.N.C. in the second year.
12. 30 lb./ac. of N as G.N.C. in the first year and rabbing in the second year.

In the first year there are only 6 distinct sub-plot treatments as follows :—

$T_1$ =Rabbing (1, 7, 9 and 11).  $T_2$ =10 C.L./ac. of compost (2 and 8).

$T_3$ =30 lb./ac. of N as A/S (3 and 10).  $T_4$ =30 lb./ac. of N as G.N.C. (4 and 12).

$T_5$ =Proper tillage (5).  $T_6$ =3300 lb./ac. of formaline (6).

### 3. DESIGN :

(i) Split-plot. (ii) (a) 2 main-plots/block ; 12 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) Main-plot 60'×40' ; sub-plot : 20'×10'. (b) 16'-8"×6'-8". (v) 1'.8" ring all round the net plot. (vi) Yes.

### 4. GENERAL :

(i) Normal. (ii) Attack of blast disease in seed bed from 1st July 1949 ; seedlings were treated with Perenox at the time of transplanting. No pest or disease in field trial. (iii) Grain yield (iv) (a) 1949—1954. (b) Yes. (c) N.A. (v) (a) Igatpuri, Ratnagiri and Vadgaon. (b) N.A. (vi) and (vii) Nil.

### 5. RESULTS :

(i) 1502 lb./ac.

(ii) (a) 352.5 lb./ac.

(b) 276.5 lb./ac.

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

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

	F <sub>0</sub>	F <sub>1</sub>	Mean
T <sub>1</sub>	1437	1420	1428
T <sub>2</sub>	1686	1581	1634
T <sub>3</sub>	1539	1364	1451
T <sub>4</sub>	1612	1404	1508
T <sub>5</sub>	1626	1614	1620
T <sub>6</sub>	1755	1267	1511
Mean	1567	1438	1502

S.E. of marginal mean of main-plot = 50.9 lb./ac.  
 S.E. of marginal mean of T<sub>1</sub> = 48.9 lb./ac.  
 S.E. of marginal mean of T<sub>2</sub>, T<sub>3</sub> or T<sub>4</sub> = 69.1 lb./ac.  
 S.E. of marginal mean of T<sub>5</sub> or T<sub>6</sub> = 97.8 lb./ac.

Crop :- Paddy (*Kharif*).

Ref :- Mh. 50(27)/49(18).

Site :- Agri. Res. Stn., Karjat.

Type :- 'CM'.

Object :—To find out a suitable substitute for method of rabbing.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) As per treatments. (ii) (a) Sandy loam, medium black soil derived from trap rock 6' to 2.5' deep pH=6.5 to 7. (b) Refer soil analysis, Karjat. (iii) 13.6.1950/24 to 28.7.1950. (iv) (a) N.A. (b) broadcast. (c) 40 lb./ac. (d) 10" × 10". (e) 6 seedlings/bunch. (v) Nil. (vi) K. 42 (late). (vii) Unirrigated. (viii) One weeding done in the end of August. Rain water kept circulating. (ix) 124". (x) 22 to 25.11.1950.

## 2. TREATMENTS :

Main-plot treatments :

2 levels of F.Y.M. : F<sub>0</sub>=0 and F<sub>1</sub>=5 C.L./ac. of F.Y.M. before puddling.

Sub-plot treatments :

T<sub>1</sub>=Rabbing every year.T<sub>2</sub>=10 C.L./ac. compost every year.T<sub>3</sub>=30 lb./ac. of N as A/S every year.T<sub>4</sub>=30 lb./ac of N as G.N.C. every year.T<sub>5</sub>=Proper tillage alone every year.T<sub>6</sub>=3300 lb./ac. of formaline every year.T<sub>7</sub>=Rabbing in the first year and 10 C.L./ac. compost in the second year.T<sub>8</sub>=10 C.L./ac. compost in the first year and rabbing in the second year.T<sub>9</sub>=Rabbing in the first year and 30 lb./ac. of N as A/S in the second year.T<sub>10</sub>=30 lb./ac. of N as A/S in the first year and rabbing in the second year.T<sub>11</sub>=Rabbing in the first year and 30 lb./ac. of N as G.N.C. in the second year.T<sub>12</sub>=30 lb./ac. of N as G.N.C. in the first year and rabbing in the second year.

## 3. DESIGN :

(i) Split-plot. (ii) (a) 2 main-plots/block ; 12 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) Main-plot : 60' × 40'. Sub-plot : 20' × 10'. (b) 15'—8" × 6'—8". (v) 1'8" ring all round the net plot. (vi) Yes.

## 4. GENERAL :

(i) Normal. (ii) No disease in seed bed ; sporadic attack of blast was observed by 3rd week of September but it was partly checked by Perenox. Attack of paddy mealy-bugs to some extent. (iii) Grain yield. (iv) a) 1949 to 1954. (b) Yes. (c) N.A. (v) (a) Igatpuri, Ratnagiri and Vadgaon. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 1447 lb./ac.  
 (ii) (a) 900.1 lb./ac.  
 (b) 318.0 lb./ac.  
 (iii) None of the effects and their interaction is significant.  
 (iv) Av. yield of grain in lb./ac.

	F <sub>0</sub>	F <sub>1</sub>	Mean
T <sub>1</sub>	1540	1591	1566
T <sub>2</sub>	1364	1549	1457
T <sub>3</sub>	1285	1266	1276
T <sub>4</sub>	1205	1652	1429
T <sub>5</sub>	1485	1474	1480
T <sub>6</sub>	1354	1757	1556
T <sub>7</sub>	1156	1555	1355
T <sub>8</sub>	1442	1402	1422
T <sub>9</sub>	1390	1254	1322
T <sub>10</sub>	1347	1688	1518
T <sub>11</sub>	1530	1628	1579
T <sub>12</sub>	1347	1475	1411
Mean	1371	1524	1447

S.E. of difference of two.

1. main-plot treatment means = 183.7 lb./ac.
2. sub-plot treatment means = 159.0 lb./ac.
3. sub-plot treatment means at a level of main-plot treatment = 224.8 lb./ac.
4. sub-plot treatment means at a level of main-plot treatment = 283.3 lb./ac.

Crop :- Paddy (*Kharif*).

Ref Mh. 51(31)/50(27)/49(18).

Site :- Agri. Res. Stn., Karjat.

Type :- 'CM'.

Object :- To find out a suitable substitute for the method of rabbing.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) Paddy, (c) As per treatments. (ii) (a) Sandy loam, medium black soil derived from trap rock 6' to 2½' deep. (b) Refer soil analysis, Karjat. (iii) 13.6.1951/25.7.1951. (iv) (a) to (e) N.A. (v) Nil. (vi) K-42 (*late*). (vii) Unirrigated. (viii) Two ploughings prior to puddling, one puddling to field plots and one hand digging, one weeding. (ix) 124°. (x) 20.11.1951 and 21.11.1951.

## 2. TREATMENTS :

Main-plot treatments :

2 levels of F.Y.M. : F<sub>0</sub>=0 and F<sub>1</sub>=5 C.L./ac. of F.Y.M. before puddling.

Sub-plot treatments :

T<sub>1</sub>=Rabbing every year.

T<sub>2</sub>=10 C.L./ac. compost every year.

T<sub>3</sub>=30 lb./ac. of N as A/S every year.

T<sub>4</sub>=30 lb./ac. of N as G.N.C. every year.

T<sub>5</sub>=Proper tillage only.

T<sub>6</sub>=3300 lb./ac. of formaline every year.

T<sub>7</sub>=Rabbing in the first year and 10 C.L./ac. compost in the second year.

T<sub>8</sub>=10 C.L./ac. compost in the first year and rabbing in the second year.

T<sub>9</sub>=Rabbing in the first year and 30 lb./ac. of N as A/S in the second year.

T<sub>10</sub>=30 lb./ac. of N as A/S in the first year and rabbing in the second year.

T<sub>11</sub>=Rabbing in the first year and 30 lb./ac. of N as G.N.C. in the second year.

T<sub>12</sub>=30 lb./ac. of N as G.N.C. in the first year and rabbing in the second year.

## 3. DESIGN :

(i) Split-plot. (ii) (a) 2 main-plots/block ; 12 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) Main-plot 60'×40'. sup-plot : 20'×10'. (b) 15'.8"×6'.8". (v) 1'.8" ring all round the net plot. (vi) Yes.

## 4. GENERAL :

(i) Rabbing showed the best results. The effect of rabbing and formaline are the best. (ii) Nil. (iii) Grain yield. (iv) (a) 1949 to 1954. (b) Yes. (c) N.A. (v) (a) Igatpuri, Ratnagiri and Vadgaon. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 1801 lb./ac.  
 (ii) (a) 788.2 lb./ac.  
 (b) 380.1 lb./ac.  
 (iii) None of the effects and their interaction is significant.  
 (iv) Av. yield of grain in lb./ac.

	F <sub>0</sub>	F <sub>1</sub>	Mean
T <sub>1</sub>	1484	1557	1520
T <sub>2</sub>	1605	2164	1884
T <sub>3</sub>	1679	1864	1771
T <sub>4</sub>	2059	1906	1982
T <sub>5</sub>	1465	1725	1595
T <sub>6</sub>	1986	1882	1934
T <sub>7</sub>	1540	1783	1661
T <sub>8</sub>	2090	1636	1863
T <sub>9</sub>	1435	2183	1809
T <sub>10</sub>	1827	2016	1921
T <sub>11</sub>	1746	1760	1753
T <sub>12</sub>	1802	2043	1922
Mean	1726	1876	1801

## S.E. of difference of two

1. main-plot treatment means =160.8 lb./ac.
2. sub-plot treatment means =190.0 lb./ac.
3. sub-plot treatment means at a level of main-plot treatment =268.7 lb./ac.
4. main-plot treatment means at a level of sub-plot treatment =303.5 lb./ac.

Crop :- Paddy (*Kharif*).

Ref :- Mh. 52(56)/51(31)/50(27)/49(18).

Site :- Agri. Res. Stn., Karjat.

Type :- 'CM'.

Object :- To find out a suitable substitute for rabbing for Paddy crop.

## 1. BASAL CONDITIONS :

(i) (a) No. (b) Paddy. (c) As per treatments. (ii) (a) Sandy loam, medium black derived from trap rock, 6" to 2½' deep. (b) Refer soil analysis, Karjat. (iii) 14.6.1952/25.7.1952. (iv) (a) 3 ploughings. (b) Broadcast. (c) 40 lb./ac. (d) 10"×10". (e) N.A. (v) Nil. (vi) K-42 (late). (vii) Unirrigated. (viii) N.A. (ix) 109°. (x) 13.11.1952, 14.11.1952 and 18.11.1952.

## 2. TREATMENTS :

## Main-plot treatments :

2 levels of F.Y.M. :  $F_0=0$  and  $F_1=5$  C.L./ac. of F.Y.M. before puddling.

## Sub-plot treatments :

$T_1$  = Rabbing every year.

$T_2$  = 10 C.L./ac. of compost every year.

$T_3$  = 30 lb./ac. of N as A/S every year.

$T_4$  = 30 lb./ac. of N as G.N.C. every year.

$T_5$  = Proper tillage only.

$T_6$  = 3300 lb./ac. of formaline every year.

$T_7$  = Rabbing in the first year and 10 C.L./ac. of compost in the second year.

$T_8$  = 10 C.L./ac. of compost in the first year and rabbing in the second year.

$T_9$  = Rabbing in the first year and 30 lb./ac. of N as A/S in the second year.

$T_{10}$  = 30 lb./ac. of N as A/S in the first year and rabbing in the second year.

$T_{11}$  = Rabbing in the first year and 30 lb./ac. of N as G.N.C. in the second year.

$T_{12}$  = 30 lb./ac. of N as G.N.C. in the first year and rabbing in the second year.

## 3. DESIGN :

(i) Split-plot. (ii) (a) 2 main-plots/block ; 12 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) main-plot : 60' x 40'. Sub-plot : 20' x 10', (b) 15'-8" x 6'-8". (v) 1'-8" ring all round the net plot. (vi) Yes.

## 4. GENERAL :

(i) Normal. (ii) Mild attack of rice skipper observed. (iii) Grain and straw yield. (iv) (a) 1949—1954. (b) Yes. (c) N.A. (v) (a) Igatpuri, Ratnagiri and Vadgaon. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 1615 lb./ac.  
 (ii) (a) 554.2 lb./ac.  
 (b) 250.0 lb./ac.  
 (iii) Effect of main-plot treatments alone is significant.  
 (iv) Av. yield of grain in lb./ac.

	$F_0$	$F_1$	Mean
$T_1$	1415	1369	1392
$T_2$	1492	1776	1634
$T_3$	1394	1710	1552
$T_4$	1623	1761	1692
$T_5$	1379	1642	1511
$T_6$	1473	1942	1708
$T_7$	1305	1764	1535
$T_8$	1804	1807	1806
$T_9$	1514	1773	1644
$T_{10}$	1421	1816	1619
$T_{11}$	1669	1853	1761
$T_{12}$	1487	1568	1528
Mean	1498	1732	1615

## S.E. of difference of two

1. main-plot treatment means = 113.1 lb./ac.  
 2. sub-plot treatment means = 125.0 lb./ac.  
 3. sub-plot treatment means at a level of main-plot treatment = 176.7 lb./ac.  
 4. main-plot treatment means at a level of sub-plot treatment = 203.5 lb./ac.

Crop :- Paddy (*Kharif*).

Ref :- Mh. 53(124)/52(56)/51(31)/50(27)/49(18).

Site :- Agri. Res. Stn., Karjat. Type :- 'CM'.

Object :- To find out a suitable substitute for the method of rabbing.

## 1. BASAL CONDITIONS :

(i) (a) No. (b) Paddy. (c) As per treatments. (ii) (a) Sandy loam, medium black derived from trap rock 6" to 2½' deep. (b) Refer soil analysis, Karjat. (iii) 14.6.1953 ; /27.7.1953. (iv) (a) Two ploughings. (b) Broadcasting seed in seed bed. (c) 40 lb./ac. (d) 10" × 10". (e) N.A. (v) Nil. (vi) K-42 (late). (vii) Unirrigated. (viii) N.A. (ix) 133". (x) 22.11.1953.

## 2. TREATMENTS :

## Main-plot treatments :

2 levels of F.Y.M. :  $F_0=0$  and  $F_1=5$  C.L./ac. of F.Y.M. before puddling.

## Sub-plot treatments :

- $T_1$  = Rabbing every year.  
 $T_2$  = 10 C.L./ac. of compost every year.  
 $T_3$  = 30 lb./ac. of N as A/S every year.  
 $T_4$  = 30 lb./ac. of N as G.N.C. every year.  
 $T_5$  = Proper tillage only.  
 $T_6$  = 3300 lb./ac. formaline every year.  
 $T_7$  = Rabbing in the first year and 10 C.L./ac. of compost in the second year.  
 $T_8$  = 10 C.L./ac. of compost in the first year and rabbing in the second year.  
 $T_9$  = Rabbing in the first year and 30 lb./ac. of N as A/S in the second year.  
 $T_{10}$  = 30 lb./ac. of N as A/S in the first year and rabbing in the second year.  
 $T_{11}$  = Rabbing in the first year and 30 lb./ac. of N as G.N.C. in the second year.  
 $T_{12}$  = 30 lb./ac. of N as G.N.C. in the first year and rabbing in the second year.

## 3. DESIGN :

(i) Split-plot. (ii) (a) 2 main-plots/block, 12 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) Main-plot : 60' × 40', sub-plot : 20' × 10'. (b) 16'-8" × 6'-8". (v) 1'.8" ring round the net plot. (vi) Yes.

## 4. GENERAL :

(i) Normal. (ii) Slight crab attack observed in some places. Stemborer attack in mid.-October. (iii) Grain yield, straw yield and no. of tillers. (iv) (a) 1949—1954. (b) Yes. (c) N.A. (v) (a) Igatpuri, Ratnagiri, and Vadgaon. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 1360 lb./ac.  
(ii) (a) 300.5 lb./ac.  
(b) 325.2 lb./ac.  
(iii) Only the sub-plot treatments differ significantly.  
(iv) Av. yield of grain in lb./ac.

	$F_0$	$F_1$	Mean
$T_1$	1509	1426	1468
$T_2$	1212	1248	1230
$T_3$	1356	1457	1406
$T_4$	1040	1089	1064
$T_5$	1178	1423	1300
$T_6$	1662	1857	1759
$T_7$	1163	1383	1273
$T_8$	1255	1282	1268
$T_9$	1304	1496	1400
$T_{10}$	1148	1536	1342
$T_{11}$	1389	1420	1404
$T_{12}$	1132	1686	1409
Mean	1279	1442	1360

## S.E. of difference of two

1. main-plot treatment means = 61.3 lb./ac.  
2. sub-plot treatment means = 162.6 lb./ac.  
3. sub-plot treatment means at a level of main-plot treatment = 230.0 lb./ac.  
4. main-plot treatment means at a level of sub-plot treatment = 228.6 lb./ac.

Crop :- Paddy (*Kharif*).

Ref :- Mh, 52(31).

Site :- Agri. Res. Stn., Karjat

Type :- 'CM'.

Object :- To find the best combination of spacing and manurial dose for Paddy.

## 1. BASAL CONDITIONS :

(i) (a) No. (b) Paddy. (c) N.A. (ii) (a) Sandy loam, medium black soil derived from trap rock. (b) Refer soil analysis, Karjat. (iii) 10.6.1952/9.7.1952, 10.7.1952 and 11.7.1952. (iv) (a) and (b) N.A. (c) 40 lb./ac. (d) As per treatments. (e) N.A. (v) Nil. (vi) K-42. (vii) Unirrigated. (viii) N.A. (ix) (x) 2.11.1952 and 8.11.1952.

## 2. TREATMENTS :

All combinations of (1), (2), (3) and (4)

(1) 3 levels of N :  $N_1=96$ ,  $N_2=128$ , and  $N_3=160$  lb./ac.(2) 2 levels of  $P_2O_5$  :  $P_0=0$ ,  $P_1=30$  lb./ac.(3) 2 levels of F.Y.M. :  $F_1=5$  and  $F_2=10$  C.L./ac. of F.Y.M.(4) 2 spacings :  $S_1=6'' \times 6''$  and  $S_2=8'' \times 8''$ .N as A/S and  $P_2O_5$  as Super.

## 3. DESIGN :

(i)  $3 \times 2^3$  Fact.in R.B.D. (ii) (a) 24. (b) N.A. (iii) 3. (iv) (a)  $28' \times 10'$ . (b)  $24' \times 6'$ . (v) 2' ring round the net plot. (vi) Yes.

## 4. GENERAL :

(i) Normal. (ii) Attack of rice skippers and insects. (iii) Grain yield. (iv) (a) 1952-continued. (b) Yes. (c) N.A. (v) (a) Chiplun, Igatpuri, Kopergaon, Kosbad Phondaghat, Ratnagiri and Vadgaon. (vi) and (vii) Nil.

## 5. RESULTS

(i) 1626 lb./ac.

(ii) 493.2 lb./ac.

(iii) Main effects of N and S are highly significant others are not significant.

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

	$N_1$	$N_2$	$N_3$	$F_1$	$F_2$	$S_1$	$S_2$	Mean
$P_0$	2305	1624	1219	1629	1804	1529	1904	1716
$P_1$	1849	1586	1177	1655	1420	1334	1742	1537
Mean	2077	1605	1198	1642	1612	1432	1823	1626
$S_1$	1767	1507	1021	1519	1345			
$S_2$	2388	1704	1376	1766	1880			
$F_1$	2073	1612	1242					
$F_2$	2082	1599	1155					

S.E. of marginal mean of N

=100.6 lb./ac.

S.E. of marginal mean of F, P or S

= 82.2 lb./ac.

S.E. of body of  $N \times P$ ,  $N \times F$  or  $N \times S$  table

=142.4 lb./ac.

S.E. of body of  $P \times F$ ,  $P \times S$  or  $F \times S$  table

=116.2 lb./ac.

Crop :- Paddy (*Kharif*).

Ref :- Mh. 53(120)/52(31).

Site :- Agri. Res. Stn., Karjat.

Type :- 'CM'.

Object :—To find out the best combination of spacing and manurial dose for Paddy.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) As per treatments. (ii) (a) Sandy loam medium black soil derived from trap rock 6" to 2½' deep; pH 6.5 to 7. (b) Refer soil analysis, Karjat. (iii) 14.6.1953/17.3.1953. (iv) (a) 2 ploughings. (b) N.A. (c) 40 lb./ac. (d) As per treatments. (e) N.A. (v) Nil. (vi) K-42 (late). (vii) Unirrigated. (viii) One weeding. (ix) 133°. (x) 12.11.1953.

## 2. TREATMENTS

All combinations of (1), (2), (3) and (4)

(1) 3 levels of N :  $N_1=96$ ,  $N_2=128$  and  $N_3=160$  lb./ac.(2) 2 levels of  $P_2O_5$  :  $P_0=0$  and  $P_1=2$  lb./ac.(3) 2 levels of F.Y.M. :  $F_1=5$  and  $F_2=10$  C.L./ac.(iv) 2 spacing :  $S_1=6" \times 6"$  and  $S_2=8" \times 8"$ .

$P_2O_5$  as Sup-r of N and A/S and G.N.C. mixed in 1:1 ratio. ½ dose of N and full dose of P applied at puddling and the remaining ½ dose of N applied 6 weeks after sowing.

## 3. DESIGN :

(i)  $3 \times 2^3$  Fact. in R.B.D. (ii) (a) 24. (b) N.A. (iii) 3. (iv) (a)  $28' \times 10'$ . (b)  $24' \times 6'$ . (v) 2' at either end and 4 lines each side for  $6" \times 6"$  spacing and 3 lines each side for  $8" \times 8"$  spacing. (vi) Yes.

## 4. GENERAL :

(i) Normal. In plots treated with N there is vegetative growth. Lodging and low yield observed. (ii) Attack of army-worms. (iii) Grain yield (iv) (a) 1952—1954. (b) Yes. (c) N.A. (v) (a) Chiplun, Igatpuri, Kopergaon, Kosbad, Phondaghat, Ratnagiri and Vadgaon. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 913 lb./ac.

(ii) 366.6 lb./ac.

(iii) Main effect of N alone is significant while other effects and interactions are not significant.

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

	$N_1$	$N_2$	$N_3$	$F_1$	$F_2$	$S_1$	$S_2$	Mean
$P_0$	1064	877	856	995	869	916	949	932
$P_1$	1094	907	685	908	883	759	1031	895
Mean	1079	892	770	952	876	837	991	913
$S_1$	972	811	729	785	889			
$S_2$	1186	973	811	1117	863			
$F_1$	1162	839	853					
$F_2$	996	945	688					

S.E. of marginal mean of N

= 74.9 lb./ac.

S.E. of marginal mean of P, F or S

= 61.6 lb./ac.

S.E. of body of  $N \times P$ ,  $N \times F$  or  $N \times S$  table

= 105.8 lb./ac.

S.E. of body of  $P \times F$ ,  $P \times S$  or  $F \times S$  table

= 86.4 lb./ac.



Crop :- Paddy (*Kharif*).  
Site :- Agri. Res. Stn., Karjat.

Ref :- Mh. 53(139).  
Type :- 'CM'.

Object:—To study the Japanese method of Paddy cultivation in relation to cultivation according to the departmentally recommended method.

### 1. BASAL CONDITIONS :

(i) (a) N.A. (b) Paddy K-42. (c) N.A. (ii) (a) Sandy loam, medium black, derived from trap rock. (b) Refer soil analysis, Karjat. (iii) 16.6.1953 and 22.6.1953/28,29 and 30.7.1953. (iv) (a) 2 to 3 ploughings. (b) As per treatments. (c) N.A. (d) As per treatments. (e) N.A. (v) Nil. (vi) K-42. (vii) Unirrigated. (viii) As per treatments. (ix) 133". (x) Repl. I—13.11.1953 ; 14.11.1953 and II—15.11.1953 ; 16.11.1953.

### 2. TREATMENTS :

All combinations of (1) and (2)

#### (1) Departmental method

A. Seed bed  
 $a_0$  = Flat.

B. Manuring of seed bed  
 $b_0$  = 1 C.L. of F.Y.M. + 1 lb./guntha of A/S.

C. Manuring of field  
 $c_0$  = 5 C.L. of F.Y.M. + green manuring + 64 lb./ac. of N as A/S + 32 lb./guntha of  $P_2O_5$  as Super.

D. Spacing  
 $d_0$  = 10" × 10".

E. No. of seedlings/bunch  
 $e_0$  = 8.

F. No. of intercultures  
 $f_0$  = 1 weeding ; no interculturing.

#### (2) Japanese method

$a_1$  = Raised.

$b_1$  = 1 C.L. of F.Y.M. + 16 lb. of A/S + 16 lb./guntha of Super + 1 layer of ash.

$c_1$  = 1 C.L. of F.Y.M. + 16 lb. of A/S + 16 lb./guntha of Super + 1 layer of ash.

$d_1$  = 9" × 9".

$e_1$  = 4.

$f_1$  = One weeding ; 3 interculturings.

### 3. DESIGN :

(i) 2<sup>s</sup> confounded Fact. (ii) (a) 8. (b) N.A. (iii) 2. (iv) (a) 10'.6" × 25'.6" and 10'.10" × 25'.10" for 9" and 10" spacings respectively. (b) 7'.6" × 22'.6". (v) 1.5' ring all round the net plot. (vi) Yes.

### 4. GENERAL :

(i) Satisfactory. (ii) Mild attack of swarming caterpillars. (iii) Grain yield. (iv) (e) 1953 - N.A. (b) No. (c) N.A. (v) (a) Igatpuri, Khopoli and Kopergaon. (b) N.A. (vi) and (vii) Nil.

### 5. RESULTS : See Page (178)

Crop :- Paddy (*Kharif*).  
Site :- Agri. Res. Stn., Khopoli.

Ref :- Mh. 53(359).  
Type :- 'CM'.

Object :—To assess the relative merits of Japanese method and departmental method of Paddy cultivation.

### 1. BASAL CONDITIONS :

(i) (a) N.A. (b) Nil. (c) Nil. (ii) (a) Medium black to light soil. (b) Refer soil analysis, Khopoli. (iii) 23.6.1953/1 and 2.8.1953. (iv) (a) N.A. (b) As per treatments. (c) 20 lb./ac. (d) and (e) As per treatments. (v) Nil. (vi) K-42. (vii) Unirrigated. (viii) As per treatments. (ix) 124'.04". (x) 12.11.1953.

5 RESULTS : Ref :-Mh. 53 (139),

(i) 2148 lb./ac.

(ii) 558.08 lb./ac.

(iii) Main effects of A, C and E are significant. All other main effects and interactions are not significant.

(iv) Means and differential response in lb./ac.

Factor	Mean response	a <sub>0</sub>	A a <sub>1</sub>	b <sub>0</sub>	B b <sub>1</sub>	c <sub>0</sub>	C c <sub>1</sub>	d <sub>0</sub>	D d <sub>1</sub>	e <sub>0</sub>	E e <sub>1</sub>	f <sub>0</sub>	F f <sub>1</sub>
A	-314	—	—	-496	-132	-331	-297	-401	-227	-388	-240	-311	-317
B	148	-34	330	—	—	200	96	251	—	11	285	186	110
C	-464	-481	-447	-412	-516	—	—	-537	-391	-292	-636	-505	-423
D	-179	-266	-92	-76	-282	-252	-106	—	—	-302	-56	-133	-225
E	244	170	318	107	381	416	72	121	367	—	—	385	103
F	154	157	151	192	116	113	195	200	108	295	13	—	—

S.E. of mean response = 98.67 lb./ac.

S.E. of differential response = 139.52 lb./ac.

5. RESULTS : Ref :- Mh. 53(359).

(i) 2992 lb./ac.

(ii) 365.06 lb./ac.

(iii) Main effects of B and D and interactions AF, BD, CD and EF are highly significant. Others are not significant.

(iv) Mean and differential response in lb./ac.

Factor	Mean response	a <sub>0</sub>	A a <sub>1</sub>	b <sub>0</sub>	B b <sub>1</sub>	c <sub>0</sub>	C c <sub>1</sub>	d <sub>0</sub>	D d <sub>1</sub>	e <sub>0</sub>	E e <sub>1</sub>	f <sub>0</sub>	F f <sub>1</sub>
A	-155	—	—	-217	-93	-124	-186	-279	-31	-210	Nil	-372	62
B	310	248	372	—	—	465	155	31	589	248	372	372	248
C	-62	-31	-93	93	-217	—	—	341	-465	-62	-62	62	-186
D	372	248	496	93	651	775	-31	—	—	434	310	248	496
E	-93	-248	62	-155	-31	-93	-93	-31	-155	—	—	-372	186
F	-155	-372	62	-93	-217	-31	-279	-279	-31	-434	124	—	—

S.E. of mean response = 91.26 lb./ac.

S.E. of differential response = 129.04 lb./ac.

## 2. TREATMENTS :

All combinations of (1) and (

## 1) Departmental method

 $a_0$ =Flat. $b_0$ =1 C.L. of F.Y.M.+8 lb./guntha of A/S. $c_0$ =5 C.L. of F.Y.M.+green manure+64 lb./ac. of N as A/S+32 lb./ac. of  $P_2O_5$  as Super $d_0$ =10"×10". $e_0$ =8. $f_0$ =1 hand weeding and no interculturing.

Green manure and 1st dose of fertilisers applied on 31.7.1953. 2nd dose of manures on 4.9.1953. 3rd dose of manures on 30.9.1953.

## (2) Japanese method

## A. Seed bed

 $a_1$ =Raised.

## B. Manuring of seed bed

 $b_1$ =1 C.L. of F.Y.M.+16 lb. of A/S+16 lb./guntha of  $P_2O_5$  as Super+1 layer of ash.

## C. Manuring of field

 $c_1$ =5 C.L./ac. of F.Y.M.+green manure+100 lb./ac. of N as A/S+80 lb./ac. of  $P_2O_5$  as Super.

## D. Spacing

 $d_1$ =9"×9".

## E. No. of seedling/bunch

 $e_1$ =4.

## F. No. of interculturing

 $f_1$ =1 hand weeding and 3 interculturings.

## 3. DESIGN :

(i) 2<sup>6</sup> confounded. (ii) (a) 8. (b) N.A. (iii) 1. (iv) (a) 22.5'×7.5'. (b) 19.5'×4.5' and 19.2'×4.2' for 9" and 10" spacings respectively. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) Little attack of bacteria blight. (iii) Grain and straw yield. (iv) (a) 1953—N.A. (b) N.A. (c) Nil. (v) (a) Igatpuri, Kopargaon, Karjat. (b) N.A. (vi) Nil. (vii) Effects confounded are ABC ADF, CEF, ABEF, BCDF, ACDE and BDEF.

## 5. RESULTS : See page (178)

Crop :- Paddy (Kharif).

Ref :- Mh. 53(344).

Site :- Agri. Res. Stn., Kolhapur.

Type :- 'CM'.

Object :—To study the combination of manurial applications with different cultural practices on the yield of Paddy.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) Groundnut. (c) N.A. (ii) (a) Deep black soil. (b) Refer soil analysis, Kolhapur. (iii) 27.6.1953. (iv) (a) N.A. (b) As per treatments. (c) 60 lb./ac. in drilled. (d) As per treatments. (e) 6 seed/dibble. (v) 5 C.L./ac. of F.Y.M. (vi) *Waksal* 207/(mid-late). (vii) Irrigated. (viii) 3 weeding, interculturings as per treatment. (ix) 43.03". (x) 30.10.1953 and 31.10.1953.

## 2. TREATMENTS :

All combinations of (1) and (2).

1. 2 levels of manures :  $M_1$ =64 lb./ac. of N as A/S+32 lb./ac. of  $P_2O_5$  as Super.  $M_2$ =100 lb./ac. of N as A/S+80 lb./ac. of  $P_2O_5$  as Super.

2. 8 cultural operations.

 $C_1$ =Drilling 15" spacing between rows with 3 interculturings. $C_2$ =Drilling 15" spacing between rows with 5 interculturings. $C_3$ =Drillings 12" spacing between rows with 3 interculturings. $C_4$ =Drilling 12" spacing between rows with 5 interculturings. $C_5$ =Dibbling 9"×9" spacing between rows with 3 interculturings one way. $C_6$ =Dibbling 9"×9" spacing between rows with 3 interculturings two way. $C_7$ =Dibbling 9"×9" spacing between rows with 5 interculturings one way. $C_8$ =Dibbling 9"×9" spacing between rows with 5 interculturings two way.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 16. (b) N.A. (iii) 4. (iv) (a) 33'×15'. (b) For 9" spacing 30'×9'; for 12" spacing 30'×9'. and for 15" spacing 27'×10'. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) Normal. (ii) Nil. (iii) Grain yield. (iv) (a) 1953 to 1954. (b) Nil. (c) Nil. (v) (a) Kopergaon, Padegaon. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 2777 lb./ac.  
 (ii) 444.9 lb./ac.  
 (iii) (a) Main effect of M alone is highly significant.  
 (iv) Av. yield of grain in lb./ac.

	M <sub>1</sub>	M <sub>2</sub>	Mean
C <sub>1</sub>	2803	2728	2765
C <sub>2</sub>	2438	3260	2849
C <sub>3</sub>	2813	3023	2918
C <sub>4</sub>	2753	3290	3021
C <sub>5</sub>	1954	3010	2482
C <sub>6</sub>	2224	2881	2552
C <sub>7</sub>	2365	3368	2866
C <sub>8</sub>	2599	2929	2764
Mean	2494	3061	2777

S.E. of marginal mean of M = 78.7 lb./ac.  
 S.E. of marginal mean of cultural operations = 157.3 lb./ac.  
 S.E. of body of table = 222.5 lb./ac.

Crop :- Paddy (*Kharif*).

Ref :- Mh. 53(39).

Site :- Agri. Res. Stn., Kopergaon.

Type :- 'CM'.

Object :- To study the combinations of manurial applications with different cultural practices on the yield of Paddy.

## 1. BASAL CONDITIONS :

- (i) (a) N.A. (b) Gram. (c) Nil. (ii) (a) "A" type. (b) Refer soil analysis, Kopergaon. (iii) 15.7.1953.  
 (iv) (a) 1 ploughing. (b) As per treatments. (c) In drilled plot seed rate 60 lb./ac. (d) As per treatments.  
 (e) 6-seed/dibble (v) 5 C.L. of F.Y.M. before sowing. (vi) *Krishnasal* (late variety). (vii) Irrigated.  
 (viii) Weeding 4 times, 2 harrowings and 1 bund making. (ix) 17.22". (x) 22.11.1953 and 23.11.1953.

## 2. TREATMENTS :

All combinations of (1) and (2).

- 2 manures : M<sub>1</sub> = 64 lb./ac. of N as A/S + 32 lb./ac. of P<sub>2</sub>O<sub>5</sub> as Super.  
 M<sub>2</sub> = 100 lb./ac. of N as A/S + 80 lb./ac. of P<sub>2</sub>O<sub>5</sub> as Super.
- 8 cultural practices :
  - C<sub>1</sub> = Drilling 15" spacing 3 interculturings
  - C<sub>2</sub> = Drilling 12" spacing 3 interculturings
  - C<sub>3</sub> = Drilling 15" spacing 5 interculturings
  - C<sub>4</sub> = Drilling 12" spacing 5 interculturings
  - C<sub>5</sub> = Dibbling 9"×9" spacing 3 interculturings (one way).
  - C<sub>6</sub> = Dibbling 9"×9" spacing 3 interculturings (two way).
  - C<sub>7</sub> = Dibbling 9"×9" spacing 5 interculturings (one way).
  - C<sub>8</sub> = Dibbling 9"×9" spacing 5 interculturings (two way).

## 3. DESIGN :

(i)  $2 \times 8$  Factorial in R.B.D. (ii) (a) 16. (b) N.A. (iii) 4. (iv) (a)  $15' \times 33'$ . (b)  $9' \times 30'$ ,  $9' \times 30'$ ,  $10' \times 27'$ . (v)  $3'$  and  $2\frac{1}{2}'$  around net plot. (vi) Yes.

## 4. GENERAL :

(i) The germination in all plots was fair. No gaps were observed. The dibbled plots were more uniform compared with drilled plots. The crop was healthy with vigorous growth. The plots with higher doses of N were dark green in colour. (ii) Slight attack of blast disease. No control measures were taken. (iii) Germination date, flowering date, ploughing, height and tillers. (iv) (a) 1953 to 1954. (b) No. (c) N.A. (v) (a) N.A. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS

- (i) 2950 lb./ac.  
 (ii) 487.2 lb./ac.  
 (iii) Only interaction MC is significant.  
 (iv) Av. yield of grain in lb./ac.

	$M_1$	$M_2$	Mean
$C_1$	3146	2404	2775
$C_2$	2984	2561	2772
$C_3$	2531	2884	2707
$C_4$	2894	2833	2863
$C_5$	2843	3489	3166
$C_6$	3196	3398	3297
$C_7$	2944	2944	2944
$C_8$	2954	3196	3075
Mean	2936	2964	2950

S.E. of marginal mean of manures = 86.1 lb./ac.  
 S.E. of marginal mean of cultural operations = 172.3 lb./ac.  
 S.E. of body of table = 243.6 lb./ac.

Crop :- Paddy (*Kharif*).

Ref :- Mh. 52(76).

Site :- Agri. Res. Stn., Kopergaon.

Type :- 'CM'.

Object :- To study the manurial requirements in combination with different spacings for Paddy.

## 1. BASAL CONDITIONS :

(i) (a) Gram—Paddy. (b) Gram in *Rabi*. (c) Nil. (ii) (a) Medium black. (b) Refer soil analysis, Kopergaon. (iii) 30th June and 1st July 1952. (iv) (a) 1 ploughing. (b) Drilled. (c) 40 lb./ac. (d) As per treatments. (e) N.A. (v) N.A. (vi) *Krishnasal* (mid-late). (vii) Irrigated. (viii) 3 weedings, 1 harrowing. (ix) 11.87". (x) 17 and 18.11.1952.

## 2. TREATMENTS :

All combinations of (1), (2), (3) and (4)

(1) 3 levels of N :  $N_1=96$ ,  $N_2=128$  and  $N_3=160$  lb./ac.

(2) 2 levels of F.Y.M. :  $F_1=5$  and  $F_2=10$  C.L./ac.

(3) 2 spacings :  $S_1=9''$  and  $S_2=12''$  between rows.

(4) 2 levels of  $P_2O_5$  :  $P_0=0$  and  $P_1=32$  lb./ac.

N applied as A/S. and G.N.C. in the ratio 1 : 1,  $P_2O_5$  as super. G.N.C. and Super drilled on 28.6.1952. A/S broadcast on 6.10.1952. F.Y.M. spread in June.

**3. DESIGN :**

(i)  $3 \times 2^3$  Fact. in R.B.D. (ii) (a) 24. (b) N.A. (iii) 3. (iv) (a)  $42' \times 18'$ . (b)  $36' \times 12'$ . (v) 3' around the net plot. (vi) Yes.

**4. GENERAL :**

(i) Satisfactory. (ii) Slight attack of blast disease. (iii) Grain yield. (iv) (a) 1952—1955. (b) Yes. (c) N.A. (v) (a) Chiplun, Igatpuri, Karjat, Kosbad, Nawapur, Phondaghat, Ratangiri and Vadgaon. (b) N.A. (vi) and (vii) Nil.

**5. RESULTS :**

- (i) 1887 lb./ac.  
 (ii) 478.8 lb./ac.  
 (iii) Main effect of F.Y.M. is significant. Other main effects and interactions are not significant.  
 (iv) Av. yield of grain in lb./ac.

	N <sub>1</sub>	N <sub>2</sub>	N <sub>3</sub>	F <sub>1</sub>	F <sub>2</sub>	S <sub>1</sub>	S <sub>2</sub>	Mean
P <sub>0</sub>	1922	1984	1917	1871	2011	1982	1901	1941
P <sub>1</sub>	1699	1816	1986	1662	2006	1881	1787	1834
Mean	1810	1900	1951	1766	2008	1931	1844	1887
S <sub>1</sub>	1722	1973	2100	1788	2075			
S <sub>2</sub>	1899	1828	1804	1745	1942			
F <sub>1</sub>	1522	1883	1894					
F <sub>2</sub>	2099	1917	2009					

S.E. of marginal mean of N = 97.8 lb./ac.  
 S.E. of marginal mean of P or F or S = 79.8 lb./ac.  
 S.E. of body of table N×P, N×F or N×S = 138.2 lb./ac.  
 S.E. of body of table P×F, or P×S or F×S = 112.8 lb./ac.

Crop :- Paddy (*Kharif*).

Ref :- Mh. 53(38).

Site :- Agri. Res. Stn., Kopergaon.

Type :- 'CM'.

Object :- To study the manurial requirements in combinations with different spacings for Paddy.

**1. BASAL CONDITIONS :**

- (i) (a) N.A. (b) Gram. (c) Nil. (ii) (a) 'A' type. (b) Refer soil analysis, Kopergaon. (iii) 9.7.1953.  
 (iv) (a) 1 ploughing and 1 planking. (b) Drilled. (c) 40 lb./ac. (d) As per treatments. (e) N.A. (v) Nil.  
 (vi) *Krishnasal* (late variety). (vii) Irrigated. (viii) Hoings 4 times and weedings 3 times. (x) 17.22".  
 (x) 20.11.1953.

**2. TREATMENTS :**

All combinations of (1), (2), (3) and (4)

(1) 3 levels of N : N<sub>1</sub>=96, N<sub>2</sub>=128 and N<sub>3</sub>=160 lb./ac.

(2) 2 levels of P<sub>2</sub>O<sub>5</sub> : P<sub>0</sub>=0 and P<sub>1</sub>=32 lb./ac.

(3) 2 levels of F.Y.M. : F<sub>1</sub>=5 and F<sub>2</sub>=10 C.L./ac.

(4) 2 spacings : S<sub>1</sub>=9" and S<sub>2</sub>=12" between rows.

N as A/S, P<sub>2</sub>O<sub>5</sub> as Super. F.Y.M. applied before sowing. A/S and Super applied on 8.7.1953

**3. DESIGN :**

- (i)  $3 \times 2^3$  Fact. in R.B.D. (ii) (a) 24. (b) N.A. (iii) 3. (iv) (a)  $42' \times 18'$ . (b)  $36' \times 12'$ . (v) 3' all round the net plot. (vi) Yes.

## 4. GENERAL :

(i) Satisfactory. (ii) Slight attack of blast disease ; no. control measures were taken. (iii) Germination date, flowering, height, tillering and grain yield. (iv) (a) 1952—1955. (b) Yes. (c) N.A. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 2601 lb./ac.  
 (ii) 387.1 lb./ac.  
 (iii) None of the effects and interaction is significant.  
 (iv) Av. yield of grain in lb./ac.

	N <sub>1</sub>	N <sub>2</sub>	N <sub>3</sub>	F <sub>1</sub>	F <sub>2</sub>	S <sub>1</sub>	S <sub>2</sub>	Mean
P <sub>0</sub>	2313	2706	2740	2584	2588	2587	2586	2586
P <sub>1</sub>	2552	2687	2609	2693	2539	2610	2621	2616
Mean	2433	2696	2674	2639	2563	2598	2604	2601
S <sub>1</sub>	2405	2683	2708	2563	2634			
S <sub>2</sub>	2460	2710	2641	2715	2493			
F <sub>1</sub>	2481	2722	2713					
F <sub>2</sub>	2384	2670	2636					

S.E. of marginal mean of N = 79.2 lb./ac.  
 S.E. of marginal mean of P, F or S = 64.5 lb./ac.  
 S.E. of body of table N×P, N×F or N×S = 111.9 lb./ac.  
 S.E. of body of table P×F, P×S or F×S = 91.5 lb./ac.

Crop :- Paddy (*Kharif*).

Ref :- Mh. 53(342).

Site :- Agri. Res. Stn., Kosbad.

Type :- 'CM'.

Object :—To study the manurial requirements in combination with different spacings for Paddy.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) Paddy. (c) 8 C.L./ac. of F.Y.M. (ii) (a) Sandy loam to cla/. (b) Refer soil analysis, Kosbad. (iii) 5.7.1953/10 8.1953. (iv) (a) N.A. (b) Transplanting. (c) —. (d) As per treatments. (e) 8 seedlings/bunch. (v) Nil. (vi) K-68-1. (vii) Unirrigated. (viii) 1 Hoeing and weeding. (ix) 93". (x) 21.10.1953.

## 2. TREATMENTS :

All combinations of (1), (2), (3) and (4)

(1) 3 levels of N : N<sub>0</sub>=0, N<sub>1</sub>=32 and N<sub>2</sub>=64 lb./ac.

(2) 2 levels of P<sub>2</sub>O<sub>5</sub> : P<sub>0</sub>=0 and P<sub>1</sub>=32 lb./ac.

(3) 2 levels of F.Y.M. : F<sub>0</sub>=0 and F<sub>1</sub>=5 C.L./ac.

(4) 2 spacings : S<sub>1</sub>=6"×6" and S<sub>2</sub>=4"×4".

N as A/S and G.N.C. in the ratio 1:1 and P<sub>2</sub>O<sub>5</sub> as Super. N applied in two doses on 10.8.1953 and 6.9.1953, P<sub>2</sub>O<sub>5</sub> on 10.8.1953 and F.Y.M on 1.7.1953.

## 3. DESIGN :

(i) 3×2<sup>3</sup> Fact. in R.B.D. (ii) (a) 24. (b) N.A. (iii) 2. (iv) (a) 30'×10'. (b) 24'×6'. (v) 3'×2' around the net plot. (vi) Yes.

## 4. GENERAL :

(i) Growth was checked due to attack of bugs. (ii) Bugs attack ; Gammoxene was sprayed. (iii) Grain and fodder yield. (iv) (a) 1953—54. (b) N.A. (c) Nil. (v) (a) Igatpuri, Ratnagiri, Vadgaon, Kopergaon and Karjat. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS:

- (i) 1925 lb./ac.  
 (ii) 481.2 lb./ac.  
 (iii) Main effect of P and S and interaction  $N \times P$  are highly significant while other main effects and interactions are not significant.  
 (iv) Av. yield of grain in lb./ae.

	N <sub>0</sub>	N <sub>1</sub>	N <sub>2</sub>	F <sub>0</sub>	F <sub>1</sub>	S <sub>1</sub>	S <sub>2</sub>	Mean
P <sub>0</sub>	1763	1602	1515	1687	1566	1364	1889	1627
P <sub>1</sub>	2195	2436	2038	2055	2391	2104	2343	2223
Mean	1979	2019	1776	1871	1978	1734	2116	1925
S <sub>1</sub>	1782	1585	1835	1666	2076			
S <sub>2</sub>	2176	2453	1719	1802	2155			
F <sub>0</sub>	2015	1930	1670					
F <sub>1</sub>	1945	2108	1883					

S.E. of marginal mean of N = 120.3 lb./ac.

S.E. of marginal mean of P, F or S = 98.2 lb./ac.

S.E. of body of  $N \times P$ ,  $N \times F$  or  $N \times S$  table = 170.2 lb./ac.

S.E. of body of  $P \times F$ ,  $P \times S$  or  $S \times F$  table = 138.9 lb./ac.

Crop :- Paddy (Kharif).

Site :- Agri. Res. Stn., Kosbad.

Ref :- Mh. 53(341).

Type :- 'CM'.

Object :- To assess the relative merits of Japanese method and departmental method of Paddy cultivation.

## 1. BASAL CONDITIONS:

(i) (a) N.A. (b) Paddy. (c) 8 C.L./ac. of F.Y.M. (ii) (a) Sandy loam to clay. (b) Refer soil analysis, Kosbad. (iii) 23 to 29.6.1959/31.7.1953 to 6.8.1953. (iv) (a) N.A. (b) Transplanting. (c) —. (d) As per treatments. (e) —. (v) Nil. (vi) Kolpi-70 (early). (vii) Irrigated. (viii) As per treatments. (ix) 93<sup>rd</sup> (x) 9.10.1953 to 13.10.1953.

## 2. TREATMENTS:

All combinations of 6 factors each at two levels.

A. Seed bed: A<sub>0</sub> = Flat and A<sub>1</sub> = Raised.

B. Manuring of seed bed: B<sub>0</sub> = Departmental method: 1 C.L./guntha of F.Y.M. + 8 lb./guntha of A/S. B<sub>1</sub> = Japanese method: 1 C.L./guntha of F.Y.M. + 16 lb./guntha of A/S + layer of ash.

C. Manuring of field: C<sub>0</sub> = Departmental method: 5 C.L./ac. of F.Y.M. + Green manuring + 64 lb./ac. of N as A/S + 32 lb./ac. of P<sub>2</sub>O<sub>5</sub> as Super. C<sub>1</sub> = Japanese method: 5 C.L./ac. of F.Y.M. + Green manuring + 100 lb./ac. of N as A/S + 80 lb./ac. of P<sub>2</sub>O<sub>5</sub> as Super.

D. Spacing: D<sub>0</sub> = 10" × 10" and D<sub>1</sub> = 9" × 9",

E. Number of seedlings/bunch: E<sub>0</sub> = 8 and E<sub>1</sub> = 4.

F. No. of interculturings: F<sub>0</sub> = 1 hand weeding and no interculturings and F<sub>1</sub> = 1 hand weeding and 3 interculturings.



## 3. DESIGN :

(i) 2<sup>o</sup> confounded. (ii) (a) 8 blocks/replication ; 8 plots/block. (b) N.A. (iii) 2. (iv) (a) 9"×9" spacing 33'×10'-6" ; 20"×10" spacing 33'-4"×10'-10". (b) 30'×7'-6". (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) Attack of bugs checked the growth of crop to a great extent. (ii) Attack of bugs. Gammaxene was sprayed. (iii) Grain and straw yield. (iv) (a) 1953-1954. (b) N.A. (c) Nil. (v) (a) Igatpuri, Karjat and Khopoli. (b) Nil. (vi) and (vii) Nil.

## 5. RESULTS : (See page 186)

Crop :- Paddy (*Kharif*).

Ref :- Mh. 52(378).

Site :- Agri. Res. Stn., Kosbad.

Type :- 'CM':

Object :—To compare Japanese method of Paddy cultivation with the local method.

## 1. BASAL CONDITIONS :

(i) (a) No. (b) Paddy. (c) 5 C.L./ac. of F.Y.M.+320 lb./ac. of manure mixture+100 lb./ac. of super. (ii) (a) Medium black. (b) Refer soil analysis, Kosbad. (iii) 10.19.2/2.7.1952. (iv) (a) 2 ploughings, 2 puddlings. (b) to (e) As per treatments. (v) 5 C.L./ac. of F.Y.M. (vi) Zenia-31. (vii) Unirrigated. (viii) As per treatments. (ix) N.A. (x) 28.10.1952.

## 2. TREATMENTS :

1. Local method.
2. Japanese method.
3. Local method+Seed beds highly manured as Japanese method.
4. Local method+interculturings as per Japanese method.
5. Local method (without manure mixture)+64 lb./ac. of N as G.N.C.+32 lb./ac. of P<sub>2</sub>O<sub>5</sub> as Super. (½ dose at planting+½ at tillering).
6. Local method (without manure mixture)+64 lb./ac. of N as G.N.C.+32 lb./ac. of P<sub>2</sub>O<sub>5</sub> as Super. (½ dose at planting+½ at tillering)+Interculturing as per Japanese method.

Japanese Method : 1 Seed dipped in brine solution and treated with formaline diluted solutions for three hours. A layer of fine silted compost spread over the seed bed. It was sown, broadcast at the rate of 5 to 6 lb. for 1 or 1½ *gunthas* of seed bed area, in long and narrow beds (6" broad and 3" high). Compost manure given at 1 C.L. per *guntha* to seed bed. Fertilizers applied after germination at the following rate per square yard.

0.5 oz. of N as A/S 15 days after germination.

0.4 oz. of P<sub>2</sub>O<sub>5</sub> as Super 15 days after germination.

0.4 oz. K<sub>2</sub>O as Sulphate of potash 15 days after germination. light dressing.

(2) 1 weeding of seedlings.

(3) Transplanting done in straight rows of 9"×9" with 4 seedlings/bunch. The seedlings thrust straight in the puddle.

(4) 3 to 5 interculturings.

(5) Fertilizers given to supply the following quantities of nutrients per ac. of the field

80 lb./ac. of N as A/S.

70 lb./ac. of P<sub>2</sub>O<sub>5</sub> as Super

60 lb./ac. of K<sub>2</sub>O as Sulphate of Potash.

One half of the total dose applied at the time of transplanting, ½ at tillering and ½ at emergence stage.

Local Method : (1) Seedling raised in long and narrow beds. Compost given before sowing at the rate of

5. RESULTS : Ref : Mh. 53 (341)

(i) 954 lb./ac. (ii) 306.9 lb./ac.

(iii) Main effects of A, B, C, D, E and interaction AC are highly significant. Others are not significant.

(iv) Table of mean and differential responses in lb./ac.

Factor	Mean response	Differential Response											
		A		B		C		D		E		F	
		Presence	Absence	Presence	Absence	Presence	Absence	Presence	Absence	Presence	Absence	Presence	Absence
A	634.83	—	—	681.29	588.37	471.12	798.54	643.12	626.54	705.80	563.86	738.53	531.13
B	171.64	218.10	125.18	—	—	242.55	100.73	109.87	233.41	173.58	169.70	119.01	224.27
C	-344.18	-507.89	-180.47	-273.27	-415.09	—	—	-262.22	-426.14	-203.82	-484.54	-337.65	-350.71
D	128.57	136.86	120.28	66.80	190.34	210.55	46.59	—	—	56.76	200.38	174.01	83.13
E	-176.60	-105.63	-247.57	-174.66	-178.54	-36.24	-316.96	-248.41	-104.79	—	—	-153.97	-199.23
F	50.28	153.98	-53.42	-2.35	102.91	56.81	43.75	95.72	4.84	72.91	27.65	—	—

S.E. of mean response =54.25 lb./ac.  
 S.E. of differential response =76.71 lb./ac.

1 C.L./guntha. Seedrate 27 lb. for 5 gunthas of seed bed area. Manure mixture given at 12 to 15 lb./guntha. Seed treated with perenox.

- (2) 1 weeding of seedlings.
- (3) Transplanting ; done 8" x 8" with 8 seedlings.
- (4) 2 hand weedings
- (5) Manure mixture will be given at the time of puddling to supply 20 lb./ac. of N+16 lb./ac. of P<sub>2</sub>O<sub>5</sub>.

### 3. DESIGN

- (i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 3. (iv) (a) 60' x 12'. (b) 58.5' x 10.5'. (v) 9" around the net plot. (vi) Yes.

### 4. GENERAL :

- (i) N.A. (ii) Nil. (iii) Grain yield. (iv) (a) 1952-N.A. (b) This is the first year of the experimet. (c) Nil. (v) (a) Igatpuri. (b) N.A. (vi) and (vii) Nil.

### 5. RESULTS :

- (i) 2612 lb./ac.  
 (ii) 416.3 lb./ac.  
 (iii) Treatment differences are significant.  
 (iv) Av. yield of grain in lb /ac.

Treatment	Av. yield
1.	1791
2.	3511
3.	2281
4.	2518
5.	2654
6.	2920
S.E./mean	= 240.4 lb /ac.

Crop :- Paddy (Kharif).

Site :- Agri. Res. Stn., Padegaon.

Ref. :- Mh. 50(119).

Type :- 'CM'.

Object :- To find out the best time of sowing and optimum dose of manure for Paddy crop.

### 1. BASAL CONDITIONS :

- (i) (a) Nil (b) N.A. (c) N.A. (ii) (a) 'B' type. (b) Refer soil analysis, Padegaon. (iii) As per treatments. (iv) (a) N.A. (b) N.A. (c) 40 lb./ac. (d) Between rows 12". (e) N.A. (v) Nil. (vi) Krishnasal. (vii) Irrigated. (viii) Weeding ; 14.6.1950, 9.7.1950, 23.7.1950, 13.8.1950 and 5.9.1950. (ix) 22.91". (x) 27.10.1950 for 1st and 2nd, 1.11.1950 for 3rd and 4th and 14.11.1950 for 5th dates of sowing.

### 2. TREATMENTS :

Main-plot treatments

5 dates of sowing : D<sub>1</sub>=16.5.1950, D<sub>2</sub>=31.5.1950, D<sub>3</sub>=15.6.1950, D<sub>4</sub>=30.6.1950 and D<sub>5</sub>=15.7.1950.

Sub-plot treatments :

All combinations of (1) and (2)

(1) 3 levels of N : N<sub>0</sub>=0, N<sub>1</sub>=64 and N<sub>2</sub>=128 lb./ac.

(2) 3 levels of P<sub>2</sub>O<sub>5</sub> : P<sub>0</sub>=0, P<sub>1</sub>=32 and P<sub>2</sub>=64 lb./ac.

N as A/S and G.N.C. in 1 : 2 ratio and P<sub>2</sub>O<sub>5</sub> as Super.

### 3. DESIGN:

- (i) Split-plot. (ii) (a) 5 main-plots/block; 9 sut-plot/main-plot. (b) N.A. (iii) 4. (iv) (a) 21' x 20'. (b) 17' x 16'. (v) 2' around the net plot. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Affected by blast of *Rui* and *Papade*. (iii) Grain and straw yield. (iv) (a) 1949—1952. (b) No. (c) N.A. (v) (a) N.A. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 1448 lb./ac.  
 (ii) (a) 570.0 lb./ac.  
 (b) 429.9 lb./ac.  
 (iii) Main effects of N and D are significant. Also the interaction N×D 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	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>
D <sub>1</sub>	1132	1766	2244	1714	1745	1577	1821
D <sub>2</sub>	838	1888	2462	1729	1700	1738	1749
D <sub>3</sub>	899	1981	2138	1673	1506	1844	1668
D <sub>4</sub>	898	1027	1509	1145	1093	1303	1038
D <sub>5</sub>	741	1052	1145	979	904	972	1062
Mean	902	1543	1900	1448	1390	1487	1468
P <sub>0</sub>	850	1571	1746				
P <sub>1</sub>	909	1587	1965				
P <sub>2</sub>	945	1470	1988				

S.E. of difference of two

1. D marginal means = 133.0 lb./ac.
2. N or P marginal means = 77.56 lb./ac.
3. N or P means at a level of D = 175.5 lb./ac.
4. D means at a level of N or P = 196.4 lb./ac.

Crop :- Paddy (*Kharif*).

Site :- Agri. Res. Stn., Padegaon.

Ref :- Mh. 51(161).

Type :- 'CM'.

Object :- To find out the best time of sowing and optimum dose of manure for Paddy crop.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Jowar* in one block and wheat in the other. (c) 20 lb./ac. of N as A/S to *Jowar* and 40 lb./ac. of N as A/S and G.N.C. in 1 : 2 ratio to wheat. (ii) (a) 'B' type. (b) Refer soil analysis, Padegaon. (iii) As per treatments. (iv) (a) N.A. (b) Dibbling. (c) 40 lb./ac. (d) 1' between rows. (e) N.A. (v) Nil. (vi) *Krishnasal*. (vii) Irrigated. (viii) 7 weedings, spraying peronox on 30th August and 30 September. (ix) 14.68". (x) For 1st sowing date ; 27.10.1951, for 2nd sowing date ; 31.10.1951 and for 3rd, 4th and 5th sowing date ; 16.11.1951.

## 2. TREATMENTS:

Main-plot treatments :

5 dates of sowing : D<sub>1</sub>=16.5.1951, D<sub>2</sub>=31.5.1951, D<sub>3</sub>=15.6.1951, D<sub>4</sub>=30.6.1951 and D<sub>5</sub>=15.7.1951.

Sub-plot treatments :

All combinations of (1) and (2)

(1) 3 levels of N : N<sub>0</sub>=0, N<sub>1</sub>=64 and N<sub>2</sub>=128 lb./ac.

(2) 3 levels of P<sub>2</sub>O<sub>5</sub> : P<sub>0</sub>=0, P<sub>1</sub>=32 and P<sub>2</sub>=64 lb./ac.

N as A/S and G.N.C. in 1 : 2 ratio, P<sub>2</sub>O<sub>5</sub> as Super.

## 3. DESIGN :

(i) Split-plot. (ii) (a) 5 main-plots/block ; 9 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 33'×14'.  
(b) 27.22'×10'. (v) 2.89'×2'. (vi) Yes.

## 4. GENERAL :

(i) Normal. (ii) Blast and *papade* attack. (iii) Grain and straw yield. (iv) (a) 1949–1952. (b) No. (c) N.A. (v) (a), (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 1642 lb./ac.  
(ii) (a) 454.2 lb./ac.  
(b) 311.7 lb./ac.  
(iii) Main effect of N is highly significant, interaction N×D 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	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>
D <sub>1</sub>	838	1938	1910	1562	1710	1690	1286
D <sub>2</sub>	896	2041	2418	1785	1732	1762	1861
D <sub>3</sub>	1024	1868	2120	1671	1651	1725	1636
D <sub>4</sub>	1000	1731	2180	1637	1694	1587	1630
D <sub>5</sub>	1130	1593	1940	1554	1592	1480	1586
Mean	978	1834	2114	1642	1676	1649	1600
P <sub>0</sub>	942	1826	2200				
P <sub>1</sub>	1030	1798	2119				
P <sub>2</sub>	960	1879	1961				

## S.E. of difference of two

1. D marginal means = 107.0 lb./ac.
2. N or P marginal means = 56.8 lb./ac.
3. N or P means at a level of D = 127.1 lb./ac.
4. D means at a level of N or P = 149.1 lb./ac.

Crop :- Paddy (*Kharif*).

Site :- Agri. Res. Stn., Padegaon.

Ref :- Mh. 52(191).

Type :- 'CM'.

Object :- To find out the optimum manurial dose and best sowing date for Paddy.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Sweet Potato. (c) Nil. (ii) (a) 'B' type. (b) Refer soil analysis, Padegaon. (iii) As per treatments. (iv) (a) N.A. (b) Hand sowing. (c) 40 lb./ac. (d) Between rows 1'. (e) N.A. (v) Nil. (vi) *Krishnasal*. (vii) Irrigated. (viii) Weeding on 15.6.1952, 1.7.1952, 24.7.1952, 8.8.1952, 28.8.1952 and 3.9.1952. (ix) 11.01". (x) 2.11.1952, 11.11.1952, 14.11.1952 and 22.11.1952.

## 2. TREATMENTS :

## Main-plot treatments :

5 dates of sowing : D<sub>1</sub>=16.5.1952, D<sub>2</sub>=31.5.1952, D<sub>3</sub>=15.6.1952, D<sub>4</sub>=30.6.1952 and D<sub>5</sub>=15.7.1952.

## Sub-plot treatments :

All combinations of (1) and (2)

(1) 3 levels of N: N<sub>0</sub>=0, N<sub>1</sub>=64 and N<sub>2</sub>=128 lb./ac.

(2) 3 levels of P<sub>2</sub>O<sub>5</sub>: P<sub>0</sub>=0, P<sub>1</sub>=32 and P<sub>2</sub>=64 lb./ac.

N as A/S and G.N.C. in 1 : 1 ratio and P<sub>2</sub>O<sub>5</sub> as Super. Manuring done at sowing and on 6.9.1952 and 4.10.1952.

## 3. DESIGN :

(i) Split-plot. (ii) (a) main-plots/block ; 9 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 26' × 18'. (b) 20' × 14'. (v) 2' around the net plot. (vi) Yes.

## 4. GENERAL :

(i) Normal. (ii) Attack of blast. (iii) Grain yield. (iv) (a) 1949—1952. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 1560 lb./ac.  
 (ii) (a) 583.2 lb./ac.  
 (b) 365.4 lb./ac.  
 (iii) Main effects of N and P are significant. Effect of D and interactions N × D and P × D are significant. Interaction N × P 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	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>
N <sub>0</sub>	627	759	795	836	866	777	703	855	772
N <sub>1</sub>	1399	2172	1993	1537	1383	1697	1453	1859	1779
N <sub>2</sub>	1839	2932	2679	1972	1609	2206	2008	2350	2260
Mean	1288	1954	1822	1448	1286	1560	1388	1688	1604
P <sub>0</sub>	1264	1568	1491	1343	1275				
P <sub>1</sub>	1381	2291	2075	1510	1183				
P <sub>2</sub>	1220	2094	1900	1493	1400				

## S.E. of difference of two

- D marginal means = 137.4 lb./ac.
- N or P marginal means = 66.7 lb./ac.
- N or P means at a level of D = 149.2 lb./ac.
- D means at a level of N or P = 183.6 lb./ac.

Crop :- Paddy (*Kharif*).

Ref :- Mh. 53(278).

Site :- Agri. Res. Stn., Padegaon.

Type :- 'CM'.

Object :- To study the effect of manurial doses combined with different cultural operations on the yield of Paddy.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) and (c) N.A. (ii) (a) 'B' type. (b) Refer soil analysis, Padegaon. (iii) 20.6.1953. (iv) (a) to (e) As per treatments. (v) 5 C.L./ac. of F.Y.M. (vi) *Krishnasal*. (vii) Irrigated. (viii) Weeding on 8.7.1953 and 18.8.1953 ; Interculturing on 16.7.1953, 27.7.1953, 8.8.1953, 24.8.1953 and 3.9.1953. (ix) 16.35". (x) 11.11.1953 and 12.11.1953.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 2 manurial doses : M<sub>1</sub>=64 lb./ac. of N+32 lb./ac. of P<sub>2</sub>O<sub>5</sub> and M<sub>2</sub>=100 lb./ac. of N+80 lb./ac. of P<sub>2</sub>O<sub>5</sub>.

(2) 8 cultural operations :

	Method of sowing	Spacing	Interculturing	Seedrate
(a)	Drilling	15"	3	60 lb./ac.
(b)	Drilling	12"	3	60 lb./ac.
(c)	Drilling	15"	5	60 lb./ac.
(d)	Drilling	12"	5	60 lb./ac.
(e)	Dibbling	9" × 9"	3 one way	6 seeds/dibble
(f)	Dibbling	9" × 9"	3 two way	6 seeds/dibble
(g)	Dibbling	9" × 9"	5 one way	6 seeds/dibble
(h)	Dibbling	9" × 9"	5 two way	6 seeds/dibble

## 3. DESIGN :

(i) R.B.D. (ii) (a) 16. (b) 132'×74' including water canal and bud. (iii) 4. (iv) (a) 33'×15' for 9", 12" and 15" spacings respectively. (b) 30'×9' for 9" and 12" spacing. 27'×10' for 15" spacing. (v) 4, 3 and 2 rows on either side respectively for 9", 12" and 15" spacing and 1'-6" at either end of the plot for 9" and 12" spacing and 3' in case of 15" spacing. (vi) Yes.

## 4. GENERAL :

(i) Healthy and Normal. (ii) Slight attack of blast disease and was controlled by spraying perenox. (iii) Grain and straw yield. (iv) (a) 1953—N.A. (b) and (c) No. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 2604 lb./ac.  
 (ii) 405.5 lb./ac.  
 (iii) Main effect of manure alone is significant.  
 (iv) Av. yield of grain in lb./ac.

	M <sub>1</sub>	M <sub>2</sub>	Mean
a	2269	2247	2258
b	2317	2737	2527
c	2682	2866	2774
d	2443	3043	2743
e	2443	2932	2687
f	2329	2680	2504
g	2833	2773	2803
h	2203	2873	2538
Mean	2440	2769	

S.E. of marginal mean of cultural operations

=143.4 lb./ac.

S.E. of marginal mean of manures

= 71.7 lb./ac.

S.E. of body of table

=202.7 lb./ac.

Crop :- Paddy (*Kharif*).

Ref :- Mh. 53(279).

Site :- Agri. Res. Stn., Padegaon.

Type :- 'CM'.

Object :- To assess the relative merits of Japanese and departmentally recommended methods of Paddy cultivation.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) N.A. (c) N.A. (ii) (a) B type, (b) Refer soil analysis, Padegaon. (iii) 2.6.1953/25.7.1953. (iv) (a) N.A. (b) As per treatments. (c) 15 lb./ac. (d) and e) As per treatments. (v) 5 C.L./ac. of F.Y.M. Sann green manuring sown at 40 lb./ac. in early June and ploughed in the 1st week of July ; 32 lb./ac. of P<sub>2</sub>O<sub>5</sub> and 80 lb./ac. of P<sub>2</sub>O<sub>5</sub> as per treatments from triple Super. (vi) *Krishnasal*. (vii) Irrigated (viii) Weeding 28.6.1953 and 9.10.1953, interculturing on 6.9.1953, 25.9.1953 and 10.10.1953. (ix) 16.35". (x) 24.11.1953.

## 2. TREATMENTS :

## (1) Departmental method

A<sub>0</sub>=Flat.

## A. Seed bed

## B. Manuring of seed bed

B<sub>0</sub>=1 C.L./ac. of F.Y.M. + 8 lb./*guntha* of A/S.

## C. Manuring of field

C<sub>0</sub>=5 C.L./ac. of F.Y.M. + G.M. + 64 lb./ac. of A/S + 32 lb./ac. of P<sub>2</sub>O<sub>5</sub>.

## D. Spacing between bunches

D<sub>0</sub>=10"×10".

## E. Number of seedlings/bunch

E<sub>0</sub>=8.

## F. Number of interculturings

F<sub>0</sub>=One hand weeding and no inter-culturing.

## (2) Japanese method

A<sub>1</sub>=Raised.

B<sub>1</sub>=1 C.L./ac. of F.Y.M.+16 lb./ac. of A/S + 16 lb./*guntha* of P<sub>2</sub>O<sub>5</sub>+layer of ash.

C<sub>1</sub>=5 C.L./ac. of F.Y.M. + G.M.+100 lb./ac. of A/S + 80 lb./ac. of P<sub>2</sub>O<sub>5</sub>.

D<sub>1</sub>=9"×9".

E<sub>1</sub>=4.

F<sub>1</sub>=One hand weeding and 3 interculturing.

## 3. DESIGN :

- (i) 2<sup>8</sup> Fact. in R.B.D. (ii) (a) 64 (Plot wise yield data N.A. Hence analysed as R.B.D. with 64 treatments/block). (b) N.A. (iii) 2. (iv) (a) 10.5'×33' and 10'.11'×33'.0" for 9" and 10" spacings respectively. (b) 7.5'×30' and 7.5'×36'. for 9" and 10" spacing respectively. (v) Two rows on each side and two plants of each row at each end of the net plot. (vi) Yes.

## 4. GENERAL :

- (i) Normal. (ii) Nil. (iii) Grain yield. (iv) (a) 1953—N.A. (b) and (c) N.A. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 2224 lb./ac.  
 (ii) 332.2 lb./ac.  
 (iii) Main effects of B, C and E and interactions A×F and C×D are significant, Other main effects and interactions are not significant.  
 (iv) Mean and differential response in lb./ac.

Factor	Mean response	A		B		C		D		E		F	
		-	+	-	+	-	+	-	+	-	+	-	+
A	- 10	-	-	- 38	18	- 25	5	- 31	11	- 74	54	103	-123
B	-229	-257	-201	-	-	-183	-275	-315	-143	-331	-127	-240	-218
C	153	138	108	199	107	-	-	388	- 82	155	151	160	146
D	- 41	- 62	- 20	-127	45	194	-276	-	-	- 42	- 40	- 15	- 67
E	-123	-187	- 59	-225	- 21	-121	-125	-124	-122	-	-	- 78	-168
F	14	127	- 99	3	25	21	7	40	- 12	59	- 31	-	-
S.E./mean=58.7 lb./ac		S.E./mean=83.7 lb./ac.											

Crop:- Paddy (Kharif).

Ref :-Mh. 53(335).

Site :- Agri. Res. Stn., Phondaghat.

Type :- 'CM'.

Object :- To study the optimum dose of N and P with different spacings for Paddy.

## 1. BASAL CONDITIONS :

- (i) (a) N.A. (b) Paddy. (c) 300 lb./ac. of manure mixture. (ii) (a) Loam. (b) N.A. (iii) 15.6.1953/12 to 19.7.1953. (iv) (a) N.A. (b) Transplanting. (c) —. (d) As per treatments. (e) 8 seedlings/bunch. (v) N.A. (vi) Panavel-61 (mid-late). (vii) Unirrigated. (viii) 1 weeding. (ix) 170°. (x) 8,9,10.1953.

## 2. TREATMENTS :

All combinations of (1), (2), (3) and (4)

- (1) 2 levels of N : N<sub>0</sub>=0 and N<sub>1</sub>=64 lb./ac. of N.  
 (2) 3 levels of P<sub>2</sub>O<sub>5</sub> : P<sub>1</sub>=64, P<sub>2</sub>=96 and P<sub>3</sub>=128 lb./ac. of P<sub>2</sub>O<sub>5</sub>.  
 (3) 2 levels of F.Y.M. : F<sub>1</sub>=5 and F<sub>2</sub>=10 C.L./ac.  
 (4) 2 spacings : S<sub>1</sub>=8'×8" and S<sub>2</sub>=10'×10".  
 N as A/S and G.N.C. in 1 : 1 ratio and P<sub>2</sub>O<sub>5</sub> as B.M.

## 3. DESIGN :

- (i) 3×2<sup>8</sup> Fact. in R.B.D. (ii) (a) 24. (b) N.A. (iii) 3. (iv) (a) 33'-4"×13'-4". (b) 30'×10'. (v) 1' 8" ring. (vi) Yes.

## 4. GENERAL :

- (i) Normal. (ii) Attack of Army worms. (iii) Grain and straw yield. (iv) (a) 1953-54. (b) N.A. (c) Nil. (v) (a) Kosbad, Ratnagiri, Vadgaon, Karjat and Igatpuri. (b) N.A. (vi) and (vii) Nil.



## 5. RESULTS :

- (i) 975 lb./ac.  
 (ii) 294.0 lb./ac.  
 (iii) None of the effects and interactions is significant.  
 (iv) Av. yield of grain in lb./ac.

	N <sub>0</sub>	N <sub>1</sub>	F <sub>1</sub>	F <sub>2</sub>	S <sub>1</sub>	S <sub>2</sub>	Mean
P <sub>1</sub>	923	971	917	977	937	957	947
P <sub>2</sub>	1069	930	1036	963	1065	933	999
P <sub>3</sub>	907	1053	955	1006	996	964	980
Mean	966	985	969	982	999	951	975
S <sub>1</sub>	1034	965	1002	997			
S <sub>2</sub>	898	1005	936	967			
F <sub>1</sub>	943	995					
F <sub>2</sub>	989	975					

S.E. of marginal mean of P	=60.0 lb./ac.
S.E. of marginal mean of N, F or S	=49.0 lb./ac.
S.E. of body of P×N, P×F or P×S table	=84.8 lb./ac.
S.E. of body of N×F, N×S or F×S table	=69.2 lb./ac.

Crop :- Paddy (*Kharif*).

Ref :- Mh. 52(19).

Site :- Agri. Res. Stn., Ratnagiri.

Type :- 'CM'.

Object :- To study the optimum requirements of N and P with basal dose of F.Y.M. in combination with spacings.

## 1. BASAL CONDITIONS :

- (i) (a) Paddy after Pa'c'dy (b) Paddy in *Kharif*. (c) N.A. (ii) (a) Laterite. (b) N.A. (iii) 3.6.1952/23.6.1953 and 26.10.1952. (iv) (a) Ploughing and harrowing before transplanting. (b) Transplanting (c) to (e) N.A. (v) N.A. (vi) *Wak sal-207* (mid-late). (vii) Unirrigated. (viii) Nil. (ix) 70.20". (x) 27 to 29.10.1952.

## 2. TREATMENTS :

All combinations of (1), (2), (3) and (4).

- (1) 2 levels of N : N<sub>0</sub>=0 and N<sub>1</sub>=32 lb./ac.  
 (2) 3 levels of P<sub>2</sub>O<sub>5</sub> : P<sub>1</sub>=64, P<sub>2</sub>=96 and P<sub>3</sub>=128 lb./ac.  
 (3) 2 levels of F.Y.M. : F<sub>1</sub>=5 and F<sub>2</sub>=10 C.L./ac.  
 (4) 2 spacings : S<sub>1</sub>=8"×8" and S<sub>2</sub>=10"×10".

P<sub>2</sub>O<sub>5</sub> as B.M.

## 3. DESIGN :

- (i) 3×2×2×2 Factorial in R.B.D. (ii) (a) 24. (b) N.A. (iii) 3. (iv) (a) 33'-4"×16'-8". (b) 26'-8"×10'. (v) 5 rows on either side of the net plot for 8"×8" spacing and 4 rows for 10"×10" spacing. 3'-4" all round the net plot. (vi) Yes.

## 4. GENERAL :

- (i) Good. (ii) Nil. (iii) Grain and straw yield. (iv) (a) 1952 to 1954. (b) Yes. (c) N.A. (v) (a) Hatakhamba. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 2944 lb./ac.  
(ii) 338.3 lb./ac.  
(iii) Main effects of N and P and interactions N × P, S × F are significant, while other effects and interactions are not significant.  
(iv) Av. yield of grain in lb./ac.

	P <sub>1</sub>	P <sub>2</sub>	P <sub>3</sub>	F <sub>1</sub>	F <sub>2</sub>	S <sub>1</sub>	S <sub>2</sub>	Mean
N <sub>0</sub>	2669	2716	2911	2758	2772	2774	2757	2765
N <sub>1</sub>	3135	2935	3297	3125	3119	3228	3016	3122
Mean	2902	2825	3104	2942	2946	3001	2886	2944
S <sub>1</sub>	2906	2861	3237	3113	2890			
S <sub>2</sub>	2897	2789	2972	2771	3002			
F <sub>1</sub>	2825	2955	3044					
F <sub>2</sub>	2978	2695	3164					

S.E. of marginal mean of P = 69.1 lb./ac.

S.E. of marginal mean of N or F or S = 56.4 lb./ac.

S.E. of body of table P × N, P × F or P × S = 97.7 lb./ac.

S.E. of body of table N × F or F × S or S × N = 79.8 lb./ac.

Crop :- Paddy (*Kharif*).

Ref :- Mh. 53(105)/52(19).

Site :- Agri. Res. Stn., Ratnagiri.

Type :- 'CM'.

Object :—To study the optimum requirements of N and P with basal dose of F.Y.M. in combination with spacing required for paddy crop.

## 1. BASAL CONDITIONS :

(i) (a) No. (b) Paddy. (c) As per treatments. (ii) (a) Laterite. (b) N.A. (iii) 3.6.1953/13 to 17.7.1953, (iv) (a) 4 ploughings. (b) Transplanting. (c) —. (d) N.A. (e) 8 seedlings/bunch. (v) Nil. (vi) *Waksal-207*. (vii) Unirrigated. (viii) Interculturing and weeding at the time of application of, N, 1st dose of N on 5.8.1953 and 2nd on 21.8.1953. (ix) 148.06'. (x) 1 to 2.11.1953.

## 2. TREATMENTS :

All combinations of (1), (2), (3) and (4).

(1) 2 levels of N : N<sub>0</sub>=0, and N<sub>1</sub>=32 lb./ac.

(2) 3 levels of P<sub>2</sub>O<sub>5</sub> : P<sub>1</sub>=64, P<sub>2</sub>=96 and P<sub>3</sub>=128 lb./ac.

(3) 2 levels of F Y.M. : F<sub>1</sub>=5 and F<sub>2</sub>=10 C.L./ac.

(4) 2 spacings : S<sub>1</sub>=8" × 8" and S<sub>2</sub>=10" × 10".

N as A/S+G.N.C. in 1 : 1 ratio and P<sub>2</sub>O<sub>5</sub> as B.M.

## 3. DESIGN :

(i) 3 × 2<sup>3</sup> Factorial in R.B.D. (ii) (a) 24. (b) N.A. (iii) 3. (iv) (a) 33'.4" × 16'.8". (b) 26'.8" × 10'. (v) 3'.4" ring round the net plot. (vi) Yes.

## 4. GENERAL :

(i) Fairly good. (ii) Slight attack of blue beetle. (iii) Grain yield. (iv) (a) 1952 to 1954. (b) Yes. (c) N.A. (v) (a) N.A. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 3037 lb./ac.  
(ii) 367.4 lb./ac.  
(iii) Main effect of F and interaction F × P are significant, while other main effects and interactions are not significant.  
(iv) Av. yield of grain in lb./ac.

	P <sub>1</sub>	P <sub>2</sub>	P <sub>3</sub>	F <sub>1</sub>	F <sub>2</sub>	S <sub>1</sub>	S <sub>2</sub>	Mean
N <sub>0</sub>	2978	2955	2935	2968	2944	3064	2848	2956
N <sub>1</sub>	3037	3065	3253	3094	3142	3355	2881	3118
Mean	3007	3010	3094	3031	3043	3210	2865	3037
S <sub>1</sub>	3219	3166	3244	3287	3133			
S <sub>2</sub>	2796	2854	2945	2776	2954			
F <sub>1</sub>	3132	2996	2966					
F <sub>2</sub>	2883	3024	3223					

S.E. of marginal mean of P	= 75.1 lb./ac.
S.E. of marginal mean of N or F or S	= 61.3 lb./ac.
S.E. of body of table P × N or P × F or P × S	= 106.1 lb./ac.
S.E. of body of table N × F or F × S or S × N	= 86.6 lb./ac.

Crop :- Paddy (*Khariif*).

Site :- Agri. Res. Stn., Ratnagiri.

Ref :- Mh. 52(18).

Type :- 'CM'.

Object : To find out a suitable substitute for rabbing of Paddy.

## 1. BASAL CONDITIONS

(i) (a) Paddy after paddy. (b) Paddy. (c) 5 C.L./ac. of F.Y.M. (ii) (a) Laterite. (b) N.A. (iii) 3.6.1952/ Replication 1st—14.7.1952, 2nd—13.7.1952, 3rd—7.7.1952, 4th—7.7.1952 and 5th—29.6.1952. (iv) (a) Puddling before transplanting. Seed-bed growth satisfactory. (b) Transplanting. (c) —. (d) 10' × 10'. (e) 8 seedlings per bunch. (v) Nil. (vi) *Patni-6* (early). (vii) Unirrigated. (viii) Weeding on 27th and 30th July, 1952. (ix) 70.20°. (x) 1st and 2nd on 25.9.1952, 3rd and 4th on 23.9.1952 and 5th and 6th on 22.9.1952.

## 2. TREATMENTS :

Main-plot treatments :

2 levels of F.Y.M. : F<sub>0</sub>=0 and F<sub>1</sub>=5 C.L./ac. of F.Y.M.

Sub-plot treatments :

1. Rabbing every year.
2. 10,000 lb./ac. of F.Y.M. every year.
3. A/S at 30 lb./ac. of N every year.
4. G.N.C. at 30 lb./ac. of N every year.
5. Rabbing in the 1st year and 10,000 lb./ac. of F.Y.M. in the 2nd year.
6. 10,000 lb./ac. of F.Y.M. in the 1st year and rabbing in the 2nd year.
7. Rabbing in the 1st year and A/S at 30 lb./ac. of N in the 2nd year.
8. A/S at 30 lb./ac. of N in the 1st year and rabbing in the 2nd year.
9. Rabbing in the 1st year and G.N.C. at 30 lb./ac. of N in the 2nd year.
10. G.N.C. at 30 lb./ac. of N in the 1st year and rabbing in the 2nd year.
11. Proper tillage.
12. Sterilising the soil with Formaline.

Being first year of the experiment, there are 6 distinct treatments as follows :

- T<sub>1</sub>=Rabbing (1, 5, 7, 9).  
T<sub>2</sub>=10,000 lb./ac. of F.Y.M. (2, 6).  
T<sub>3</sub>=A/S at 30 lb./ac. of N (3, 8).  
T<sub>4</sub>=G.N.C. at 30 lb./ac. of N (4, 10).  
T<sub>5</sub>=Proper tillage.

and T<sub>6</sub>=Sterilising the soil with Formaline.

## 3. DESIGN :

(i) Split-plot. (ii) (a) 2 main-plots/ block ; 12 sub-plots/main-plot (b) N.A. (iii) 4. (originally planned with 6 replications). (iv) (a) 23'-4" × 13'-4". (b) 20' × 10'. (v) Two rows all round the net plot. (vi) Yes.

## 4. GENERAL :

(i) Normal. (ii) Replications 5 and 6 affected by *Sparrows*, which were scared away. (iii) Grain and straw yield. (iv) (a) 1952—1955. (b) Yes. (c) N.A. (v) (a) Igatpuri, Karjat and Vadgaon. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 2351 lb./ac.  
 (ii) (a) 872.3 lb./ac.  
 (b) 297.9 lb./ac.  
 (iii) None of the effects is significant.  
 (iv) Av. yield of grain in lb./ac.

	F <sub>0</sub>	F <sub>1</sub>	Mean
T <sub>1</sub>	2494	2321	2407 (32)
T <sub>2</sub>	2151	2270	2210 (16)
T <sub>3</sub>	2289	2377	2333 (16)
T <sub>4</sub>	2297	2397	2347 (16)
T <sub>5</sub>	2317	2399	2358 (8)
T <sub>6</sub>	2447	2443	2445 (8)
Mean	2351	2351	2351

S.E. of marginal mean of main-plot = 125.9 lb./ac.  
 S.E. of marginal mean of T<sub>1</sub> = 52.7 lb./ac.  
 S.E. of marginal mean of T<sub>2</sub>, T<sub>3</sub> or T<sub>4</sub> = 74.5 lb./ac.  
 S.E. of marginal mean of T<sub>5</sub> or T<sub>6</sub> = 105.4 lb./ac.

Crop :- Paddy (*Kharif*).

Site :- Agri. Res. Stn., Ratnagiri.

Ref :- Mh. 53(104)/52(18).

Type :- 'CM'.

Object :- To find out suitable substitute for rabbing of Paddy.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) As per treatments. (ii) (a) *Mala* inter lying. Lime requirements in terms of CaCO<sub>3</sub>=4.4 ton/ac., pH value 5. (b) N.A. (iii) 4.6.1953/6.7.53. to 8.7.53 (iv) (a) N.A. (b) Transplanting (c) —. (d) 10" × 10". (e) N.A. (v) Nil (vi) *Patni-6*. (vii) Unirrigated. (viii) Weeding on 22.6.1953. and 24.7.1953. Interculturing 12 to 14th August 1953. (ix) 148.06". (x) 10.10.1953 16.10.1953.

## 2. TREATMENTS :

Main-plot treatments :

2 levels of F.Y.M : F<sub>0</sub>=0 and F<sub>1</sub>=5 C.L./ac. of F.Y.M.

Sub-plot treatments :

- Rabbing every year.
- 10,000 lb./ac. of F.Y.M. every year.
- A/S at 30 lb./ac. of N every year.
- G.N.C. at 30 lb./ac. of N every year.
- Rabbing in the 1st year and 10,000 lb./ac. of F.Y.M. in the 2nd year.
- 10,000 lb./ac. of F.Y.M. in the first year and rabbing in the 2nd year.
- Rabbing in the 1st year and A/S at 30 lb./ac. of N in the 2nd year.

(Continued)

8. A/S at 30 lb./ac. of N in the 1st year and rabbing in the 2nd year.
9. Rabbing in the 1st year and G.N.C. at 30 lb./ac. of N in the 2nd year.
10. G.N.C. at 30 lb./ac. of N in the 1st year and rabbing in the 2nd year.
11. Proper tillage.
12. Sterilising the soil with Formaldehyde. (Formaline)

A/S applied on 17.6.1953. and G.N.C. on 18.6.1953.

### 3. DESIGN :

- (i) Split-plot. (ii) (a) 2 main-plots/block ; 12 sub-plots/main-plot. (b) N.A. (iii) 6. (iv) (a) 23'-4" × 13'-4".  
(b) 20' × 10'. (v) 1'.8" ring round the net plot. (vi) Yes.

### 4. GENERAL :

- (i) Germination poor in formaldehyde plots. F.Y.M. plots could produce medium type seedlings. In field plots, the growth was normal. (ii) Slight attack of blue beetle. (iii) Grain and straw yield. (iv) (a) 1952—1955. (b) Yes. (c) N.A. (v) (a) Igatpuri, Karjat and Vadgaon. (b) N.A. (vi) and (vii) Nil.

### 5. RESULTS :

- (i) 3201 lb./ac.  
(ii) (a) 702.2 lb./ac.  
(b) 520.1 lb./ac.  
(iii) Sub-plot treatment means are highly significantly different, while others are not significant.  
(iv) Av. yield of grain in lb./ac.

	F <sub>0</sub>	F <sub>1</sub>	Mean
T <sub>1</sub>	3331	3181	3256
T <sub>2</sub>	3174	3315	3245
T <sub>3</sub>	3402	3006	3204
T <sub>4</sub>	3317	3435	3376
T <sub>5</sub>	3574	3346	3460
T <sub>6</sub>	3081	3533	3307
T <sub>7</sub>	3236	3496	3366
T <sub>8</sub>	3263	3555	3409
T <sub>9</sub>	3306	3342	3324
T <sub>10</sub>	3501	3403	3452
T <sub>11</sub>	3428	3247	3338
T <sub>12</sub>	1878	1462	1670
Mean	3208	3194	3201

#### S.E. of difference of two

1. main-plot treatment means = 117.0 lb./ac.
2. sub-plot treatment means = 212.2 lb./ac.
3. sub-plot treatment means at a level of main-plot treatment = 300.6 lb./ac.
4. main-plot treatment means at a level of sub-plot treatment = 311.5 lb./ac.

Crop :- Paddy (*Kharif*).  
Site :- Agri. Res. Stn., Vadgaon.

Ref :- Mh. 52(168).  
Type :- 'CM'.

Object :- To study the optimum dose of N and P with basal manuring of F.Y.M. in combination with spacing for Paddy crop.

### 1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Jowar* in *Rabi*. (c) Nil. (ii) (a) Medium black. (b) N.A. (iii) 15.6.1952/29.7.1952.  
(iv) (a) N.A. (b) Transplanting. (c) —. (d) As per treatments. (e) N.A. (v) Nil. (vi) *Ambemohor*—157.  
(vii) Unirrigated. (viii) One interculturing. (ix) 74.70" (x) 22.11.1952.

### 2. TREATMENTS :

All combinations of (1), (2), (3) and (4)

(1) 3 levels of N :  $N_1=96$ ,  $N_2=128$  and  $N_3=160$  lb./ac.

(2) 2 levels of  $P_2O_5$  :  $P_0=0$ , and  $P_1=32$  lb./ac.

(3) 2 levels of F.Y.M. :  $F_1=5$  and  $F_2=10$  C.L./ac.

(4) 2 spacings :  $S_1=6'' \times 6''$  and  $S_2=8'' \times 8''$ .

N in the form of A/S and G.N.C. and  $P_2O_5$  as Super.

### 3. DESIGN :

(i)  $3 \times 2^3$  Fact. in R.B.D. (ii) (a) 24. (b) N.A. (iii) 3. (iv) (a)  $28' \times 10'$ . (b)  $24' \times 6'$ . (v) 2' ring all round the plot. (vi) Yes.

### 4. GENERAL :

(i) Normal. (ii) Stem borer and leaf-roller affected the crop very severely. (iii) Grain yield  
(iv) (a) 1952—1955. (b) Yes. (c) N.A. (v) (a) Igatpuri, Karjat, Kopergaon and Ratoagiri. (b) N.A.  
(vi) and (vii) Nil.

### 5. RESULTS :

(i) 1993 lb./ac.

(ii) 4392 lb./ac.

(iii) Spacing and F.Y.M. effects are significant while other effects and interactions are not significant.

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

	$P_0$	$P_1$	$F_1$	$F_2$	$S_1$	$S_2$	Mean
$N_1$	1999	1838	1731	2106	1970	1866	1919
$N_2$	2061	2216	2106	2171	2203	2074	2139
$N_3$	1841	2002	1806	2036	2121	1721	1921
Mean	1967	2019	1881	2104	2098	1887	1993
$S_1$	2173	2024	2060	2137			
$S_2$	1761	2013	1702	2072			
$\bar{F}_1$	1868	1894					
$\bar{F}_2$	2066	2143					

S.E. of marginal mean of N

= 89.7 lb./ac.

S.E. of marginal of P or F or S

= 73.2 lb./ac.

S.E. of body of table  $N \times P$  or  $N \times S$  or  $N \times F$

= 126.7 lb./ac.

S.E. of body of table  $P \times S$  or  $P \times F$  or  $S \times F$

= 103.5 lb./ac.

Crop :-Paddy (*Kharif*).

Ref :-Mh. 53(254)/52(168).

Site :-Agri. Res. Stn., Vadgaon.

Type :-'CM'.

Object :—To study the optimum dose of N and P with basal manuring of F.Y.M. in combination with spacing for Paddy crop.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) As per treatments. (ii) (a) Medium black. (b) N.A. (iii) 12.6.1953/22, 23.7.1953. (iv) (a) N.A. (b) Transplanting. (c) —. (d) As per treatments. (e) N.A. (v) Nil. (vi) *Ambemohor*—157. (vii) Unirrigated. (viii) 2 interculturings. (ix) 46.38%. (x) 18.11.1953.

## 2. TREATMENTS :

All combinations of (1), (2), (3) and (4)

(1) 3 levels of N :  $N_1=96$ ,  $N_2=128$  and  $N_3=160$  lb./ac.

(2) 2 levels of  $P_2O_5$  :  $P_0=0$  and  $P_1=32$  lb./ac.

(3) 2 levels of F.Y.M. :  $F_1=5$  and  $F_2=10$  C.L./ac.

(4) 2 spacings :  $S_1=6'' \times 6''$  and  $S_2=8'' \times 8''$ .

## 3. DESIGN :

(i)  $3 \times 2^3$  Fact. in R.B.D. (ii) (a) 24. (b) N.A. (iii) 3. (iv) (a)  $28' \times 10'$ . (b)  $24' \times 6'$ . (v) 2' ring all round the plot. (vi) Yes.

## 4. GENERAL :

(i) Normal. (ii) Nil. (iii) Grain yield. (iv) (a) 1952—1955. (b) Yes. (c) N.A. (v) (a) Igatpuri, Karjat, Kopergaon and Ratnagiri. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 2502 lb./ac.

(ii) 458.4 lb./ac.

(iii) Main effect of N alone is significant.

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

	$P_0$	$P_1$	$F_1$	$F_2$	$S_1$	$S_2$	Mean
$N_1$	2115	2347	2140	2321	2411	2050	2231
$N_2$	2611	2719	2721	2609	2604	2726	2665
$N_3$	2526	2693	2628	2590	2523	2696	2609
Mean	2417	2586	2496	2507	2513	2491	2502
$S_1$	2460	2565	2528	2497			
$S_2$	2374	2607	2465	2517			
$F_1$	2402	2591					
$F_2$	2432	2582					

S.E. of marginal mean of N = 93.2 lb./ac.

S.E. of marginal mean of P or F or S = 75.9 lb./ac.

S.E. of body of table  $N \times P$  or  $N \times S$  or  $N \times F$  = 132.3 lb./ac.

S.E. of body of table  $S \times P$  or  $S \times F$  or  $F \times P$  = 108.0 lb./ac.

Crop :- Paddy (*Kharif*).

Ref :- Mh. 53(334).

Site :- Agri. Res. Stn., Vadgaon.

Type :- 'CM'.

Object :—To study the Japanese method of Paddy cultivation in relation to the departmental method.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) Paddy. (c) Nil. (ii) (a) Medium black. (b) N.A. (iii) 13.6.1953/21.7.1953.  
 (iv) (a) N.A. (b) Transplanting. (c) —. (d) and (e) As per treatments. (v) Nil. (vi) N.A. (vii) Unirrigated. (viii) As per treatments. (ix) 46.38" (x) 17.11.1953.

## 2. TREATMENTS :

All combinations of the following :—

(1) Departmental method	(2) Japanese method
	A. Seed bed
A <sub>0</sub> =Flat	A <sub>1</sub> =Raised bed.
	B. Manuring of seed bed
B <sub>0</sub> =1 C.L./ac of F.Y.M.+8 lb./guntha of A/S	B <sub>1</sub> =1 C.L./ac. of F.Y.M.+16 lb./ac. of A/S+16 lb./guntha of P <sub>2</sub> O <sub>5</sub> +layer of ash
	C. Manuring of field
C <sub>0</sub> =5 C.L./ac. of F.Y.M.+green manuring+64 lb./ac. of N as A/S+32 lb./ac. of P <sub>2</sub> O <sub>5</sub> .	C <sub>1</sub> =5 C.L./ac. of F.Y.M.+green manuring+100 lb./ac. of N as A/S+80 lb./ac. of P <sub>2</sub> O <sub>5</sub> .
	D. Spacing
D <sub>0</sub> =10"×10".	D <sub>1</sub> =9"×9".
	E. Number of seedlings/bunch
E <sub>0</sub> =8.	E <sub>1</sub> =4.
	F. Number of interculturings
F <sub>0</sub> =1 hand weeding and no inter-culturing.	F <sub>1</sub> =1 hand weeding and 3 interculturings.

## 3. DESIGN :

(i) 2<sup>4</sup> Confounded. (ii) (a) 8 plots/block ; 8 blocks/replication. (b) N.A. (iii) 1. (iv) (a) 10'.6"×25'.6" and 10'.10"×25'.10" for 9" and 10" spacings respectively. (b) 7'.6"×22'.6". (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) Normal. (ii) Slight attack of Bacterial - blight. (iii) Grain yield. (iv) (a) 1953-54. (b) No. (c) Nil. (v) (a) and (b) Karjat, Khopoli, Kosbad and Kopergaon. (vi) and (vii) Nil.

## 5. RESULTS : See page 201

Crop :- Paddy (*Kharif*).

Ref :- Mh. 49(87).

Site :- Agri. Res. Stn., Vadgaon.

Type :- 'CM'.

Object :—To find out a suitable substitute for rabbing Paddy.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) 320 lb./ac. of G.N.C. (ii) (a) Medium black. (b) N.A. (iii) 23.6.1949—18.8.1949. (iv) (a) N.A. (b) Transplanting. (c) —. (d) 9"×9". (e) 8 seedlings/bunch. (v) Nil. (vi) N.A. (vii) Unirrigated. (viii) 1 harrowing. (ix) 34.83" (x) 4.12.1949.



RESULTS: Ref. :-Mh. 53 (334).

(i) 2553 lb./ac.

(ii) 304.9 lb./ac.

(iii) Main effects of A, B, C and E are highly significant ; other main effects and interactions are not significant.

(iv) Mean and differential response in lb./ac.

Factor	Mean response	A		Differential response B		C		D		E		F	
		-	+	-	+	-	+	-	+	-	+	-	+
A	133.75	—	—	266.86	0.64	123.26	144.24	131.66	135.84	57.60	209.90	169.73	97.77
B	161.99	295.10	28.88	—	—	275.89	48.09	139.08	184.90	168.44	155.54	223.30	100.68
C	417.22	406.73	427.71	531.12	303.32	—	—	329.78	504.68	430.45	403.99	408.51	425.93
D	-20.33	-22.42	-18.24	-43.24	2.58	-107.77	67.11	—	—	-77.44	36.78	-105.84	65.18
E	-195.87	-272.02	-119.72	-189.42	-202.32	-182.64	-209.10	-22.98	-138.76	—	—	-287.51	-104.23
F	114.87	150.85	78.89	176.18	53.56	106.16	123.58	29.36	200.38	23.23	206.51	—	—

S.E. of mean response = 76.22 lb./ac.

S.E. of differential response = 107.77 lb./ac.

**2. TREATMENTS :****Main-plot treatments :**2 levels of F.Y.M. :  $F_0=0$  and  $F_1=5$  C.L./ac.**Sub-plot treatments :**

1. Rabbing every year.
2. Compost every year at 10 C.L./ac.
3. 30 lb./ac. of N as A/S every year.
4. 30 lb./ac. of N as G.N.C every year.
5. Rabbing in first year and 10 C.L./ac. of compost in the second year.
6. 10 C.L./ac. compost in first year and rabbing in the second year.
7. Rabbing in first year and 30 lb./ac. of N as A/S in second year.
8. 30 lb./ac. of N as A/S in the first year and rabbing in the second year.
9. Rabbing in the first year and 30 lb./ac. of N as G.N.C. in the second year.
10. 30 lb./ac. of N as G.N.C. in the first year and rabbing in the second year.
11. Proper tillage alone.
12. Sterilising the soil with formaline.

In the first year of the experiment, there are only 6 distinct treatments as follows:  $T_1$ =Rabbing (1, 5, 7 and 9),  $T_2$ =Compost at 10 C.L./ac. (2 and 6),  $T_3$ =30 lb./ac. of N as A/S (3 and 8),  $T_4$ =30 lb./ac. of N as G.N.C. (4 and 10),  $T_5$ =Proper tillage and  $T_6$ =Sterilising the soil with formaline.

**3. DESIGN :**

(i) Split-plot. (ii) (a) 2 main-plots/block ; 12 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 21' × 15'. (b) 18' × 12'. (v) 1.5' round the net plot. (vi) Yes.

**4. GENERAL :**

(i) Normal. (ii) Nil. (iii) Grain yield. (iv) (a) 1949—54. (b) Yes. (c) N.A. (v) (a) Igatpuri, Karjat and Ratnagiri. (b) N.A. (vi) and (vii) Nil.

**5. RESULTS :**

- (i) 923 lb./ac.  
 (ii) (a) 132.0 lb./ac.  
 (b) 206.8 lb./ac.  
 (iii) Main effect of sub-plot treatments alone is significant. Others are not significant.  
 (iv) Av. yield of grain in lb./ac.

	$F_0$	$F_1$	Mean
$T_1$	970	949	959 (32)
$T_2$	785	953	869 (16)
$T_3$	1030	1093	1061 (16)
$T_4$	885	970	927 (16)
$T_5$	786	819	802 (8)
$T_6$	803	817	810 (8)
Mean	906	955	1973

S.E. of marginal mean of main-plots = 19.6 lb./ac.  
 S.E. of marginal mean of  $T_1$  = 36.6 lb./ac.  
 S.E. of marginal mean of  $T_2, T_3$  or  $T_4$  = 51.7 lb./ac.  
 S.E. of marginal mean of  $T_5$  or  $T_6$  = 73.2 lb./ac.

Crop :- Paddy (*Kharif*).

Ref :- Mh. 50(105)/49(87).

Site :- Agri. Res. Stn., Vadgaon.

Type :- 'CM'.

Object :- To find out a suitable substitute for rabbing of Paddy.

**1. BASAL CONDITIONS :**

- (i) (a) Nil. (b) Paddy. (c) As per treatments. (ii) (a) Medium black. (b) N.A. (iii) 17.6.1950/24.8.1950. (iv) (a) N.A. (b) Transplanting. (c) —. (d) 9" × 9". (e) 8 seedlings/bunch. (v) Nil. (vi) N.A. (vii) Unirrigated. (viii) One weeding. (ix) N.A. (x) 7.12.1950.

**2. TREATMENTS :****Main-plot treatments :**2 levels of F.Y.M. ;  $F_0=0$  and  $F_1=5$  C.L./ac.**Sub-plot treatments :** $T_1$ =Rabbing every year. $T_2$ =Compost every year at 10 C.L./ac. $T_3$ =30 lb./ac. of N as A/S every year. $T_4$ =30 lb./ac. of N as G.N.C. every year. $T_5$ =Rabbing in the first year and 10 C.L./ac. of compost in the second year. $T_6$ =10 C.L./ac. of compost in the first year and rabbing in the second year. $T_7$ =Rabbing in first year and 30 lb./ac. of N as A/S in the second year. $T_8$ =30 lb./ac. of N as A/S in the first year and rabbing in the second year. $T_9$ =Rabbing in the first year and 30 lb./ac. of N as G.N.C. in the second year. $T_{10}$ =30 lb./ac. of N as G.N.C. in the first year and rabbing in the second year. $T_{11}$ =Proper tillage alone. $T_{12}$ =Sterilising the soil with formaline.**3. DESIGN :**

(i) Split-plot. (ii) (a) 2 main-plots/block ; 12 sub-plots/main-plot. (b) N.A. (iii) 3 (originally planned with 4 replications.) (iv) (a) 21' x 15'. (b) 18' x 12'. (v) 1.5' ring round the net plot. (vi) and (vii) Yes.

**4. GENERAL :**

(i) Crop was damaged due to continuous rains. (ii) Nil. (iii) Height, vigour of seedlings and grain yield. (iv) (a) 1949 to 1954. (b) Yes, (c) N.A. (v) (a) Igatpuri, Karjat, and Ratnagiri. (b) N.A. (vi) Nil.

**5. RESULTS :**

(i) 1302 lb./ac.

(ii) (a) 1233.0 lb./ac.

(b) 317.9 lb./ac.

(iii) Main plot treatments, sub-plot treatment and their interaction are not significant.

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

	$F_0$	$F_1$	Mean
$T_1$	1500	1445	1473
$T_2$	983	1227	1105
$T_3$	1399	1496	1448
$T_4$	1101	1420	1261
$T_5$	1281	1340	1311
$T_6$	1172	1428	1300
$T_7$	1433	1445	1439
$T_8$	1113	1332	1223
$T_9$	1399	1256	1328
$T_{10}$	950	1378	1164
$T_{11}$	1147	1399	1273
$T_{12}$	1147	1441	1294
Mean	1219	1384	1302

**S.E. of difference of two**

- main-plot treatment means = 290.7 lb./ac.
- sub-plot treatment means = 183.5 lb./ac.
- sub-plot treatment means at a level of mean-plot treatment = 258.2 lb./ac.
- main-plot treatment means at a level of sub-plot treatment = 382.0 lb./ac.

Crop :- Paddy (*Kharif*).

Ref :- Mh. 51(143)/50(105)/49(87).

Site :- Agri. Res. Stn., Vadgaon.

Type :- 'CM'.

Object :- To find out a suitable substitute for rabbing of Paddy crop.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) As per treatments. (ii) (a) Medium black. (b) N.A. (iii) 6.6.1951/1.8.1951.  
 (iv) (a) N.A. (b) Transplanting. (c) —. (d) 9" x 9". (e) 8 seedlings/bunch. (v) Nil. (vi) N.A. (vii) Unirrigated. (viii) One weeding on 11.9.1951. (ix) 35.96" (x) 28,29.11.1951.

## 2. TREATMENTS :

## Main-plot treatments :

2 levels of F.Y.M. :  $F_0=0$  and  $F_1=5$  C.L./ac.

## Sub-plot treatments :

 $T_1$  = Rabbing every year. $T_2$  = 10 C.L./ac. of compost every year. $T_3$  = 30 lb./ac of N as A/S every year. $T_4$  = 30 lb./ac. of N as G.N.C. every year. $T_5$  = Rabbing in the first year and 10 C.L./ac. of compost in the second year. $T_6$  = 10 C.L./ac. of compost in the first year and rabbing in the second year. $T_7$  = Rabbing in the first year and 30 lb./ac. of N as A/S in the second year. $T_8$  = 30 lb./ac of N as A/S in the first year and rabbing in the second year. $T_9$  = Rabbing in the first year and 30 lb./ac. of N as G.N.C. in the second year. $T_{10}$  = 30 lb./ac. of N as G.N.C. in the first year and rabbing in the second year. $T_{11}$  = Proper tillage alone. $T_{12}$  = Sterilising the soil with Formaline.

## 3. DESIGN :

(i) Split-plot. (ii) (a) 2 main-plots/block ; 12 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 21' x 15'.  
 (b) 18' x 12'. (v) 1.5' around the net plot. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Nil. (iii) Grain yield. (iv) (a) 1949—1954. (b) Yes. (c) N.A. (v) (a) Igatpuri, Karja and Ratnagiri. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 1232 lb./ac.

(ii) (a) 198.8 lb./ac.

(b) 129.2 lb./ac.

(iii) Main-plot treatments, sub-plot treatments and their interaction are not significant.

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

	$F_0$	$F_1$	Mean
$T_1$	1169	1276	1222
$T_2$	1248	1100	1174
$T_3$	1327	1145	1236
$T_4$	1251	1271	1261
$T_5$	1270	1164	1217
$T_6$	1227	1160	1193
$T_7$	1297	1309	1303
$T_8$	1254	1155	1205
$T_9$	1314	1303	1308
$T_{10}$	1265	1256	1260
$T_{11}$	1290	1180	1235
$T_{12}$	1245	1093	1169
Mean	1263	1201	1232

## S.E. of difference of two

1. main-plot treatment means = 40.6 lb./ac.
2. sub-plot treatment means = 64.6 lb./ac.
3. sub-plot treatment means at a level of main-plot treatment = 91.4 lb./ac.
4. main-plot treatment means at a level of sub-plot treatment = 96.4 lb./ac.

Crop :-Paddy (*Kharif*).

Ref :-Mh. 52(167)/51(143)/50(105)/49(87).

Site :-Agri. Res. Stn., Vadgaon. Type :-'CM'.

Object :-To find out a suitable substitute for rabbing of Paddy crop.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) As per treatments. (ii) (a) Medium black. (b) N.A. (iii) 20.6.1952/6.7.1952. (iv) (a) N.A. (b) Transplanting. (c) —. (d) 9"×9". (e) 8 seedlings/bunch. (v) Nil. (vi) N.A. (vii) Unirrigated. (viii) One interculturing. (ix) 74.70" (x) 24 and 25.11.1952.

## 2. TREATMENTS :

Main-plot treatments :

2 levels of F.Y.M.:  $F_0=0$  and  $F_1=5$  C.L./ac.

Sub-plot treatments :

 $T_1$  =Rabbing every year. $T_2$  =10 C.L./ac. of compost every year. $T_3$  =30 lb./ac. of N as A/S every year. $T_4$  =30 lb./ac. of N as G.N.C. every year. $T_5$  =Rabbing in the first year and 10 C.L./ac. of compost in the second year. $T_6$  =10 C.L./ac. of compost in the first year and rabbing in the second year. $T_7$  =Rabbing in the first year and 30 lb./ac. of N as A/S in the second year. $T_8$  =30 lb./ac. of N as A/S in the first year and rabbing in the second year. $T_9$  =Rabbing in the first year and 30 lb./ac. of N as G.N.C. in the second year. $T_{10}$  =30 lb./ac. of N as G.N.C. in the first year and rabbing in the second year. $T_{11}$  =Proper tillage alone. $T_{12}$  =Sterilising the soil with Formaline.

## 3. DESIGN :

(i) Split-plot. (ii) (a) 2 main-plots/block ; 12 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 21'×15'. (b) 18'×12'. (v) 1.5' around the net plot. (vi) Yes.

## 4. GENERAL :

(i) Normal. (ii) Nil. (iii) Grain yield. (iv) (a) 1949—1954. (b) Yes. (c) N.A. (v) (a) Igatpuri, Karjat and Ratnagiri. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 1372 lb./ac.

(ii) (a) 546.2 lb./ac.

(b) 163.8 lb./ac.

(iii) Main-plot treatments, sub-plot treatments and their interaction are not significant.

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

	$F_0$	$F_1$	Mean
$T_1$	1342	1330	1336
$T_2$	1280	1450	1365
$T_3$	1428	1494	1461
$T_4$	1409	1374	1391
$T_5$	1315	1321	1318
$T_6$	1389	1478	1434
$T_7$	1377	1491	1434
$T_8$	1248	1352	1300
$T_9$	1295	1409	1352
$T_{10}$	1396	1383	1389
$T_{11}$	1333	1204	1268
$T_{12}$	1459	1358	1408
Mean	1356	1387	1372

S.E. of difference of two

1. main-plot treatment means =111.5 lb./ac.
2. sub-plot treatment means = 81.9 lb./ac.
3. sub-plot treatment means at a level of main-plot treatment =115.8 lb./ac.
4. main-plot treatment means at a level of sub-plot treatment =159.2 lb./ac.

Crop :- Paddy (*Kharif*).

Ref :- Mh. 53(253)/52(167)/51(143)/50(105)/49(87).

Site :- Agri. Res. Stn., Vadgaon.

Type :- 'CM'.

Object :- To find out a suitable substitute for rabbing of Paddy.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Paddy. (c) As per treatments. (ii) (a) Medium black. (b) N.A. (iii) 15.6.1953/2.8.1953. (iv) (a) N.A. (b) Transplanting (c) —. (d) 9'×9'. (e) 8 seedlings/bunch. (v) Nil. (vi) N.A. (vii) Unirrigated. (viii) N.A. (ix) 46.38" (x) 23.11.1953.

## 2. TREATMENTS :

Main-plot treatments :

2 levels of F.Y.M. :  $F_0=0$  and  $F_1=5$  C.L./ac.

Sub-plot treatments :

 $T_1$  = Rabbing every year. $T_2$  = 10 C.L./ac. of compost every year. $T_3$  = 30 lb./ac. of N as A/S every year. $T_4$  = 30 lb./ac. of N as G.N.C. every year. $T_5$  = Rabbing in the first year and 10 C.L./ac. of compost in the second year. $T_6$  = 10 C.L./ac. of compost in the first year and rabbing in the second year. $T_7$  = Rabbing in the first year and 30 lb./ac. of N as A/S in the second year. $T_8$  = 30 lb./ac. of N as A/S in the first year and rabbing in the second year. $T_9$  = Rabbing in the first year and 30 lb./ac. of N as G.N.C. in the second year. $T_{10}$  = 30 lb./ac. of N as G.N.C. in the first year and rabbing in the second year. $T_{11}$  = Proper tillage alone. $T_{12}$  = Sterilising the soil with Formaline.

## 3. DESIGN :

(i) Split-plot. (ii) (a) 2 main-plots/block ; 12 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 21'×15'. (b) 18'×12'. (v) 1.5' around the net plot. (vi) Yes.

## 4. GENERAL :

(i) Repln. I suffered from uneven water level and had poor yield. (ii) Nil. (iii) Grain yield. (iv) (a) 1949—1954. (b) Yes. (c) N.A. (v) (a) Igatpuri, Karjat and Ratnagiri. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 1305 lb./ac.

(ii) (a) 1265.0 lb./ac.

(b) 428.4 lb./ac.

(iii) Main-plot treatments, sub-plot treatments and their interaction are not significant.

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

	$F_0$	$F_1$	Mean
$T_1$	955	1068	1012
$T_2$	854	1239	1047
$T_3$	1292	1260	1276
$T_4$	1380	1318	1349
$T_5$	1611	1437	1524
$T_6$	1330	1220	1275
$T_7$	1371	1166	1269
$T_8$	1928	1321	1625
$T_9$	1334	1217	1276
$T_{10}$	1752	1469	1611
$T_{11}$	1157	1043	1100
$T_{12}$	1176	1415	1295
Mean	1345	1264	1305

S.E. of difference of two

1. main-plot treatment means =258.2 lb./ac.
2. sub-plot treatment means =214.2 lb./ac.
3. sub-plot treatment means at a level of main-plot treatment =303.0 lb./ac.
4. main-plot treatment means at a level of sub-plot treatment =388.3 lb./ac.

✓ Crop :- Wheat (*Rabi*).

Ref :- Mh. 48(57).

Site :- Govt. Seed Demonstration Farm, Achalpur.

Type :- 'M'.

Object :- To determine the efficacy of P manure and its method of application.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) and (c) N.A. (ii) (a) Medium black. (b) N.A. (iii) 30.10.1948. (iv) (a) 2 bakherings and 2 heavy bakherings. (b) By *Rabi Tiffan*. (c) N.A. (d) Between rows—18". (e) N.A. (v) Nil. (vi) I.P.52. (vii) Unirrigated. (viii) One weeding on 29.2.1948. (ix) Nil. (x) 4.3.1949.

2. TREATMENTS :

1. Control.
2. Seed soaked in solution of double Super (50 lb./ac. of Super).
3. Seed soaked in solution of Ammo. phosphate (50 lb./ac. of A/S).
4. 100 lb./ac. of A/S broadcasted.
5. 100 lb./ac. of A/S drilled.

3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 2. (iv) (a) N.A. (b) 60½' × 18'. (v) N.A. (vi) Yes.

4. GENERAL :

(i) N.A. (ii) N.A. (iii) Grain yield. (iv) (a) and (b) No. (c) N.A. (v) (a) and (b) N.A. (vi) Nil. (vii) No reasons given in the records for low yields.

5. RESULTS :

- (i) 218.8 lb./ac.
- (ii) 44.30 lb./ac.
- (iii) Treatment differences are not significant.
- (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	200.8
2.	142.4
3.	252.4
4.	281.6
5.	217.2
S.E./mean	= 31.33 lb./ac.

Crop :- Wheat (*Rabi*).

Ref :- Mh. 48(81).

Site :- Agri. Res. Stn., Akluj.

Type :- 'M'.

Object :- To see the effect of Bone Super for top dressing on Wheat.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) Sugarcane. (c) 375 lb./ac. of N as A/S and G.N.C. in 1 : 1 ratio. (ii) (a) 'D' type. (b) Refer soil analysis, Akluj. (iii) October 1948. (iv) (a) Ploughings and harrowing. (b) to (e) N.A. (v) Nil. (vi) Niphad. (vii) Irrigated. (viii) Weeding. (ix) 6.49". (x) February 1949.

2. TREATMENTS :

1. No manure.
2. 56 lb./ac. of Bone Super.
3. 56 lb./ac. of Bone Super + 56 lb./ac. of A/S.
4. 56 lb./ac. of A/S.
5. 150 lb./ac. of G.N.C.

3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 6. (iv) (a) N.A. (b) 0.50 *gunthas*. (v) N.A. (vi) Yes.

## 4. GENERAL :

- (i) No lodging. (ii) Nil. (iii) Grain yield. (iv) (a) 1946 to 1948 (alternate year). (b) No. (c) Nil. (v) (a) Kopergaon, Deolali and Lakhmanpur. (b) N.A. (vi) No reason given by A.R.S. for low yields. (vii) Nil.

## 5. RESULTS :

- (i) 269 lb./ac.  
 (ii) 96.0 lb./ac.  
 (iii) Treatments do not differ significantly.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	297
2.	309
3.	227
4.	253
5.	260
S.E./mean	= 38.9 lb./ac.

Crop :- Wheat (*Rabi*).

Ref :- Mh. 53(14).

Site :- Crop Res. Stn., Badnapur.

Type :- 'M'.

Object :—To compare C/N as a source of N with A/S and Ammonium chloride for increasing the yield of Wheat.

## 1. BASAL CONDITIONS :

- (i) (a) N.A. (b) and (c) N.A. (ii) (a) Black cotton soil. (b) Refer soil analysis, Badnapur. (iii) 11.10.1953 and 12.10.1953. (iv) (a) *Bakharing* on 3.10.1953. (b) to (e) N.A. (v) N.A. (vi) P.W. 5. (vii) N.A. (viii) N.A. (ix) 1.62" (x) 26.2.1954 to 1.3.1954.

## 2. TREATMENTS :

All combinations of (1) and (2)

- (1) 3 levels of N :  $N_0=0$ ,  $N_1=20$  and  $N_2=40$  lb./ac.  
 (2) 3 sources of N :  $S_1=A/S$ ,  $S_2=Ammonium\ chloride$  and  $S_3=C/N$ .

## 3. DESIGN :

- (i)  $3 \times 3$  Fact. in R.B.D. (ii) (a) 9. (b) N.A. (iii) 5. (iv) (a)  $60' \times 17'$ . (b)  $57' \times 14'$ . (v) N.A. (vi) Yes.

## 4. GENERAL :

- (i) Due to continuous absence of rain during *Rabi* season, the growth of the crop remained stunted.  
 (ii) N.A. (iii) Grain yield. (iv) (a) 1953—N.A. (b) N.A. (c) N.A. (v) (a) Nil. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 304 lb./ac.  
 (ii) 23.20 lb./ac.  
 (iii) Main effect of 'level of N' alone is significant.  
 (iv) Av. yield of grain in lb./ac.

	$S_1$	$S_2$	$S_3$	Mean
$N_0$	—	—	—	290
$N_1$	330	299	307	312
$N_2$	315	315	302	311
Mean	323	307	305	304

S.E. of marginal mean of N = 5.97 lb./ac.  
 S.E. of marginal mean of S = 7.10 lb./ac.  
 S.E. of body of table = 10.37 lb./ac.



Crop :- Wheat (*Rabi*).

Ref :- Mh. 51(209).

Site :- Agri. Res. Stn., Chas.

Type :- 'M'.

Object :—To study the effect of different doses of Zn SO<sub>4</sub> on Wheat.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) Gram. (c) Nil. (ii) (a) Medium black. (b) N.A. (iii) N.A. (iv) (a) 1 ploughing and 1 harrowing. (b) to (e) N.A. (v) Nil. (vi) Medium. (vii) Unirrigated. (viii) 3 intercultures. (ix) 6.00° from Sept. to Dec. (x) 9.2.1952.

## 2. TREATMENTS :

1. Control.
2. 10 lb./ac. of Zn SO<sub>4</sub>.
3. 20 lb./ac. of Zn SO<sub>4</sub>.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 3. (b) N.A. (iii) 8. (iv) (a) 15'×24'. (b) 13'×21'. (v) 1'×1.5' around the plot. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) N.A. (iii) Grain yield. (iv) (a) 1951—N.A. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 235 lb./ac.
- (ii) 77.07 lb./ac.
- (iii) Treatments do not differ significantly.
- (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	220
2.	223
3.	261
S.E./mean	= 27.25 lb./ac.

Crop :- Wheat (*Rabi*).

Ref :- Mh. 52(328).

Site :- Agri. Res. Stn., Dhullia.

Type :- 'M'.

Object :—To compare calcium cyanamide with A/S as a source of N for Wheat.

## 1. BASAL CONDITIONS :

(i) (a) No. (b) *Chavali* and *Bajri*. (c) 5 C.L./ac. of F.Y.M.+2 bags of manure mixture. (ii) (a) Medium black. (b) N.A. (iii) 21.11.1952. (iv) (a) N.A. (b) Drilling. (c) 40 lb./ac. (d) 10° between rows. (e) —. (v) 5 C.L./ac. of F.Y.M. (vi) *Motia*. (vii) Irrigated. (viii) Nil. (ix) N.A. (x) 19.3.1953.

## 2. TREATMENTS :

1. 40 lb./ac. of N as A/S.
2. 40 lb./ac. of N as G.N.C. and A/S in 1 : 1 ratio.
3. 40 lb./ac. of N as calcium cyanamide.
4. 40 lb./ac. of N as G.N.C. and calcium cyanamide in 1 : 1 ratio.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 2. (iv) (a) 65'×25'. (b) 55'×20'. (v) 5'×2.5'. (vi) Yes.

## 4. GENERAL :

(i) Unsatisfactory growth due to low rainfall. (ii) Nil. (iii) Grain yield. (iv) (a) 1952—N.A. (b) No. (c) Nil. (v) (a) *Kopergaon* and *Padegaon*. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 377 lb./ac.  
 (ii) 46.13 lb./ac.  
 (iii) Treatments do not differ significantly.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	393
2.	396
3.	339
4.	381
S.E./mean	=32.62 lb./ac.

Crop :- Wheat (*Rabi*).

Ref :- Mh. 53(350).

Site :- Agri. Res. Stn., Dhullia.

Type :- 'M'.

Object :—To compare calcium cyanamide with A/S as a source of N for Wheat.

## 1. BASAL CONDITIONS :

- (i) (a) N.A. (b) Groundnut. (c) N.A. (ii) (a) Medium black. (b) N.A. (iii) 7.11.1953. (iv) (a) N.A. (b) Drilling (c) 60 lb./ac. (d) 12". (e) Nil. (v) Nil. (vi) Kenphad—Improved. (vii) Irrigated. (viii) 1 weeding. (ix) N.A. (x) 24.3.1954.

## 2. TREATMENTS :

- 40 lb./ac. of N as A/S.
- 40 lb./ac. of N as G.N.C. and A/S in 1 : 1 ratio.
- 40 lb./ac. of N as calcium cyanamide.
- 40 lb./ac. of N as G.N.C. and calcium cyanamide in 1 : 1 ratio.

## 3. DESIGN :

- (i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 2. (iv) (a) 50'×24'. (b) 45'×24'. (v) 5' on one side only. (vi) Yes.

## 4. GENERAL :

- (i) Satisfactory. (ii) Rust attack. (iii) Grain yield. (iv) (a) 1952—N.A. (b) No. (c) Nil. (v) (a) Kopergaon, Padegaon and Amreli. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 715 lb./ac.  
 (ii) 154.0 lb./ac.  
 (iii) Treatments do not differ significantly.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	596
2.	831
3.	868
4.	565
S.E./mean	=108.9 lb./ac.

Crop :- Wheat (*Rabi*).

Ref :- Mh. 53(383).

Site :- Agri. Res. Stn., Jalagaon.

Type :- 'M'.

Object :—To study the usefulness of Chinamug as G.M. to Wheat.

## 1. BASAL CONDITIONS :

- (i) (a) *Chinamug*—Wheat. (b) *Chinamug*. (c) Nil. (ii) (a) Deep black soil. (b) Refer soil analysis, Jalagaon. (iii) 28.10.1953. (iv) (a) N.A. (b) Drilling. (c) 60 lb./ac. (d) 12" between rows. (e) N.A. (v) Nil. (vi) *Kenphad*. (vii) Unirrigated. (viii) Nil. (ix) 0.47". (x) 10.2.1954.

## 2. TREATMENTS :

1. Growing *Chinamug* (Wheat in *Rabi*).
2. Burying *Chinamug* from plot 1 (Wheat in *Rabi*).
3. Growing *Chinamug* and burying in *situ*.

## 3. DESIGN :

- (i) R.B.D. (ii) (a) 3, (b) N.A. (iii) 2. (iv) (a) and (b) 33'×33'. (v) Nil. (vi) Yes.

## 4. GENERAL :

- (i) Growth was satisfactory. (ii) White-ants trouble observed. (iii) Grain and fodder yield. (iv) (a) 1952 to 1955. (b) and (c) No. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 426 lb./ac.  
 (ii) 259.6 lb./ac.  
 (iii) Treatments do not differ significantly.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	496
2.	327
3.	454
S.E./mean	= 183.6 lb./ac.

Crop :- Wheat (*Rabi*).

Ref :- Mh. 53(384).

Site :- Agri. Res. Stn., Jalagaon.

Type :- 'M'.

Object :- To study the effect of Sannhemp as G.M. on dry Wheat.

## 1. BASAL CONDITIONS :

- (i) (a) Sannhemp—Wheat. (b) Sannhemp. (c) Nil. (ii) (a) Deep black soil, (b) Refer soil analysis, Jalagaon. (iii) 22.10.1953. (iv) (a) N.A. (b) Drilling. (c) 60 lb./ac. (d) 12" between rows. (e) N.A. (v) Nil. (vi) Kenphad. (vii) Unirrigated. (viii) Nil. (ix) 0.47". (x) 10.2.1954.

## 2. TREATMENTS :

1. Sann grown for green manuring and tender tops and leaves burried in the same site.
2. Sann grown and removed.
3. Tender shoots and stripped leaves from treatment 2 burried.
4. Control (Wheat in *Rabi*).

## 3. DESIGN :

- (i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 2. (iv) (a) and (b) 33'×33'. (v) Nil. (vi) Yes.

## 4. GENERAL :

- (i) Growth was satisfactory. (ii) Slight attack of white-ants. (iii) Grain and fodder yield. (iv) (a) 1952 to 1954. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 310 lb./ac.  
 (ii) 160.8 lb./ac.  
 (iii) Treatments do not differ significantly.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	284
2.	408
3.	373
4.	174
S.E./mean	= 113.7 lb./ac.

Crop :- Wheat (*Kharif*).  
Site :- Agri. Res. Stn., Jalagaon.

Ref :- Mh. 53(385).

Type :- 'M'.

Object :- To study the effect of compost prepared from legume (*Sann* and *Chinamug*) grown in *Kharif*, on Wheat in *Rabi*.

## 1. BASAL CONDITIONS:

(i) (a) *Chinamug* and *Sann*—Wheat. (b) *Chinamug* and *Sann*. (c) Nil. (ii) (a) Deep black soil. (b) Refer soil analysis, Jalagaon. (iii) *Chinamug* and *Sann* ; 24.6.1953, Wheat 26.10.1953. (iv) (a) N.A. (b) Drilling. (c) 60 lb./ac. (d) 12" between rows. (e) N.A. (v) Nil. (vi) *Kenphad*. (viii) Unirrigated. (viii) Nil. (ix) 0.47". (x) *Chinamug* and *Sann* ; 7.8.1953 and Wheat ; 25.2.1954.

## 2. TREATMENTS :

1. Control (Wheat in *Rabi*).
2. *Sann* grown (Compost to be applied to the same plot).
3. *Chinamug* grown (Compost to be applied to the same plot).
4. New Site plot (Compost of *Chinamug* to be applied).
5. New Site plot (Compost of *Sann* to be applied).

## 3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 2. (iv) (a) and (b) 33'×33'. (v) Nil. (vi) Yes.

## 4. GENERAL :

(i) Growth was satisfactory. (ii) White-ants trouble observed. (iii) Grain and fodder yield. (iv) (a) 1952—1955. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 814 lb./ac.
- (ii) 78.52 lb./ac.
- (iii) Treatments do not differ significantly.
- (iv) Av. yield of grain in lb /ac.

Treatment	Av. yield
1.	765
2.	884
3.	794
4.	880
5.	749
S.E./mean	= 55.53 lb./ac.

Crop :- Wheat (*Rabi*).  
Site :- Agri. Res. Stn., Jalagaon.

Ref :- Mh. 49(45).

Type :- 'M'.

Object :- To find out a suitable time and method of application of different kinds of manures to dry Wheat.

## 1. BASAL CONDITIONS:

(i) (a) No. (b) Groundnut. (c) N.A. (ii) (a) Deep black cotton type having a depth of 10 to 13 feet. (b) Refer soil analysis, Jalagaon. (iii) 9.11.1949. (iv) (a) N.A. (b) Drilling. (c) 50 lb./ac. (d) 13" between rows. (e) N.A. (v) Nil. (vi) *Motia*. (vii) Unirrigated. (viii) Nil. (ix) Nil. (x) 27.2.1950.

## 2. TREATMENTS :

All combinations of (1), (2), (3) and (4).

- (1) 3 dates of application of N :  $D_1=8.10.1949$ ,  $D_2=10.10.1949$  and  $D_3=9.11.1949$ .
- (2) 2 sources of N :  $S_1=G.N.C.$  and  $S_2=A/S.$
- (3) 2 levels of N :  $N_0=0$  and  $N_1=40$  lb./ac.
- (4) 2 methods of application :  $M_1=Surface$  and  $M_2=Drilling.$

## 3. DESIGN :

(i)  $3 \times 2^3$  Fact. in R.B.D. (ii) (a) 24. (b) N.A. (iii) 4. (iv) (a)  $40' \times 30'-4"$ . (b)  $38' \times 26'$ . (v)  $3' \times 2'$ . (vi) Yes.

## 4. GENERAL :

(i) Drying of plants in early stage was observed. (ii) Very few plants were attacked by loose-smut. The attack was not considerable. (iii) Grain and chaff yield. (iv) (a) 1948 to 1952. (b) No. (c) N.A. (v) (a) No. (b) No. (vi) Nil. (vii) Expt. failed in 1948.

## 5. RESULTS :

(i) 1004 lb./ac.  
 (ii) 114.9 lb./ac.  
 (iii) None of the main effects or interactions differs significantly.  
 (iv) Av. yield of grain in lb./ac.

	Control = 1022 lb./ac.			Mean	M <sub>1</sub>	M <sub>2</sub>
	D <sub>1</sub>	D <sub>2</sub>	D <sub>3</sub>			
N <sub>1</sub> S <sub>1</sub>	933	1003	1004	980	948	1013
N <sub>1</sub> S <sub>2</sub>	1000	1018	952	990	973	1007
Mean	966	1011	978	985		
M <sub>1</sub>	933	1015	933	960		
M <sub>2</sub>	1000	1007	1023	1010		

S.E. of marginal mean of D = 28.7 lb./ac.  
 S.E. of marginal mean of NS or M = 23.4 lb./ac.  
 S.E. of body of D × NS or D × M tables = 40.6 lb./ac.  
 S.E. of body of NS × M table = 33.2 lb./ac.  
 S.E. of control mean = 16.6 lb./ac.

Crop :- Wheat (*Rabi*).

Ref :- Mh. 50(62).

Site :- Agri. Res. Stn., Jalagaon.

Type :- 'M'.

Object :—To find out a suitable time and method of application of different kinds of manures to dry Wheat.

## 1. BASAL CONDITIONS :

(i) (a) No. (b) Groundnut. (c) N.A. (ii) (a) Deep black cotton type having a depth of 10 to 13 feet. (b) Refer soil analysis, Jalagaon. (iii) 26.10.1950. (iv) (a) N.A. (b) Drilling. (c) 60 lb./ac. (d) 13" between rows. (e) N.A. (v) Nil. (vi) *Motia*. (vii) Unirrigated. (viii) Nil. (ix) 91 cents. (x) 15.2.1951.

## 2. TREATMENTS :

All combinations of (1), (2), (3) and (4)

- (1) 3 dates of applications of N : D<sub>1</sub>=24.9.1950, D<sub>2</sub>=9.10.1950 and D<sub>3</sub>=24.10.1950.
- (2) 2 sources of N : S<sub>1</sub>=G.N.C. and S<sub>2</sub>=A/S.
- (3) 2 levels of N : N<sub>0</sub>=0 and N<sub>1</sub>=40 lb./ac.
- (4) 2 methods of application : M<sub>1</sub>=Surface and M<sub>2</sub>=Drilling.

## 3. DESIGN :

(i)  $3 \times 2^3$  Fact. in R.B.D. (ii) (a) 24. (b) N.A. (iii) 4. (iv) (a)  $44' \times 30'4"$ . (b)  $38' \times 26'$ . (v) 2 rows on either side and 3' on either ends. (vi) Yes.

## 4. GENERAL :

(i) Drying of plants in early stage was observed. Rainfall was less than average. (ii) Infection of loose smut of wheat in few plots was observed. (iii) Grain and chaff yield. (iv) (a) 1948 to 1952. (b) No. (c) N.A. (v) (a) No. (b) Nil. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 1043 lb./ac.  
(ii) 77.86 lb./ac.  
(iii) None of the main effects or interactions differs significantly.  
(iv) Av. yield of grain in lb./ac.

Control = 1042 lb./ac.

	D <sub>1</sub>	D <sub>2</sub>	D <sub>3</sub>	Mean	M <sub>1</sub>	M <sub>2</sub>
N <sub>1</sub> S <sub>1</sub>	1016	1037	1035	1029	1022	1036
N <sub>1</sub> S <sub>2</sub>	1077	1062	1037	1059	1058	1056
Mean	1046	1050	1036	1044		
M <sub>1</sub>	1040	1026	1054	1040		
M <sub>2</sub>	1048	1073	1018	1046		

S.E. of marginal mean of D	=19.47 lb./ac.
S.E. of marginal mean of NS or M	=15.90 lb./ac.
S.E. of body of D×NS or D×M table	=27.53 lb./ac.
S.E. of body of NS×M table	=22.48 lb./ac.
S.E. of control mean	=11.24 lb./ac.

Crop :-Wheat (*Rabi*).

Ref :-Mh. 51(74).

Site :-Agri. Res. Stn., Jalagaon.

Type :-'M'.

Object :-To find out a suitable time and method of application of different kinds of manures to dry Wheat.

## 1. BASAL CONDITIONS :

(i) (a) No. (b) Cotton. (c) N.A. (ii) (a) Deep black cotton type having a depth of 10' to 13'  
(b) Refer soil analysis, Jalagaon. (iii) 2.11.1951. (iv) (a) N.A. (b) Drilling. (c) 60 lb./ac. (d) 13"  
(between rows). (e) N.A. (v) Nil. (vi) *Motia*. (vii) Unirrigated (viii) Nil. (ix) 0.2". (x)  
22.2.1952.

## 2. TREATMENTS :

All combinations of (1), (2), (3) and (4)

- (1) 3 dates of application of N : D<sub>1</sub>=24.9.1951, D<sub>2</sub>=9.10.1951 and D<sub>3</sub>=24.10.1951.  
(2) 2 sources of N : S<sub>1</sub>=G.N.C. and S<sub>2</sub>=A/S.  
(3) 2 levels of N : N<sub>n</sub>=0 and N<sub>1</sub>=40 lb /ac.  
(4) 2 methods of application : M<sub>1</sub>=Surface and M<sub>2</sub>=Drilling.

## 3. DESIGN :

(i) 3×2<sup>3</sup> Fact. in R.B.D. (ii) (a) 24. (b) N.A (iii) 4. (iv) (a) 44'×30' 4". (b) 38'×26'. (v) 2 rows  
on either side and 3' on either ends. (vi) Yes.

## 4. GENERAL :

(i) Drying of seedlings observed in early stage. (ii) Attack of white-ants observed at the time of flowering.  
Attack of loose-smut also observed. Grain and chaff yield. (iv) (a) 1948 to 1952. (b) No. (c) N.A. (v)  
(a) No. (b) N.A. (vi) Nil. (vii) Expt. vitiated during 1952.

## 5. RESULTS :

- (i) 643 lb./ac.  
(ii) 120.4 lb./ac.  
(iii) Main effects of sources, methods and dates and their interactions are not significant. Control vs.  
others also is not significant.

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

Control mean = 631 lb./ac.

	D <sub>1</sub>	D <sub>2</sub>	D <sub>3</sub>	Mean	M <sub>1</sub>	
N <sub>1</sub> S <sub>1</sub>	673	709	634	672	667	678
N <sub>1</sub> S <sub>2</sub>	629	636	649	638	625	650
Mean	651	672	641	655		
M <sub>1</sub>	620	708	610	646		
M <sub>2</sub>	682	637	672	663		

S.E. of marginal mean of D	=30.1 lb./ac.
S.E. of marginal mean of NS or M	=24.6 lb./ac.
S.E. of body of D×NS or D×M table	=42.6 lb./ac.
S.E. of body of M×NS table	=34.8 lb./ac.
S.E. of control mean	=17.4 lb./ac.

Crop :- Wheat (*Rabi*).

Ref :- Mh. 49(30).

Site :- Agri. Res. Stn., Jalagaon.

Type :- 'M'.

Object :- To study the effects of leguminous crop (*chinamug*) grown with and without P<sub>2</sub>O<sub>5</sub> on succeeding cereal crop Wheat.

## 1. BASAL CONDITIONS :

(i) (a) *Chinamug*—Wheat. (b) *Chinamug*. (c) As per treatments. (ii) (a) Deep black cotton type having a depth of 10' to 13'. (b) Refer soil analysis, Jalagaon. (iii) 4.11.1949. (iv) (a) N.A. (b) Drilling. (c) 50 lb./ac. (d) 13". (e) N.A. (v) Nil. (vi) *Gulab* (mid-late). (vii) Unirrigated. (viii) Nil. (ix) Nil. (x) 27.2.1950.

## 2. TREATMENTS :

1. Control (no manure).
  2. 50 lb./ac. of P<sub>2</sub>O<sub>5</sub> as Super.
  3. 100 lb./ac. of P<sub>2</sub>O<sub>5</sub> as Super.
  4. 150 lb./ac. of P<sub>2</sub>O<sub>5</sub> as Super.
  5. No manure (fallow in *Kharif* and sown in *Rabi*).
- Treatments applied to previous crop *Chinamug*.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 5. (iv) (a) 42'×19'-6". (b) 30'×13'. (v) 6'×3'-3". (vi) Yes.

## 4. GENERAL :

(i) Germination and stand was good, normal uniform growth in all plots (ii) Nil. (iii) Grain yield. (iv) (a) *Kharif* 1949 to *Rabi* 1954. (b) No. (c) N.A. (v) (a) Mohol and Niphad. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 965 lb./ac.
- (ii) 70.17 lb./ac.
- (iii) Treatments do not differ significantly.

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

Treatment	Av. yield
1.	935
2.	943
3.	927
4.	959
5.	1050
S.E./mean	=31.37 lb./ac.

Crop :- Wheat (*Rabi*).

Ref :- Mh. 50(41).

Site :- Agri. Res. Stn., Jalagaon.

Type :- 'M'.

Object :—To study the effects of leguminous crop (*Chinamug*) grown with and without  $P_2O_5$  on succeeding cereal crop Wheat.

## 1. BASAL CONDITIONS :

(i) (a) *Chinamug*—Wheat. (b) *Chinamug*. (c) As per treatments. (ii) (a) Deep black cotton type with depth of 10' to 13'. (b) Refer soil analysis, Jalagaon. (iii) 19.10.1950. (iv) (a) N.A. (b) Drilling. (c) 60 lb./ac. (d) 13". (e) N.A. (v) Nil. (vi) *Gulab* (mid-late). (vii) Unirrigated. (viii) Nil. (ix) 91 cents. (x) 14.2.1951.

## 2. TREATMENTS :

1. Control (no manure).
2. 50 lb./c. of  $P_2O_5$  as Super.
3. 100 lb./ac. of  $P_2O_5$  as Super.
4. 150 lb./ac. of  $P_2O_5$  as Super.
5. No manure (fallow in *Kharif* and sown in *Rabi*).

Treatments applied to previous crop *Chinamug*.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 5. (iv) (a) 42'×19'-6". (b) 30'×13'. (v) 6'×3'—3". (vi) Yes.

## 4. GENERAL :

(i) Rainfall was less than average and it affected the growth. (ii) Drying of plants in early stage of the crop was observed. Infection of loose-smut was also marked in many of the plots. (iii) Grain yield. (iv) (a) *Kharif* 1949 to *Rabi* 1954. (b) No. (c) N.A. (v) (a) Mohol and Niphad. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 555 lb./ac.  
 (ii) - 55.81 lb./ac.  
 (iii) Treatments do not differ significantly.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	506
2.	574
3.	498
4.	545
5.	652
S.E./mean	=24.95 lb./ac



Crop :- Wheat (*Rabi*).  
Site :- Agri. Res. Stn., Jalagaon.

Ref :- Mh. 51(45).  
Type :- 'M'.

Object :- To study the effect of leguminous crop (*Chinamug*) grown with and without  $P_2O_5$  on succeeding cereal crop Wheat.

### 1. BASAL CONDITIONS :

(i) (a) *Chinamug*—Wheat (b) *Chinamug*. (c) As per treatments. (ii) (a) Deep black cotton type having depth of 10' to 13'. (b) Refer soil analysis, Jalagaon. (iii) 2.11.1951. (iv) (a) N.A. (b) Drilling. (c) 60 lb./ac. (d) 13". (e) N.A. (v) Nil. (vi) *Motia* (early). (vii) Unirrigated. (viii) Nil. (ix) 19 cents. (x) 22.2.1952.

### 2. TREATMENTS :

1. Control (no manure).
2. 50 lb./ac. of  $P_2O_5$  as Super.
3. 100 lb./ac. of  $P_2O_5$  as Super.
4. 150 lb./ac. of  $P_2O_5$  as Super.
5. No manure (fallow in *Kharif* and sown in *Rabi*).  
Treatments applied to previous crop *Chinamug*.

### 3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 5. (iv) (a) 42' × 19'-6" (b) 30' × 13'. (v) 6' × 3'.3". (vi) Yes.

### 4. GENERAL :

(i) Normal. (ii) Drying of seedlings observed in early stage. Attack of white-ants observed. Attack of loose-smut also observed. (iii) Grain yield. (iv) (a) *Kharif* 1949 to *Rabi* 1954. (b) No. (c) N.A. (v) (a) Mohol and Niphad. (b) No. (vi) and (vii) Nil.

### 5. RESULTS :

- (i) 550 lb./ac.  
(ii) 103.0 lb./ac.  
(iii) Treatments do not differ significantly.  
(iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	508
2.	507
3.	478
4.	538
5.	723
S.E./mean	=46.17 lb./ac.

Crop :- Wheat (*Rabi*).  
Site :- Agri. Res. Stn., Jalagaon.

Ref :- Mh. 52(71).  
Type :- 'M'.

Object :- To study the effect of leguminous crop (*Chinamug*) grown with and without  $P_2O_5$  on succeeding cereal crop Wheat.

### 1. BASAL CONDITIONS :

(i) (a) *Chinamug*—Wheat. (b) *Chinamug*. (c) As per treatments. (ii) (a) Deep black cotton type having a depth of 10' to 13'. (b) Refer soil analysis, Jalagaon. (iii) 20.10.1952. (iv) (a) N.A. (b) Drilling. (c) 60 lb./ac. (d) 13" between rows ; irregular between plants. (e) N.A. (v) Nil. (vi) *Motia* (early). (vii) Unirrigated. (viii) N.A. (ix) 20 cents. (x) 6.3.1953.

### 2. TREATMENTS :

1. Control (no manure).
2. 50 lb./ac. of  $P_2O_5$  as Super.
3. 100 lb./ac. of  $P_2O_5$  as Super.
4. 150 lb./ac. of  $P_2O_5$  as Super.
5. No manuring (fallow in *Kharif* and sown in *Rabi*).  
Treatments applied to previous crop *Chinamug*.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 5. (iv) (a) 42'×19'.6". (b) 30'×13'. (v) 6'×3'-3". (vi) Yes.

## 4. GENERAL :

(i) The growth was not vigorous owing to the lack of sufficient rains. The height was below normal. The grain size was thin. (ii) Plants were attacked by white-ants and root-rot. Hence the quantity of yield was very much less. (iii) Grain and chaff yield. (iv) (a) *Kharif* 1949 to *Rabi* 1954. (b) No. (c) N.A. (v) (a) Mohol and Niphad. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 95 lb./ac.  
 (ii) 53.71 lb./ac.  
 (iii) Treatments differ significantly.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	67
2.	77
3.	74
4.	84
5.	176
S.E./mean	= 24.01 lb./ac.

Crop :-Wheat (*Rabi*).

Ref :-Mh. 50(134).

Site :-Agri. Res. Stn., Jalagaon.

Type :-'M'.

Object :—To study the effect of leguminous crop (*Chinamug*) grown with and without  $P_2O_5$  on succeeding cereal crop Wheat.

## 1. BASAL CONDITIONS :

(i) (a) *Chinamug*—Wheat. (b) *Chinamug*. (c) As per treatments. (ii) (a) Deep black cotton type having a depth of 10' to 13'. (b) Refer soil analysis, Jalagaon. (iii) 28.10.1953. (iv) (a) N.A. (b) Drilling. (c) 60 lb./ac. (d) Between rows 13". (e) N.A. (v) Nil. (vi) *Motia* (early). (vii) Unirrigated. (viii) N.A. (ix) 48 cents. (x) 10.2.1954.

## 2. TREATMENTS :

- Control (no manure).
  - 50 lb./ac. of  $P_2O_5$  as Super.
  - 100 lb./ac. of  $P_2O_5$  as Super.
  - 150 lb./ac. of  $P_2O_5$  as Super.
  - No manure (fallow in *Kharif* and sown in *Rabi*).
- Treatments applied to previous crop *Chinamug*.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 5. (iv) (a) 42'×19'.6". (b) 30'×13'.6". (v) 6'×3'. (vi) Yes.

## 4. GENERAL :

(i) The growth was satisfactory. (ii) Few plots dried due to attack of white-ants. The damage was negligible. (iii) Grain and chaff yield. (iv) (a) *Kharif* 1949 to *Rabi* 1954. (b) No. (c) N.A. (v) (a) Mohol and Niphad. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 501 lb./ac.  
 (ii) 79.77 lb./ac.  
 (iii) Treatments do not differ significantly.

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

Treatment	Av. yield
1.	510
2.	513
3.	526
4.	452
5.	507
S.E./mean	= 35.66 lb./ac.

Crop :- Wheat (*Rabi*),

Ref :- Mh. 51(104).

Site :- Agri. Res. Stn., Jeur.

Type :- 'M'.

Object :- To study the effect of Zinc Sulphate on Wheat.

## 1. BASAL CONDITIONS :

(i) (a) Wheat—*Jowar*. (b) *Jowar*. (c) Nil. (ii) (a) Medium deep. (b) N.A. (iii) 12.10.1951. (iv) (a) N.A. (b) Seed drilled. (c) 40 lb./ac. (d) 12" apart. (e) N.A. (v) Nil. (vi) *Vijaya*. (vii) Unirrigated. (viii) 3 intercultures. (ix) N.A. (x) 21.1.1952.

## 2. TREATMENTS :

1. No manure (control).  
 2. 10 lb./ac. of ZnSO<sub>4</sub>.  
 3. 20 lb./ac. of ZnSO<sub>4</sub>.  
 ZnSO<sub>4</sub> applied with seed.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 3. (b) N.A. (iii) 8. (iv) (a) 33'×20'. (b) 27'×14'. (v) 3' all round the net plot. (vi) Yes.

## 4. GENERAL :

(i) Due to the scanty rains after sowing the crop could not gain its maximum growth. (ii) Nil. (iii) Grain yield. (iv) (a) 1951—continued. (b) No. (c) N.A. (v) (a) Nil. (b) N.A. (vi) Late rains were absent. (vii) Nil.

## 5. RESULTS :

(i) 409 lb./ac.  
 (ii) 115.2 lb./ac.  
 (iii) Treatments differ significantly.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	328
2.	481
3.	417
S.E./mean	=40.3 lb./ac.

Crop :- Wheat (*Rabi*).

Ref :- Mh. 52(363).

Site :- Agri Res. Stn., Jeur.

Type :- 'M'.

Object :- To study the effect of Zinc Sulphate on Wheat.

## 1. BASAL CONDITIONS :

(i) (a) No. (b) Wheat. (c) Nil. (ii) (a) Medium deep. (b) N.A. (iii) 11.10.1952. (iv) (a) 4 harrowings. (d) Drilling. (c) 40 lb./ac. (d) 12" between rows. (e) N.A. (v) Nil. (vi) *Vijaya*. (vii) Unirrigated. (viii) 2 interculturings. (ix) 19.51". (x) 18.1.1953.

## 2. TREATMENTS :

1. No manure (Control).
2. 10 lb./ac. of Zn SO<sub>4</sub>.
3. 20 lb./ac. of Zn SO<sub>4</sub>.

## 3. DESIGN :

- (i) R.B.D. (ii) (a) 3. (b) 84'×19'. (iii) 8. (iv) (a) 28'×19'. (b) 24'×15'. (v) 2' around the plot. (vi) Yes.

## 4. GENERAL :

- (i) Growth was checked due to scanty rains. (ii) Nil. (iii) Grain yield. (iv) (a) 1951—continued. (b) Yes. (c) Nil. (v) (a) Sholapur, Chas. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 67 lb./ac.  
 (ii) 42.11 lb./ac.  
 (iii) Treatments do not differ significantly.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	62
2.	44
3.	95
S.E./mean	=14.89 lb./ac.

Crop :- Wheat (*Rabi*).

Site :- Agri. Res. Stn., Jeur.

Ref :- Mh. 53(5).

Type :- 'M'.

Object :- To study the effect of Zinc Sulphate on Wheat.

## 1. BASAL CONDITIONS :

- (i) (a) Wheat—*Jowar*. (b) *Jowar*. (c) Nil. (ii) (a) Medium deep. (b) N.A. (iii) 11.10.1953. (iv) (a) 2 harrowings. (b) Seed drilled. (c) 40 lb./ac. (d) 12" apart. (v) Nil. (vi) *Vijaya*. (vii) Unirrigated. (viii) 2 Intercultures. (ix) 5.88". (x) 30.1.1954.

## 2. TREATMENTS :

1. No manure (Control).
  2. 10 lb./ac. of Zn SO<sub>4</sub>.
  3. 20 lb./ac. of Zn SO<sub>4</sub>.
- Zn SO<sub>4</sub> applied on 11.10.1953.

## 3. DESIGN :

- (i) R.B.D. (ii) (a) 3. (b) N.A. (iii) 8. (iv) (a) 33'×20'. (b) 27'×14'. (v) 3' around the net plot. (vi) Yes.

## 4. GENERAL :

- (i) Normal. (ii) Nil. (iii) Grain and *bhusa* yield. (iv) (a) 1951—continued. (b) No. (c) N.A. (v) (a) Nil. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 583 lb./ac.  
 (ii) 184.4 lb./ac.  
 (iii) Treatments do not differ significantly.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	515
2.	683
3.	550
S.E./mean	=65.9 lb./ac.

Crop :- Wheat (*Rabi*).  
Site :- Agri. Res. Stn , Kopergaon.

Ref :- Mh. 52(306).  
Type :- 'M'.

Object :- To see the effect of Calcereous Ammonium Nitrate, Urea fertilizers, Calcium Cynamide and other fertilizers on Wheat crop.

1. BASAL CONDITIONS :

(i) (a) No. (b) and (c) N.A. (ii) (a) A type. (b) Refer soil analysis, Kopergaon. (iii) 25.10.1952. (iv) (a) 3 ploughings and 2 harrowings. (b) Drilled. (c) 40 lb./ac. (d) 12" between rows. (e) —. (v) 5 C.L./ac. of F.Y.M. (vi) Kenphad-25. (vii) Irrigated. (viii) 2 hocings and 2 weedings. (ix) 11.73". (x) 13.3.1953.

2. TREATMENTS :

1. No top dressing.
2. Urea alone at 40 lb./ac. of N.
3. A/S alone at 40 lb./ac. of N.
4. Calcereous Ammonium Nitrate alone at 40 lb./ac. of N.
5. Calcium Cynamide alone at 40 lb./ac. of N.
6. G.N.C.+Urea (ratio 1 : 1) at 40 lb./ac. of N.
7. G.N.C.+A/S (1 : 1) at 40 lb./ac. of N.
8. G.N.C.+Calcereous Ammonium Nitrate (1 : 1) at 40 lb./ac. of N.
9. G.N.C. + Calcium Cynamide in 1 : 1 at 40 lb./ac. of N.

3. DESIGN :

(i) R.B.D. (ii) (a) 9. (b) N.A. (iii) 2. (iv) (a) 20' x 60'. (b) 16' x 56'. (v) 2' ring around. (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) Nil. (iii) Grain yield. (iv) (a) 1952—1955. (b) N.A. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

- (i) 785 lb./ac.  
(ii) 171.70 lb./ac.  
(iii) Treatments do not differ significantly.  
(iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	790
2.	815
3.	764
4.	815
5.	783
6.	861
7.	727
8.	736
9.	780
S E./mean	= 121.4 lb./ac.

Crop :- Wheat (*Rabi*).  
Site :- Agri. Res. Stn., Kopergaon.

Ref :- Mh. 48(92).  
Type :- 'M'.

Object :- To study the effect of Mr. Huskells' fertilizers on Wheat.

1. BASAL CONDITIONS :

(i) (a) No. (b) Fallow. (c) Nil. (ii) (a) A type. (b) Refer soil analysis, Kopergaon. (iii) 23.9.1948. (iv) (a) N.A. (b) Drilled. (c) 60 lb./ac. (d) 12" between rows. (e) —. (v) Nil. (vi) Niphad-4. (vii) Unirrigated. (viii) One weeding. (ix) 33.20". (x) 8.3.1949.

## 2. TREATMENTS :

1. Control.
2. 10 C.L./ac. of F.Y.M.
3. Mr. Huskells' fertilizers at 600 lb./ac.

## 3. DESIGN :

- (i) R.B.D. (ii) (a) 3. (b) N.A. (iii) 3. (iv) (a) 44'×22'. (b) 34'×16'. (v) 5'×3'. (vi) Yes.

## 4. GENERAL :

- (i) Growth was checked due to continuous rains. (ii) Rust was observed but it was checked by dusting sulphur. (iii) Grain yield. (iv) (a) 1948—N.A. (b) N.A. (c) No. (v) (a) and (b) N.A. (vi) and (vii) N.A.

## 5. RESULTS :

- (i) 434 lb./ac.  
 (ii) 172.0 lb./ac.  
 (iii) Treatments do not differ significantly.  
 (iv) Av yield of grain in lb./ac.

Treatment	Av. yield
1.	464
2.	407
3.	432
S.E./mean	= 99.2 lb./ac.

Crop :-Wheat (*Rabi*).

Ref :-Mh. 50(143).

Site :-Agri. Res. Stn., Kopergaon.

Type :-'M'.

Object :-To study the N and P<sub>2</sub>O<sub>5</sub> requirements of Wheat.

## 1. BASAL CONDITIONS :

- (i) (a) No. (b) and (c) N.A. (ii) (a) A type. (b) Refer soil analysis, Kopergaon. (iii) 16.10.1950.  
 (iv) (a) 1 ploughing and 1 harrowing. (b) Drilled. (c) 50 lb./ac. (d) 12" between rows. (e) —. (v) Nil. (vi) Niphad-4. (vii) Irrigated. (viii) 1 hoeing and 1 weeding. (ix) 21.26". (x) 27.3.1951.

## 2. TREATMENTS :

1. 3 bags/ac. of G.N.C.+50 lb./ac. of A/S.
2. 32 lb./ac. of N as G.N.C.+32 lb./ac. of P<sub>2</sub>O<sub>5</sub> as Super.

## 3. DESIGN :

- (i) R.B.D. (ii) (a) 2. (b) N.A. (iii) 2. (iv) (a) 32'×154'. (b) 24'×136'. (v) 4'×9'. (vi) Yes.

## 4. GENERAL :

- (i) Normal. (ii) Nil. (iii) Grain yield. (iv) (a) 1950—N.A. (b) N.A. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## RESULTS :

- (i) 1357 lb./ac.  
 (ii) 16.70 lb./ac.  
 (iii) Treatments do not differ significantly.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	1325
2.	1389
S.E./mean	=11.81 lb./ac.

Crop :- Wheat (*Rabi*).  
Site :- Agri. Res. Stn., Kopergaon.

Ref :- Mh. 51(210).  
Type :- 'M'.

Object: —To study the N and P<sub>2</sub>O<sub>5</sub> requirements of Wheat.

1. BASAL CONDITIONS :

(i) (a) No. (b) Sann. (c) Nil. (ii) (a) A type. (b) Refer soil analysis, Kopergaon. (iii) 24.10.1951.  
(iv) (a) 1 ploughing and 2 harrowings. (b) Drilled. (c) 50 lb./ac. (d) 12" between rows. (e) —. (v)  
Nil. (vi) Kenphad-25. (vii) Irrigated. (viii) 2 weedings. (ix) 34.67". (x) 13.3.1952.

2. TREATMENTS :

1. 3 bags/ac. of G.N.C.+50 lb./ ac. of A/S.  
2. 32 lb./ac. of N as G.N.C.+32 lb./ac. of P<sub>2</sub>O<sub>5</sub> as Super.

3. DESIGN :

(i) R.B.D. (ii) (a) 2. (b) N.A. (iii) 2. (iv) (a) 32'×154'. (b) 24'×136'. (v) 4'×9'. (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) Nil. (iii) Grain yield. (iv) (a) 1950—N.A. (b) No. (c) Nil. (v) (a) and (b) N.A.  
(vi) Nil. (vii) Nil.

5. RESULTS :

(i) 2018 lb./ac.  
(ii) 193.0 lb./ac.  
(iii) Treatments do not differ significantly.  
(iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	1859
2.	2178
S.E./mean	=136.4 lb./ac.

Crop :- Wheat (*Rabi*).  
Site :- Agri. Res. Stn., Kopergaon.

Ref :- Mh. 51(211).  
Type :- 'M'.

Object: —To find out the suitability of green manuring in comparison with F.Y.M.

1. BASAL CONDITIONS :

(i) (a) No. (b) N.A. (c) N.A. (ii) (a) A type. (b) Refer soil analysis, Kopergaon. (iii) 18.11.1951.  
(iv) (a) 4 ploughings and 7 harrowings. (b) Drilled. (c) 40 lb./ac. (d) 12" between rows. (e) —. (v) Nil.  
(vi) Kenphad—25. (vii) Irrigated. (viii) 1 hoeing and 1 weeding. (ix) 34.67". (x) 5,6,7-4-1952.

2. TREATMENTS :

1. 5000 lb./ac. of F.Y.M.  
2. Sann green manuring. (Quantity N.A.)

3. DESIGN :

(i) R.B.D. (ii) (a) 2. (b) N.A. (iii) 3. (iv) (a) N.A. (b) 1 *guntha*. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) Grain yield. (iv) (a) 1951—N.A. (b) N.A. (c) Nil. (v) (a) and (b) N.A.  
(vi) Nil. (vii) Nil.

5. RESULTS :

(i) 1161 lb./ac.  
(ii) 86.40 lb./ac.  
(iii) Treatments do not differ significantly.

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

Treatment	Av. yield
1.	1050
2.	1273
S.E./mean	=49.80 lb./ac.

Crop :- Wheat (*Rabi*).

Ref :- Mh. 53(246).

Site :- Agri. Res. Stn., Kopergaon.

Type :- 'M'.

Object :—To study the effect of Sann green manuring with and without  $P_2O_5$  on Wheat.

#### 1. BASAL CONDITIONS :

(i) (a) Jowar (*Rabi*)—Wheat. (b) Sann green manuring. (c) As per treatments. (ii) (a) A type. (b) Refer soil analysis, Kopergaon. (iii) 23.10.1953. (iv) (a) Twice harrowing. (b) to (e) N.A. (v) Nil. (vi) Kenphad (early). (vii) Irrigated. (viii) Interculturing once. (ix) 4.17". (x) 13.3.1954.

#### 2. TREATMENTS :

1. Sann grown for G.M.
2. 50 lb./ac. of  $P_2O_5$  applied to Sann crop at sowing and then Sann used as G.M.
3. 50 lb./ac. of  $P_2O_5$  applied at the time of burying of Sann crop.
4. 30 lb./ac. of N as A/S applied at the time of burying of Sann.
5. 60 lb./ac. of N as A/S applied at the time of burying of Sann.

#### 3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 2. (iv) (a) 42'×40'. (b) 34'×32'. (v) 4' all round. (vi) Yes.

#### 4. GENERAL :

(i) Satisfactory. (ii) Very light attack of rust. (iii) Grain yield. (iv) (a) 1952—1955. (b) No. (c) N.A. (v) (a) N.A. (b) N.A. (vi) Nil. (vii) Nil.

#### 5. RESULTS :

- (i) 1641 lb./ac.
- (ii) 282.0 lb./ac.

(iii) Treatments do not differ significantly

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

Treatment	Av. yield
1.	1477
2.	1692
3.	1785
4.	1604
5.	1645
S.E./mean	=199.4 lb./ac.

Crop :- Wheat (*Rabi*).

Ref :- Mh. 53(247).

Site :- Agri. Res. Stn., Kopergaon.

Type :- 'M'.

Object :—To find out the suitability of green manuring as compared to F.Y.M.

#### 1. BASAL CONDITIONS :

(i) (a) No. (b) Sann for green manuring. (c) Nil. (ii) (a) A type. (b) Refer soil analysis, Kopergaon. (iii) 22.10.1953. (iv) (a) 1 harrowing. (b) to (e) N.A. (v) Nil. (vi) Kenphad (early). (vii) Irrigated. (viii) N.A. (ix) 4.17". (x) 14.3.1954.



## 2. TREATMENTS :

1. Control (no manure).
2. Sann green manuring only.
3. 50 lb./ac. of  $P_2O_5$  at sowing of Sann.
4. 5 C L./ac. of F.Y.M. before sowing Wheat.

## 3. DESIGN :

- (i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 5. (iv) (a) 78'×36'. (b) 72'×30'. (v) 3' around. (vi) Yes.

## 4. GENERAL :

- (i) Satisfactory. (ii) Very light attack of rust. (iii) Grain yield. (iv) (a) 1951-55. (b) No. (c) N.A. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 987 lb./ac.  
 (ii) 339.7 lb./ac.  
 (iii) Treatments do not differ significantly.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	830
2.	889
3.	1255
4.	973
S.E./mean	= 151.9 lb./ac.

Crop :- Wheat (*Rabi*).

Ref :- Mh. 52(346).

Site :- Agri. Res. Stn., Mohol.

Type :- 'M'.

Object :—To study the effect of compost prepared from legume crops (Sann and *Chinamug*) on Wheat.

## 1. BASAL CONDITIONS :

- (i) (a) No. (b) Sann and *Chinamug*. (c) Nil. (ii) (a) Medium black. (b) Refer soil analysis, Mohol. (iii) N.A. (iv) (a) Ploughing and 4 harrowings. (b) Drill. (c) 40 lb./ac. (d) 12" between rows. (e) —. (v) Nil. (vi) K-25. (vii) Unirrigated. (viii) 4 interculturings and 1 weeding. (ix) 5 03". (x) N.A.

## 2. TREATMENTS :

1. Control (no manure).
  2. Growing Sann in *Kharif* and using its compost for Wheat crop on the same site.
  3. Growing *Chinamug* in *Kharif* and using it as compost in *Rabi* on the same site.
  4. Sann compost brought from out side.
  5. *Chinamug* compost brought from out side.
- Amount of different green manuring crops N.A.

## 3. DESIGN :

- (i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 2. (iv) (a) 54'×21'. (b) 51'×21'. (v) N.A. (vi) Yes.

## 4. GENERAL :

- (i) N.A. (ii) N.A. (iii) Grain yield. (iv) (a) 1952-1953. (b) N.A. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 236 lb./ac.  
 (ii) 60.68 lb./ac.  
 (iii) Treatments do not differ significantly.

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

Treatment	Av. yield
1.	316
2.	161
3.	183
4.	235
5.	285
S.E./mean	= 42.91 lb./ac.

Crop :-Wheat (*Rabi*).

Ref :-Mh. 53(354).

Site :-Agri. Res. Stn., Mohol.

Type :-'M'.

Object :—To study the effect of compost prepared from Sann and *Chinamug* on Wheat.

## 1. BASAL CONDITIONS :

(i) (a) No. (b) Sann+*Chinamug*. (c) Nil. (ii) (a) Medium black. (b) Refer soil analysis, Mohol. (iii) N.A. (iv) (a) 1 ploughing and 4 harrowings. (b) Drilled. (c) 40 lb./ac. (d) 12" between rows. (e) —. (v) Nil. (vi) K-52. (vii) Unirrigated. (viii) 3 interculturings and 1 weeding. (ix) 8.89". (x) N.A.

## 2. TREATMENTS :

1. Control.
  2. Growing Sann in *Kharif* and use it as compost for wheat in *Rabi*.
  3. Growing *Chinamug* in *Kharif* and used it as compost for wheat in *Rabi*.
  4. Sann compost brought from out side.
  5. *Chinamug* compost brought from out side.
- Other details N.A.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 2. (iv) (a) N.A. (b) 51'×21'. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) N.A. (iii) Grain yield. (iv) (a) 1950—1953. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 142 lb./ac.  
 (ii) 20.73 lb./ac.  
 (iii) Treatments do not differ significantly.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	132
2.	130
3.	150
4.	161
5.	136
S E /mean	=14.66 lb./ac.

Crop :-Wheat (*Rabi*).

Ref :-Mh. 49(141).

Site :-Agri. Res Stn., Mohol.

Type :- 'M'.

Object :—To study the effect of leguminous crop (gram) raised with and without  $P_2O_5$  on the succeeding cereal crop Wheat.

## 1. BASAL CONDITIONS :

(i) (a) Gram—Wheat. (b) Gram (c) As per treatments. (ii) (a) Medium black. (b) Refer soil analysis, Mohol. (iii) N.A. (iv) (a) 1 ploughing and 4 harrowings. (b) Drilled. (c) 40 lb./ac. (d) 12" between rows. (e) N.A. (v) Nil. (vi) Kenphad-25. (vii) Unirrigated. (viii) 3 interculturings and 1 weeding. (ix) 1.14". (x) N.A.

## 2. TREATMENTS :

1. Control (no  $P_2O_5$ ).
2. 50 lb./ac. of  $P_2O_5$  applied to Gram crop.
3. 100 lb./ac. of  $P_2O_5$  applied to Gram crop.
4. 150 lb./ac. of  $P_2O_5$  applied to Gram crop.
5. Fallow in *Kharif* and grown in *Rabi*.

## 3. DESIGN :

- (i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 5. (iv) (a) N.A. (b)  $30' \times 15'$ . (v) N.A. (vi) Yes.

## 4. GENERAL :

- (i) N.A. (ii) Nil. (iii) Grain yield. (iv) (a) 1949—1954. (b) Yes. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 293 lb./ac.  
 (ii) 43.30 lb./ac.  
 (iii) Treatments do not differ significantly.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	288
2.	300
3.	297
4.	279
5.	303
S.E./mean	=19.35 lb./ac.

Crop :- Wheat (*Rabi*).

Ref :- Mh. 50(9).

Site :- Agri. Res. Strn., Mohol.

Type :- 'M'.

Object :- To study the effect of leguminous crop Gram grown with and without  $P_2O_5$  on the succeeding cereal crop Wheat.

## 1. BASAL CONDITIONS :

- (i) (a) No. (b) Gram. (c) As per treatments. (ii) (a) Medium black. (b) Refer soil analysis, Mohol. (iii) 25.10.1950. (iv) (a) N.A. (b) Drilled with 3 coultered drill. (c) 40 lb./ac. (d) 12" apart. (e) N.A. (v) F.Y.M. at 5 C.L./ac. once in 3 years. (vi) *Jay*. (vii) Unirrigated. (viii) Interculturing 4 times. (ix) 9.91". (x) 13.2.1951.

## 2. TREATMENTS :

1. Control (no  $P_2O_5$ ).
2. 50 lb./ac. of  $P_2O_5$  applied to Gram crop.
3. 100 lb./ac. of  $P_2O_5$  applied to Gram crop.
4. 150 lb./ac. of  $P_2O_5$  applied to Gram crop.
5. Fallow in *Kharif* and grown in *Rabi*.

## 3. DESIGN :

- (i) R.B.D. (ii) (a) 5. (b)  $115' \times 38'$ . (iii) 5. (iv) (a)  $23' \times 38'$ . (b)  $15' \times 30'$ . (v) 4' around net plot. (vi) Yes.

## 4. GENERAL :

- (i) Stunted growth. (ii) Nil. (iii) Grain yield. (iv) (a) 1949—1954. (b) No. (c) N.A. (v) (a) No. (b) N.A. (vi) Nil. (vii) Rainfall was not well distributed. Due to want of mulch and condition of soil, sowing was delayed. After sowing no rain was received which affected the growth of the crop.

## 5. RESULTS :

- (i) 261 lb./ac.  
 (ii) 69.70 lb./ac.  
 (iii) Treatments do not differ significantly.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	247
2.	235
3.	296
4.	269
5.	258
S.E./mean	=31.22 lb./ac.

Crop :- Wheat (*Rabi*).

Ref :- Mh. 51(9).

Site :- Agri. Res. Stn., Mohol.

Type :- 'M'.

Object :—To study the effect of Gram grown with and without  $P_2O_5$  on the succeeding cereal crop Wheat.

## 1. BASAL CONDITIONS :

- (i) (a) No. (b) Gram. (c) As per treatments. (ii) (a) Medium black. (b) Refer soil analysis, Mohol.  
 (iii) 29.9.1951. (iv) (a) 4 times harrowing. (b) Drilled. (c) 40 lb./ac. (d) 12' apart. (e) N.A. (v) Nil.  
 (vi) *Jay*. (vii) Unirrigated. (viii) 3 times interculturing. (ix) 7.49'. (x) 25.1.1952.

## 2. TREATMENTS :

- Control (no  $P_2O_5$ ).
- 50 lb./ac. of  $P_2O_5$  applied to Gram crop.
- 100 lb./ac. of  $P_2O_5$  applied to Gram crop.
- 150 lb./ac. of  $P_2O_5$  applied to Gram crop.
- Fallow in *Kharif* and grown in *Rabi*.

## 3. DESIGN :

- (i) R.B.D. (ii) (a) 5. (b) 38' × 115'. (iii) 5. (iv) (a) 38' × 23'. (b) 30' × 15'. (v) 4' around net plot.  
 (vi) Yes.

## 4. GENERAL :

- (i) Crop was fair and normal. But the yield was not satisfactory. (ii) No. (iii) Grain yield. (iv) (a) 1949—1954. (b) No. (c) N.A. (v) (a) No. (b) N.A. (vi) Nil. (vii) The atmosphere was not cloudy during the time of grain formation. No rains were received during growth and there was no moisture in the soil.

## 5. RESULTS :

- (i) 288 lb./ac.  
 (ii) 88.09 lb./ac.  
 (iii) Treatments do not differ significantly.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	265
2.	299
3.	269
4.	295
5.	312
S.E./mean	=39.69 lb./ac.

Crop :- Wheat (*Rabi*).

Ref :- Mh. 52(111).

Site :- Agri. Res. Stn., Mohol.

Type :- 'M'.

Object :—To study the effect of leguminous crop Gram grown with and without  $P_2O_5$  on the succeeding cereal crop Wheat.

1. BASAL CONDITIONS :

(i) (a) No. (b) Gram. (c) As per treatments. (ii) (a) Medium black. (b) Refer soil analysis, Mohol. (iii) 1.10.1952. (iv) (a) Harrowed 5 times. (b) Drilled with 3 coultered seed drill. (c) 40 lb./ac. (d) 12" apart. (e) N.A. (v) F.Y.M. at 5 C.L./ac. once in 3 years. (vi) *Jay*. (vii) Unirrigated. (viii) 2 interculturings and weeding. (ix) 5.03". (x) 2.1.1953.

2. TREATMENTS :

1. Control (no  $P_2O_5$ ).
2. 50 lb./ac. of  $P_2O_5$  applied to Gram crop.
3. 100 lb./ac. of  $P_2O_5$  applied to Gram crop.
4. 150 lb./ac. of  $P_2O_5$  applied to Gram crop.
5. Fallow in *Kharif* and grown in *Rabi*

3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) 115'×38'. (iii) 5. (iv) (a) 23'×38'. (b) 15'×30'. (v) 4' around net plot. (vi) Yes.

4. GENERAL :

(ii) Good. (iii) Nil. (iii) Grain yield. (iv) (a) 1949—1954. (b) No. (c) N.A. (v) (a) No. (b) N.A. (vi) Experiment failed in 1953. (vii) Nil.

5. RESULTS :

- (i) 1738 lb./ac.  
 (ii) 786.5 lb./ac.  
 (iii) Treatments do not differ significantly.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	1684
2.	1800
3.	1704
4.	2013
5.	1491
S.E./mean	= 351.6 lb./ac.

Crop :- Wheat (*Rabi*).

Ref :- Mh. 53(211).

Site :- Agri. Res. Stn., Mohol.

Type :- 'M'.

Object :—To study the effect of leguminous crop Groundnut grown with and without  $P_2O_5$  on succeeding cereal crop Wheat.

1. BASAL CONDITIONS :

(i) (a) No. (b) Groundnut. (c) As per treatments. (ii) (a) Medium black. (b) Refer soil analysis, Mohol. (iii) 23.9.1953. (iv) (a) N.A. (b) Drilled with 3 coultered drill. (c) 40 lb./ac. (d) 18" apart. (e) N.A. (v) Nil. (vi) *Jay*. (vii) Unirrigated. (viii) Interculturing on 21.11.1953 and bullock hoeing on 8.12.1953. (ix) 8.89". (x) 8,9.2.1954.

2. TREATMENTS :

1. Control (no  $P_2O_5$ ).
2. 50 lb./ac. of  $P_2O_5$  applied to Groundnut crop.
3. 100 lb./ac. of  $P_2O_5$  applied to Groundnut crop.
4. 150 lb./ac. of  $P_2O_5$  applied to Groundnut crop.
5. Fallow in *Kharif* and grown in *Rabi*.

## 3. DESIGN :

(i) R.B.D. (iii) (a) 5. (b) N.A. (iii) 5. (iv) (a) 42'×30'. (b) 30'×18'. (v) 6' all round net plot.  
(vi) Yes.

## 4. GENERAL :

(i) Fair. (ii) Nil. (iii) Weight of grain. (iv) (a) 1952—1954. (b) No. (c) N.A. (v) (a) No. (b) N.A.  
(vi) and (vii) Nil.

## 5. RESULTS :

- (i) 319 lb./ac.  
(ii) 31.05 lb./ac.  
(iii) Treatments differ highly significantly.  
(iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	310
2.	343
3.	319
4.	353
5.	271
S.E./mean	= 13.91 lb./ac.

Crop :-Wheat (*Rabi*).

Ref :-Mh. 49(59).

Site :-Agri. Res. Stn., Mohol.

Type :-'M'.

Object :—To study the effect of a leguminous crop *Chinamug* grown with and without  $P_2O_5$  on the succeeding cereal crop Wheat.

## 1. BASAL CONDITIONS :

(i) (a) *Chinamug*—Wheat. (b) *Chinamug*. (c) As per treatments. (ii) (a) Medium black. (b) Refer soil analysis, Mohol. (iii) 18.9.1949. (iv) (a) N.A. (b) Drilled. (c) 40 lb./ac. (d) 12" between rows.  
(e) Nil. (v) Nil. (vi) *Jay*. (vii) Unirrigated. (viii) One interculturing. (ix) 1.14". (x) 16.1.1950.

## 2. TREATMENTS :

- Control (no  $P_2O_5$ ).
- 50 lb./ac. of  $P_2O_5$  applied to *Chinamug*.
- 100 lb./ac. of  $P_2O_5$  applied to *Chinamug*.
- 150 lb./ac. of  $P_2O_5$  applied to *Chinamug*.
- Fallow in *Kharif* and grown in *Rabi*.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 5. (iv) (a) 42'×27'. (b) 30'×15'. (v) 6' all round net plot.  
(vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) Nil. (iii) N.A. (iv) (a) 1949—1954. (b) No. (c) Nil. (v) (a) Niphad. (b) N.A. (iv) and (vii) Nil.

## 5. RESULTS :

- (i) 363 lb./ac.  
(ii) 59.67 lb./ac.  
(iii) Treatments do not differ significantly.  
(iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	334
2.	346
3.	364
4.	396
5.	374
S.E./mean	=26.68 lb./ac.

Crop :-Wheat (*Rabi*).

Ref:-Mh. 53(209).

Site :- Agri. Res. Stn., Mohol.

Type :-'M'.

Object :-To study the effects of leguminous crop *Chinamug* grown with and without  $P_2O_5$  on the succeeding crop Wheat.

1. BASAL CONDITIONS :

(i) (a) *Chinamug*-Wheat. (b) *Chinamug*. (b) As per treatments. (ii) (a) Medium black. (b) Refer soil analysis, Mohol. (iii) 18.10.1953. (iv) (a) N.A. (b) Drilled with 4 coultered drill. (c) 40 lb./ac. (d) 12" apart. (e) N.A. (v) Nil. (vi) *Jay*. (vii) Unirrigated. (viii) 2 bullock interculturings. (ix) 8.89". (x) 22 to 25.2.1954.

2. TREATMENTS :

1. Control (no  $P_2O_5$ ).
2. 50 lb./ac. of  $P_2O_5$  applied to *Chinamug*.
3. 100 lb./ac. of  $P_2O_5$  applied to *Chinamug*.
4. 150 lb./ac. of  $P_2O_5$  applied to *Chinamug*.
5. Fallow in *Kharif* and grown in *Rabi*.

3. DESIGN :

(i) R B.D. (ii) (a) 5. (b) N.A. (iii) 5. (iv) (a) 42'×27'. (b) 30'×15'. (v) 6' all round net plot. (vi) Yes.

4. GENERAL :

(i) The crop was very much affected owing to heavy moisture content in the soil. The stand of the crop was also very much uneven. (ii) The crop was attacked slightly by root-rot. (iii) Grain yield. (iv) (a) 1949-1954. (b) No. (c) N.A. (v) (a) Niphad and Jalagaon. (vi) and (vii) Nil.

5. RESULTS :

- (i) 191 lb./ac.  
 (ii) 100.7 lb./ac.  
 (iii) Treatments do not differ significantly.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	174
2.	184
3.	192
4.	197
5.	209
S.E./mean	=45.02 lb./ac.

Crop :- Wheat (*Rabi*).

Ref :- Mh. 51(118).

Site :- Govt. Expt. Farm, Nagpur.

Type :- 'M'.

Object :-To determine the N and  $P_2O_5$  requirements of Wheat crop.

1. BASAL CONDITIONS :

(i) (a) No. (b) Wheat. (c) N.A. (ii) (a) Black cotton. (b) Refer soil analysis, Nagpur. (iii) 7, 8.11.1951. (iv) (a) N.A. (b) Drill (c) 50 lb./ac. (d) Between rows 10" ; between plants—irregular. (e) N.A. (v) N.I. (vi) NP-52. (vii) Unirrigated. (viii) N.A. (ix) 5.28". (x) 28.3.1952.

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) 5 levels of  $P_2O_5$  :  $P_0=0$ ,  $P_1=15$ ,  $P_2=30$ ,  $P_3=45$  and  $P_4=60$  lb./ac.

N applied as A/S and  $P_2O_5$  as Super.

## 3. DESIGN :

(i) 3×5 Fact. in R.B.D. (ii) (a) 15. (b) N.A. (iii) 3. (iv) (a) N.A. (b) 49.5'×11'. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) Normal. (ii) N.A. (iii) Grain yield. (iv) (a) N.A. (b) No. (c) N.A. (v) (a) N.A. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 747 lb./ac.  
 (ii) 117.4 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>	P <sub>3</sub>	P <sub>4</sub>	Mean
N <sub>0</sub>	827	773	787	760	720	773
N <sub>1</sub>	613	760	813	613	747	709
N <sub>2</sub>	667	907	760	780	773	757
Mean	702	813	787	684	747	747

S.E. of marginal mean of N = 30.3 lb./ac.  
 S.E. of marginal mean of P = 39.1 lb./ac.  
 S.E. of body of table = 67.7 lb./ac.

Crop :- Wheat (*Rabi*).

Site :- Govt. Expt. Farm, Nagpur.

Ref :- Mh. 52(147).

Type :- 'M'.

Object :—To determine the N and P<sub>2</sub>O<sub>5</sub> requirements of Wheat crop.

## 1. BASAL CONDITIONS :

(i) (a) No. (b) Wheat. (c) N.A. (ii) (a) Black cotton soil. (b) Refer soil analysis, Nagpur. (iii) 28.19.1952.  
 (iv) (a) N.A. (b) By *tiffan*. (c) 50 lb./ac. (d) Between lines 10". (e) —. (v) Nil. (vi) NP—52. (vii) Unirrigated. (viii) 3 weedings and 2 hoeings. (ix) 1.79". (x) 20.2.1953.

## 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) 5 levels of P<sub>2</sub>O<sub>5</sub> : P<sub>0</sub>=0, P<sub>1</sub>=15, P<sub>2</sub>=30, P<sub>3</sub>=45 and P<sub>4</sub>=60 lb./ac.

N applied as A/S and P<sub>2</sub>O<sub>5</sub> as Super.

## 3. DESIGN :

(i) 3×5 Fact. in R.B.D. (ii) (a) 15. (b) N.A. (iii) 3. (iv) (a) N.A. (b) 49.5'×11'. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) Normal. (ii) Nil. (iii) Grain yield. (iv) (a) N.A. (b) No. (c) N.A. (v) (a) N.A. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 633 lb./ac.  
 (ii) 90.4 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>	P <sub>3</sub>	P <sub>4</sub>	Mean
N <sub>0</sub>	635	582	524	680	624	609
N <sub>1</sub>	580	620	624	660	697	636
N <sub>2</sub>	614	544	657	667	787	654
Mean	610	582	601	669	702	633

S.E. of marginal mean of N = 23.3 lb./ac.

S.E. of marginal mean of P = 30.1 lb./ac.

S.E. of body of table = 52.1 lb./ac.

Crop :- Wheat (*Rabi*).

Ref :- Mh. 53(200).

Site :- Govt. Expt. Farm, Nagpur.

Type :- 'M'.

Object :- To determine the N and P<sub>2</sub>O<sub>5</sub> requirements of Wheat.

## 1. BASAL CONDITIONS :

(i) (a) No. (b) N.A. (c) N.A. (ii) (a) Black cotton soil. (b) Refer soil analysis, Nagpur. (iii) 26.10.1953.  
 (iv) (a) 2 ploughings and 4 *bakharings*. (b) N.A. (c) 50 lb./ac. (d) N.A. (e) —. (v) Nil. (vi) NP—52 (early). (vii) Unirrigated. (viii) 3 hoeings and 2 weedings. (ix) 1.58". (x) 21.2.1954 to 21.2.1954.

## 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) 5 levels of P<sub>2</sub>O<sub>5</sub> : P<sub>0</sub>=0, P<sub>1</sub>=15, P<sub>2</sub>=30, P<sub>3</sub>=45 and P<sub>4</sub>=60 lb./ac.N applied as A/S and P<sub>2</sub>O<sub>5</sub> as Super.

## 3. DESIGN :

(i) 3x5 Fact. in R.B.D. (ii) (a) 15. (b) N.A. (iii) 3. (iv) (a) 33.8'x17.3'. (b) 33.0'x16.5'. (v) 10' round the plot. (vi) Yes.

## 4. GENERAL :

(i) Normal. (ii) Nil. (iii) Grain yield. (iv) (a) N.A. (b) No (c) N.A. (v) (a) N.A. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 526 lb./ac.

(ii) 160.2 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>	633	607	510	550	377	535
N <sub>1</sub>	570	467	540	555	414	509
N <sub>2</sub>	507	515	630	494	513	532
Mean	570	530	560	533	435	526

S.E. of marginal mean of N = 41.4 lb./ac.

S.E. of marginal mean of P = 53.4 lb./ac.

S.E. of body of table = 92.5 lb./ac.

Crop :- Wheat (*Rabi*).

Ref :- Mh. 53(228).

Site :- Govt. Expt. Farm, Nagpur.

Type :- 'M'.

Object :- To compare the effects of C/N and A/S on the yield of Wheat.

## 1. BASAL CONDITIONS :

(i) (a) No. (b) Wheat. (c) N.A. (ii) (a) Black cotton soil. (b) Refer soil analysis, Nagpur. (iii) 25.10.1953. (iv) (a) 2 ploughings and 4 *bakhering*. (b) Sown by *tiffan*. (c) 50 lb./ac. (d) and (e) N.A. (v) Nil. (vi) NP-52. (vii) Unirrigated. (viii) N.A. (ix) 1.58". (x) 20.2.1954 to 21.2.1954.

## 2. TREATMENTS :

All combinations of (1) and (2)

- (1) 2 sources of N :  $S_1 = A/S$  and  $S_2 = G.N.C$  9N?  
 (2) 3 levels of N :  $N_0 = 0$ ,  $N_1 = 15$  and  $N_2 = 30$  lb./ac.

## 3. DESIGN :

(i)  $3 \times 2$  Fact. in R.B.D. (ii) (a) 6. (b) N.A. (iii) 5. (iv) (a)  $50.3' \times 22.8'$ . (b)  $49.5' \times 22.0'$ . (v) 10' round the plot. (vi) Yes.

## 4. GENERAL :

(i) Normal. (ii) Nil. (iii) Grain yield. (iv) (a) N.A. (b) No. (c) N.A. (v) (a) N.A. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 591 lb./ac.  
 (ii) 115.8 lb./ac.  
 (iii) None of the effects is significant.  
 (iv) Av. yield of grain in lb./ac.

	$S_1$	$S_2$	Mean
$N_0$	—	—	608
$N_1$	647	601	624
$N_2$	537	545	541
Mean	592	573	—

S.E. of any marginal mean

=36.6 lb./ac.

S.E. of body of table

=51.8 lb./ac.

Crop :- Wheat (*Rabi*).

Ref :- Mh. 53(229).

Site :- Govt. Expt. Farm, Nagpur.

Type :- 'M'.

Object :- To study the effect of green manuring on Wheat in comparison with A/S.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) and (c) N.A. (ii) (a) Black cotton soil. (b) Refer soil analysis, Nagpur. (iii) 24.10.1953. (v) (a) 4 *bakharings* and 2 ploughings. (b) N.A. (c) 60 lb./ac. (d) N.A. (e) —. (vi) Nil. (vii) Hawral. (medium). (viii) Unirrigated. (viii) N.A. (ix) 1.58". (x) 19,20.2.1954.

## 2. TREATMENTS :

- Control.
  - Green manuring with Sannhemp + 20 lb./ac. of  $P_2O_5$  at the time of sowing.
  - Sowing early *mung* during *Kharif* to be followed by Wheat (*Mung* 20 lb./ac.).
  - Ammono. Phos. at 20 lb./ac. of N one month before sowing.
  - Ammono. Phos. at 20 lb./ac. of N at the time of sowing.
  - A/S at 20 lb./ac. of N at the time of sowing.
- Sannhemp and *mung* were sown on 25.6.1953 and were buried on 8.3.1953.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 5. (iv) (a) 50.5' × 12'. (b) 49.5' × 11'. (v) 1' all around the plot. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Nil. (iii) Grain yield. (iv) (a) 1953—N.A. (b) No. (c) N.A. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 1143 lb./ac.  
 (ii) 238.0 lb./ac.  
 (iii) Treatments do not differ significantly.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	1028
2.	1110
3.	1142
4.	1056
5.	1420
6.	1102
S.E./mean	= 106.4 lb./ac.

Crop :- Wheat (*Rabi*).

Ref :- Mh. 53(230).

Site :- Govt. Expt. Farm, Nagpur.

Type :- 'M'.

Object:—To study the effect of methods of application of different doses of N and  $P_2O_5$  on the yield and quality of Wheat.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Wheat. (c) N.A. (ii) (a) Black cotton soil. (b) Refer soil analysis, Nagpur. (iii) 29,30.10.1953. (iv) (a) to (e) N.A. (v) Nil. (vi) Wheat, Hawaral (medium). (vii) Unirrigated. (viii) N.A. (ix) 0.24". (x) Last week of Feb. 1954.

## 2. TREATMENTS :

Main-plot treatments :

4 methods of application of N and  $P_2O_5$  :  $M_1$  = By hand placement,  $M_2$  = By hill placement,  $M_3$  = By mixing with seeds and  $M_4$  = By broadcasting.

Sub-plot treatments :

All combinations of (1) and (2)

(1) 2 levels of N :  $N_1$  = 15 and  $N_2$  = 30 lb./ac.  
 (2) 2 levels of  $P_2O_5$  :  $P_1$  = 15 and  $P_2$  = 30 lb./ac.

## 3. DESIGN :

(i) Split-plot. (ii) (a) 4 main-plots/block ; 4 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 1/67th of an ac. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) Normal. (ii) Nil. (iii) Grain yield. (iv) (a) No. (b) No. (c) N.A. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 169 lb./ac.  
 (ii) (a) 85.69 lb./ac.  
 (b) 44.52 lb./ac.  
 (iii) Only the interaction  $M \times N$  is significant.

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

	M <sub>1</sub>	M <sub>2</sub>	M <sub>3</sub>	M <sub>4</sub>	Mean	N <sub>1</sub>	N <sub>2</sub>
P <sub>1</sub>	168	213	162	151	173	186	161
P <sub>2</sub>	158	178	170	156	166	165	166
Mean	163	195	166	153	169	175	163
N	164	199	201	139	175		
N <sub>2</sub>	163	192	131	168	163		

S.E. of difference of two

1. M marginal means = 11.13 lb./ac.
2. N or P marginal means = 30.26 lb./ac.
3. N or P means at the same level of M = 22.33 lb./ac.
4. M means at the same level of N or P = 34.21 lb./ac.

Crop :- Wheat (*Rabi*).

Ref :- Mh. 52(146).

Site :- Govt. Expt. Farm, Nagpur.

Type :- 'M'.

Object :—To study the effect of pre-treated wheat seed with different fertilizers on Wheat crop.

## 1. BASAL CONDITIONS :

- (i) (a) Wheat -Wheat. (b) Wheat. (c) Nil. (ii) (a) Black cotton soil. (b) Refer soil analysis, Nagpur. (iii) 1.11.1952. (iv) (a) 5 *bakharings* and 2 ploughings. (b) By *tiffan*. (c) 60 lb./ac. (d) N.A. (e) —. (v) Nil. (vi) Wheat—Hawral. (vii) Unirrigated. (viii) N.A. (ix) 1.78". (x) 23.2.1953.

## 2. TREATMENTS :

1. Dry seed (control).
  2. Seed soaked in water.
  3. A/S solution (one molar).
  4. Mono. Pot Phosphate solution (one molar).
- Seed soaked for 24 hours.

## 3. DESIGN :

- (i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 5. (iv) (a) N.A. (b) 1/80th. ac. (v) N.A. (vi) Yes.

## 4. GENERAL :

- (i) N.A. (ii) Nil. (iii) Grain yield. (iv) (a) N.A. (b) N.A. (c) N.A. (v) (a) N.A. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 552 lb./ac.  
(ii) 126.4 lb./ac.  
(iii) Treatments do not differ significantly.  
(iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	549
2.	653
3.	503
4.	501
S.E./mean	= 56.50 lb./ac.

Crop :- Wheat (*Rabi*).

Ref :- Mh. 53(199).

Site :- Govt. Expt. Farm, Nagpur.

Type :- 'M'.

Object :- To study the effect of wheat seed pre-treated with different fertilizer solutions on the yield of Wheat crop.

## 1. BASAL CONDITIONS :

(i) (a) No particular crop rotation. (b) Wheat. (c) N.A. (ii) (a) Black cotton soil. (b) Refer soil analysis, Nagpur. (iii) 25.10.1953. (iv) (a) 4 *bakharings* and 2 ploughings. (b) N.A. (c) 60 lb./ac. (d) N.A. (e) N.A. (v) Nil. (vi) Wheat—Hawral. (vii) Unirrigated. (viii) N.A. (ix) 1.58°. (x) 20.2.1954.

## 2. TREATMENTS :

1. Dry seed (control).
  2. Seed soaked in pure water.
  3. Ammonium sulphate solution (one molar).
  4. Mono. Pot. Phosphate (one molar).
  5. Sodium nitrate (one molar).
- Seed soaked for 24 hours.

## 3. DESIGN :

(i) L. sq. (ii) (a) 5. (b) N.A. (iii) 5. (iv) (a) 33' x 16.5' (b) 1/90th ac. (v) 1½' plot to plot. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Nil. (iii) Grain yield. (iv) (a) N.A. (b) N.A. (c) N.A. (v) (a) N.A. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 1096 lb./ac.  
 (ii) 188.8 lb./ac.  
 (iii) Treatments do not differ significantly.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	1076
2.	1103
3.	1019
4.	1148
5.	1135
S.E /mean	= 84.40 lb./ac.

Crop :- Wheat (*Rabi*).

Ref :- Mh. 53(337).

Site :- Agri. Res. Stn., Niphad.

Type :- 'M'.

Object :- To find out the N requirements of Wheat.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) *Jowar*. (c) Nil. (ii) (a) Medium black. (b) Refer soil analysis, Niphad. (iii) 2.11.1953. (iv) (a) N.A. (b) Drilled. (c) 40 lb./ac. (d) 10" between rows. (e) —. (v) 5 C.L./ac. of F.Y.M. (vi) N.A. (vii) Irrigated. (viii) N.A. (ix) 4.65°. (x) 16.3.1954.

## 2. TREATMENTS :

1. Control.
2. 40 lb./ac. of N as A/S.
3. 40 lb./ac. of N as G.N.C.+A/S in 1 : 1 ratio.
4. 40 lb./ac. of N as Calcium Cynamide.
5. 40 lb./ac. of N as G.N.C.+Calcium Cynamide in 1 : 1 ratio.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 2. (iv) (a) 15' x 70'. (b) 8.3' x 60'. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) Normal. (ii) Nil. (iii) Grain yield. (iv) (a) 1953—N.A. (b) N.A. (c) Nil. (v) (a) Dhullia and Kopergaon. (b) Nil. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 1438 lb./ac.  
 (ii) 324.2 lb./ac.  
 (iii) Treatments do not differ significantly.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	1495
2.	1280
3.	1400
4.	1283
5.	1585
S.E./mean	= 229.3 lb./ac.

Crop :- Wheat (*Rabi*).

Ref :- Mh. 52(310).

Site :- Agri. Res. Stn., Niphad.

Type :- 'M'.

Object :- To study the utility of Sann hemp as a green manuring crop for Wheat.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) N.A. (c) Nil. (ii) (a) Medium black—loamy. (b) Refer soil analysis, Niphad. (iii) 1.8.1952. (iv) (a) N.A. (b) Drilled. (c) 40 lb./ac. (d) 10" between rows. (e) —. (v) Nil. (vi) Kenphad-25. (vii) Irrigated. (viii) 2 weedings. (ix) N.A. (x) 11.3.1953.

## 2. TREATMENTS :

- Fallow in *Kharif*.
- Sann hemp grown in *Kharif* and buried.
- Sann hemp grown with 50 lb./ac. of  $P_2O_5$  as Super grown in *Kharif* and dumped.
- Sann hemp grown in *Kharif*, buried + 50 lb./ac. of  $P_2O_5$  as super applied to Wheat crop.
- Sann hemp grown in *Kharif*, buried + 30 lb./ac. of N as A/S applied to Wheat.
- Sann hemp grown in *Kharif*, buried + 60 lb./ac. of N as A/S applied to Wheat crop.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 2. (iv) (a) 72' × 15'. (b) 60' × 10'. (v) 6' × 2.5'. (vi) Yes.

## 4. GENERAL :

(i) Normal. (ii) Nil. (iii) Grain yield. (iv) (a) 1952—1958. (b) N.A. (c) Nil. (v) (a) Kopergaon and Khopoli. (b) Nil. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 1565 lb./ac.  
 (ii) 230.2 lb./ac.  
 (iii) Treatments do not differ significantly.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	1379
2.	1379
3.	1570
4.	1645
5.	1720
6.	1697
S.E./mean	= 162.8 lb./ac.

Crop :- Wheat (*Rabi*).  
Site :- Agri. Res. Stn., Niphad.

Ref :- Mh. 52(330).  
Type :- 'M'.

Object :- To study the utility of *Mung* crop as a green manuring crop for Wheat.

1. BASAL CONDITIONS :

(i) (a) No. (b) N.A. (c) N.A. (ii) (a) Medium black, loamy. (b) Refer soil analysis, Niphad.  
(iii) 1.8.1952. (iv) (a) Nil. (b) Drilled. (c) 40 lb./ac. (d) 10" between rows. (e) —. (v) Nil. (vi)  
Niphad—4. (vii) Irrigated. (viii) 2 weedings. (ix) N.A. (x) 11.3.1953.

2. TREATMENTS :

1. Control (fallow in the past).
2. *Situ*-green manure buried in the same site.
3. Burying *mung* grown in another plot.
4. Rotational effect.

3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 2. (iv) (a) 72'×15'. (b) 60'×10'. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Growth good. Rainfall was inadequate. The area was heavily infested with weeds especially, *hariyali*.  
(ii) Nil. (iii) Grain yield. (iv) (a) 1952 to 1954 (modified in 1953 to 19.4). (b) N.A. (c) Nil. (v) (a)  
N.A. (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

- (i) 1297 lb./ac.  
(ii) 249.3 lb./ac.  
(iii) Treatments do not differ significantly.  
(iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	1193
2.	1511
3.	1327
4.	1157
S.E./mean	=176.3 lb./ac.

Crop :- Wheat (*Rabi*).  
Site :- Agri. Res. Stn., Niphad.

Ref :- Mh. 53(353).  
Type :- 'M'.

Object :- To study the utility of *Mung* crop as a green manuring crop for Wheat.

1. BASAL CONDITIONS :

(i) (a) No. (b) Sweet-potato. (c) Nil. (ii) (a) Medium black, loamy. (b) Refer soil analysis, Niphad.  
(iii) 1.11.1953. (iv) (a) Nil. (b) Drilled. (c) 40 lb./ac. (d) 10" between rows. (e) —. (v) Nil. (vi) Niphad—4.  
(vii) Irrigated. (viii) Nil. (ix) 4.65". (x) 16.3.1954.

2. TREATMENTS :

1. Control (Fallow in the past).
2. *Situ* green manure buried in the same plot.
3. Burying *Mung* grown in another plot.
4. Rotational effect.
5. Fallow (another plot).

3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 2. (iv) (a) 72'×15'. (b) 56'×5'-10". (v) N.A. (vi) Yes.

## 4. GENERAL :

- (i) Normal. (ii) Nil. (iii) Grain yield. (iv) (a) 1952—1954 (modified in 1953—1954). (b) No. (c) Nil.  
 (v) (a) N.A. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 806 lb./ac.  
 (ii) 122.8 lb./ac.  
 (iii) Treatments do not differ significantly.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	692
2.	971
3.	708
4.	813
5.	846
S.E./mean	=86.8 lb./ac.

Crop :- Wheat (*Rabi*).

Ref :- Mh. 50(57)

Site:- Agri. Res. Stn., Niphad.

Type :- 'M'.

Object :- To study the effect of *Chinamug* raised with and without  $P_2O_5$  on the succeeding cereal Wheat crop.

## 1. BASAL CONDITIONS :

- (i) (a) *Chinamug*—Wheat. (b) *Chinamug*. (c) As per treatments. (ii) (a) Loamy, medium. (b) Refer soil analysis, Niphad. (iii) 24.7.1950. (iv) (a) N.A. (b) Drilled. (c) 40 lb./ac. (d) Between rows 10" and between plants irregular. (e) N.A. (v) 5 C.L./ac. of F.Y.M. (vi) *Jay-Vijay*. (vii) Irrigated. (viii) Gap filling and hand weeding. (ix) Nil. (x) 17.2.1951.

## 2. TREATMENTS :

- Control (no  $P_2O_5$ ).
- 50 lb./ac. of  $P_2O_5$  applied to *Chinamug* in *Kharif*.
- 100 lb./ac. of  $P_2O_5$  applied to *Chinamug* in *Kharif*.
- 150 lb./ac. of  $P_2O_5$  applied to *Chinamug* in *Kharif*.
- Fallow in *Kharif* and sann in *Rabi*.

## 3. DESIGN :

- (i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 5. (iv) (a) 40'×25'. (b) 30'×15'. (v) 5' ring round the net plot. (vi) Yes.

## 4. GENERAL :

- (i) Fair stand and growth gappy. (ii) Nil. (iii) Grain yield. (iv) (a) 1950—1953. (b) No. (c) N.A. (v) (a) Mohol. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 263 lb./ac.  
 (ii) 43.04 lb./ac.  
 (iii) Treatments differ significantly.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	242
2.	267
3.	232
4.	255
5.	321
S.E./mean	= 19.24 lb./ac.



Crop :- Wheat (*Rabi*).  
Site :- Agri. Res. Stn., Niphad.

Ref :- Mh. 51(60).  
Type :- 'M'.

Object :- To study the effect of leguminous crop *Chinamug* grown with and without  $P_2O_5$  on the succeeding cereal crop Wheat.

### 1. BASAL CONDITIONS :

(i) (a) *Chinamug*—Wheat. (b) *Chinamug*. (c) As per treatments. (ii) (a) Loamy, medium black. (b) Refer soil analysis Niphad. (iii) 25.10.1951. (iv) (a) No ploughings. (b) Drilled. (c) 40 lb./ac. (d) Between rows 10" and between plants irregular. (e) N.A. (v) 5 C.L./ac. of F.Y.M. (vi) *Vijay*. (vii) Un-irrigated. (viii) Nil. (ix) 1". (x) 16.2.1952.

### 2. TREATMENTS :

1. Control (no  $P_2O_5$ ).  
2. 50 lb./ac. of  $P_2O_5$  applied to *Chinamug* in *Kharif*.  
3. 100 lb./ac. of  $P_2O_5$  applied to *Chinamug* in *Kharif*.  
4. 150 lb./ac. of  $P_2O_5$  applied to *Chinamug* in *Kharif*.  
5. Fallow in *Kharif* and grown in *Rabi*.

### 3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 5. (iv) (a) 40'×25'. (b) 30'×15'. (v) 5' ring round the net plot. (vi) Yes.

### 4. GENERAL :

(i) Normal. (ii) Nil. (iii) Grain yield. (iv) (a) 1950—1953. (b) No. (c) N.A. (v) (a) Mohol. (b) N.A. (vi) and (vii) Nil.

### 5. RESULTS :

(i) 382 lb./ac.  
(ii) 76.33 lb./ac.  
(iii) Treatments differ highly significantly.  
(iv) Av. yield of grain in lb./ac.

Treatment	Av. yield <sup>*</sup>
1.	312
2.	363
3.	330
4.	421
5.	486
S.E./mean	= 34.12 lb./ac.

Crop :- Wheat (*Rabi*).  
Site :- Agri. Res. Stn., Niphad.

Ref :- Mh. 53(60).  
Type :- 'M'.

Object :- To study the residual effect of N,  $P_2O_5$  and F.Y.M. manures applied to *Bajra* in *Kharif* on Wheat in *Rabi*.

### BASAL CONDITIONS :

(i) (a) Gram—*Bajra*—Wheat. (b) *Bajra*. (c) As per treatments. (ii) (a) Loamy to clay loam, medium black to deep black. (b) Refer soil analysis, Niphad. (iii) 18.10.1953. (iv) (a) One iron and 2 wooden ploughings. (b) to (e) N.A. (v) Nil. (vi) Kenphad-28 (yellow, early). (vii) Unirrigated. (viii) 3 harrowings. (ix) 4.65". (x) 13 and 14.3.1954.

### 2. TREATMENTS :

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

(1) 3 levels of N :  $N_1=40$ ,  $N_2=60$  and  $N_3=80$  lb./ac.  
(2) 2 levels of  $P_2O_5$  :  $P_1=20$  and  $P_2=40$  lb./ac.  
(3) 2 levels of F.Y.M. :  $F_1=2.5$  and  $F_2=5$  C.L./ac.

N as A/S and  $P_2O_5$  as Super.

These manures were applied to the previous crop *Bajra* in *Kharif* and the residual effect on wheat in *Rabi* is studied.

## 3. DESIGN :

(i)  $3 \times 2 \times 2$  Fact. in R.B.D. (ii) (a) 12. (b) N.A. (iii) 4. (iv) (a)  $40' \times 25'$ . (b)  $30' \times 15'$ . (v) 5' all round net plot. (vi) Yes.

## 4. GENERAL :

(i) Growth was normal; however gappy growth in few plots due to foot rot and rat trouble. (ii) Foot rot and rat trouble. (iii) Grain yield. (iv) (a) 1951—N.A. (b) No. (c) N.A. (v) (a) N.A. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 486 lb./ac.  
 (ii) 110.4 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	F <sub>1</sub>	F <sub>2</sub>
P <sub>1</sub>	449	461	498	470	506	434
P <sub>2</sub>	501	502	508	504	523	485
Mean	475	481	503	486	514	459
F <sub>1</sub>	529	492	521			
F <sub>2</sub>	420	472	485			

S.E. of marginal mean of N = 27.1 lb./ac.  
 S.E. of marginal mean of P or F = 22.3 lb./ac.  
 S.E. of body of table N × P or N × F = 39.0 lb /ac.  
 S.E. of body of table P × F = 31.9 lb./ac.

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Crop :-Wheat (*Rabi*).

Ref :-Mh. 53(61).

Site :-Agri. Res. Stn., Niphad.

Type :-'M'.

Object :—To study the residual effect of leguminous crop (*Mung*) grown with and without P<sub>2</sub>O<sub>5</sub> on the succeeding cereal crop Wheat.

## 1. BASAL CONDITIONS :

(i) (a) *Mung*—Wheat. (b) *Mung*. (c) As per treatments. (ii) (a) {Loamy to clay loam in texture; medium black in colour. Depth of the soil 3' to 7'. (b) Refer soil analysis, Niphad. (iii) 20.10.1953. (iv) (a) 1 iron and 2 wooden ploughings. (b) to (e) N.A. (v) N.A. (vi) Kenphad K-28 (yellow, early). (vii) Unirrigated. (viii) 2 to 3 harrowings. (ix) 4.65°. (x) 15.2.1954.

## 2. TREATMENTS :

- No P<sub>2</sub>O<sub>5</sub> to *Mung* in *Kharif*.
- 50 lb./ac of P<sub>2</sub>O<sub>5</sub> to *Mung* in *Kharif*.
- 100 lb./ac. of P<sub>2</sub>O<sub>5</sub> to *Mung* in *Kharif*.
- 150 lb./ac. of P<sub>2</sub>O<sub>5</sub> to *Mung* in *Kharif*.
- Fallow in *Kharif* and sown in *Rabi*.

P<sub>2</sub>O<sub>5</sub> as Super was applied to the previous legume (*Mung* in *Kharif*) crop and its residual effect was studied on the succeeding cereal (Wheat in *Rabi*).

## 3. DESIGN:

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 5. (iv) (a)  $40' \times 25'$ . (b)  $30' \times 15'$ . (v) 5' all round the net plot. (vi) Yes.

## 4. GENERAL :

(i) Normal. (ii) Foot rot was seen. (iii) Grain yield. (iv) (a) 1953—1954. (b) No. (c) N.A. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 315 lb./ac.  
 (ii) 46.46 lb./ac.  
 (iii) Treatments do not differ significantly.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	292
2.	319
3.	315
4.	305
5.	344
S.E./mean	=20.76 lb./ac.

Crop :-Wheat (*Rabi*).

Ref :-Mh. 48(60).

Site :-Agri. Res. Stn., Padegaon.

Type :-'M'.

Object :—To study the N and P<sub>2</sub>O<sub>5</sub> requirements of irrigated Wheat.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) and (c) N.A. (ii) (a) 'B' type. (b) Refer soil analysis, Padegaon. (iii) 4.11.1948. (iv) (a) to (c) N.A. (d) 12" between rows. (e) N.A. (v) 5 C.L./ac. of F.Y.M. (vi) Niphad-4. (vii) Irrigated. (viii) N.A. (ix) 22.47". (x) 13.3.1949.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 4 levels of N : N<sub>0</sub>=0, N<sub>1</sub>=32, N<sub>2</sub>=64 and N<sub>3</sub>=96 lb./ac.

(2) 4 levels of P<sub>2</sub>O<sub>5</sub> : P<sub>0</sub>=0, P<sub>1</sub>=32, P<sub>2</sub>=64 and P<sub>3</sub>=96 lb./ac.

N applied as A/S and P<sub>2</sub>O<sub>5</sub> as Super.

## 3. DESIGN :

(i) 4×4 Fact in R.B.D. (ii) (a) 16. (b) N.A. (iii) 4. (iv) (a) 28'×24'. (b) 20'×18'. (v) 4'×3'. (vi) Yes.

## 4. GENERAL :

(i) and (ii) N.A. (iii) Grain yield. (iv) (a) 1948—1949 (modified in 1950). (b) and (c) No. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 323 lb./ac.  
 (ii) 120.2 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
P <sub>0</sub>	387	343	389	409	382
P <sub>1</sub>	324	348	299	343	329
P <sub>2</sub>	263	263	335	288	287
P <sub>3</sub>	263	325	243	349	295
Mean	309	320	317	347	323

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

=30.1 lb./ac.  
 =60.1 lb./ac.

Crop :- Wheat (*Rabi*).

Ref :- Mh. 49(94).

Site :- Agri. Res. Stn., Padegaon.

Type :- 'M'.

Object :- To study the N and  $P_2O_5$  requirement of Wheat.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) N.A. (c) N.A. (ii) (a) 'B' type. (b) Refer soil analysis, Padegaon. (iii) 7.11.1949.  
 (iv) (a), (b) and (c) N.A. (d) 12". (e) N.A. (v) 5 C.L./ac. of F.Y.M. (vi) Niphad-4. (vii) Irrigated.  
 (viii) 2 weedings. (ix) 23.32". (x) 12.3.1950 to 13.3.1950.

## 2. TREATMENTS :

All combinations of (1) and (2).

(1) 4 levels of N :  $N_0=0$ ,  $N_1=32$ ,  $N_2=64$  and  $N_3=96$  lb./ac.(2) 4 levels of  $P_2O_5$  :  $P_0=0$ ,  $P_1=32$ ,  $P_2=64$  and  $P_3=96$  lb./ac.N applied as A/S and  $P_2O_5$  as Super on 6, 7.11.1949.

## 3. DESIGN .

(i)  $4 \times 4$  Fact. in R.B.D. (ii) (a) 16. (b) N.A. (iii) 4. (iv) (a)  $28' \times 24'$ . (b)  $20' \times 18'$ . (v) N.A.  
 (vi) Yes.

## 4. GENERAL :

(i) Normal. (ii) Nil. (iii) Grain yield. (iv) (a) 1948—1949 (modified in 1950). (b) No. (c) N.A. (v)  
 (a) N.A. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 444 lb./ac.  
 (ii) 168.0 lb./ac.  
 (iii) None of the effects is significant.  
 (iv) Av. yield of grain in lb./ac.

	$N_0$	$N_1$	$N_2$	$N_3$	Mean
$P_0$	351	571	369	607	475
$P_1$	495	506	490	523	504
$P_2$	455	300	459	412	407
$P_3$	319	356	445	458	395
Mean	405	433	441	500	444

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

=42.0 lb./ac.  
 =84.0 lb./ac.

Crop :- Wheat (*Rabi*).

Ref :- Mh. 49(95).

Site :- Agri. Res. Stn., Padegaon.

Type :- 'M'.

Object :- To study the N and  $P_2O_5$  requirement of Wheat.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) N.A. (c) N.A. (ii) (a) 'B' type. (b) Refer soil analysis, Padegaon. (iii) 1.11.1949.  
 (iv) (a) N.A. (b) N.A. (c) N.A. (d) 12". (e) N.A. (v) Nil. (vi) Niphad-4. (vii) Irrigated. (viii) N.A.  
 (ix) 23.32". (x) 6.3.1950 to 7.3.1950.

## 2. TREATMENTS :

All combinations of (1) and (2).

(1) 4 levels of N :  $N_0=0$ ,  $N_1=32$ ,  $N_2=64$  and  $N_3=96$  lb./ac.(2) 4 levels of  $P_2O_5$  :  $P_0=0$ ,  $P_1=32$ ,  $P_2=64$  and  $P_3=96$  lb./ac.N applied as A/S and  $P_2O_5$  as Super on 27.10.1949 and 28.10.1949.

## 3. DESIGN :

(i) 4×4 Fact. in R.B.D. (ii) (a) 16. (b) N.A. (iii) 4. (iv) (a) 16'×42'. (b) 12'×36.3'. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) Nil. (iii) Grain yield. (iv) (a) 1948—1949 (modified in 1950). (b) No. (c) No. (v) (a) N.A. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 1007 lb./ac.  
 (ii) 180.8 lb./ac.  
 (iii) Main effect of N is highly significant while P and NP are 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
P <sub>0</sub>	782	956	925	1169	958
P <sub>1</sub>	715	1024	1212	1206	1039
P <sub>2</sub>	830	995	1263	1004	1023
P <sub>3</sub>	898	908	1008	1218	1008
Mean	806	970	1102	1149	1007

S.E. of marginal mean of N or P = 48.20 lb./ac.  
 S.E. of body of table = 50.42 lb./ac.

Crop :- Wheat (*Rabi*).

Ref :- Mh. 50(117).

Site :- Agri. Res. Stn., Padegaon.

Type :- 'M'.

Object :- To find out the optimum dose of N and P<sub>2</sub>O<sub>5</sub> for Wheat crop with and without basal dose.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Jowar*. (c) Nil. (ii) (a) 'B' type. (b) Refer soil analysis, Padegaon. (iii) 30.10.1950. (iv) (a) N.A. (b) Drilled. (c) 40 lb./ac. (d) 12". (e) N.A. (v) Nil. (vi) Niphad—4. (vii) Irrigated. (viii) 1 harrowing. (ix) 22.91". (x) 24.2.1951.

## 2. TREATMENTS :

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

(1) 4 levels of N : N<sub>0</sub>=0, N<sub>1</sub>=32, N<sub>2</sub>=64 and N<sub>3</sub>=96 lb./ac.

(2) 4 levels of P<sub>2</sub>O<sub>5</sub> : P<sub>0</sub>=0, P<sub>1</sub>=32, P<sub>2</sub>=64 and P<sub>3</sub>=96 lb./ac.

(3) 2 levels of F.Y.M. : F<sub>0</sub>=0 and F<sub>1</sub>=5 C.L./ac.

N applied as A/S and P<sub>2</sub>O<sub>5</sub> as Super on 30.10.1950.

## 3. DESIGN :

(i) 4×4×2 Fact. in R.B.D. (ii) (a) 32. (b) N.A. (iii) 4. (iv) (a) 27'×20'. (b) 22.7'×16'. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) Normal. (ii) Nil. (iii) Grain yield. (iv) (a) 1948—1953 (modified in 1950). (b) No. (c) N.A. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 528 lb./ac.  
 (ii) 110.6 lb./ac.  
 (iii) Main effect of P and interactions NP, PF 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>	P <sub>3</sub>	Mean	F <sub>0</sub>	F <sub>1</sub>
N <sub>0</sub>	432	507	603	646	547	521	572
N <sub>1</sub>	352	435	556	620	491	469	513
N <sub>2</sub>	415	513	576	597	526	532	519
N <sub>3</sub>	346	485	652	712	549	560	537
Mean	387	485	597	644	528	521	535
F <sub>0</sub>	370	457	606	651			
F <sub>1</sub>	404	514	588	638			

S.E. of marginal mean of N or P	=19.6 lb./ac.
S.E. of marginal mean of F	= 13.8 lb./ac.
S.E. of body of N×P table	=39.1 lb./ac.
S.E. of body of F×N or F×P table	=27.6 lb./ac.

Crop :- Wheat (*Rabi*).

Ref :- Mh. 51(160).

Site :- Agri. Res. Stn., Padegaon.

Type :- 'M'.

Object :- To find out the optimum dose of N and P<sub>2</sub>O<sub>5</sub> with and without F.Y.M. for Wheat crop

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Jowar*. (c) No manure. (ii) (a) 'B' type. (b) Refer soil analysis, Padegaon. (iii) 27.10.1951.  
 (iv) (a) N.A. (b) Drilling by 12" drill. (c) 40 lb./ac. (d) 12". (e) N.A. (v) Nil. (vi) Niphad-4. (vii) Irrigated. (viii) 1 harrowing and 1 weeding. (ix) 14.68". (x) 29.2.1952.

## 2. TREATMENTS :

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

(1) 4 levels of N : N<sub>0</sub>=0, N<sub>1</sub>=32, N<sub>2</sub>=64 and N<sub>3</sub>=96 lb./ac.(2) 4 levels of P<sub>2</sub>O<sub>5</sub> : P<sub>0</sub>=0, P<sub>1</sub>=32, P<sub>2</sub>=64 and P<sub>3</sub>=96 lb./ac.(3) 2 levels of F.Y.M : F<sub>0</sub>=0 and F<sub>1</sub>=5 C.L./ac.N applied as A/S and P<sub>2</sub>O<sub>5</sub> as Super.

## 3. DESIGN :

(i) 4×4×2 Fact. in R.B.D. (ii) (a) 32. (b) N.A. (iii) 4. (iv) (a) 24'×22.5'. (b) 20'×18.1'. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) Nil. (iii) Grain yield. (iv) (a) 1948—1953 (modified in 1950). (b) No. (c) N.A. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 963 lb./ac.

(ii) 286.4 lb./ac.

(iii) Main effect of N and interactions NP, NF 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>	P <sub>3</sub>	Mean	F <sub>0</sub>	F <sub>1</sub>
N <sub>0</sub>	473	586	704	713	619	608	630
N <sub>1</sub>	958	896	865	807	882	738	1025
N <sub>2</sub>	1021	1014	1002	1225	2066	1130	1002
N <sub>3</sub>	1215	1309	1258	1371	1288	1343	1234
Mean	917	951	957	1030	963	955	973
F <sub>0</sub>	856	972	984	1007	955		
F <sub>1</sub>	978	931	931	1052	973		

S.E. of marginal mean of N or P	= 50.6 lb./ac.
S.E. of marginal mean of F	= 35.8 lb./ac.
S.E. of body of N×P table	= 101.2 lb./ac.
S.E. of body of N×F or P×F table	= 71.6 lb./ac.

Crop :- Wheat (*Rabi*).

Ref :- Mh. 52(194).

Site :- Agri. Res. Stn., Padegaon.

Type :- 'M'.

Object :—To find out the optimum requirement of N and P<sub>2</sub>O<sub>5</sub> with and without F.Y.M.

## 1. BASAL CONDITIONS

- (i) (a) Nil. (b) Gram. (c) Nil. (ii) (a) 'B' type. (b) Refer soil analysis, Padegaon. (iii) 27.10.1952.  
 (iv) (a) N.A. (b) Drilled by 12" drill. (c) 40 lb./ac. (d) 12". (e) N.A. (v) Nil. (vi) R.R. Wheat.  
 (vii) Irrigated. (viii) 2 weedings. (ix) 11.01". (x) N.A.

## 2. TREATMENTS :

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

- (1) 4 levels of N : N<sub>0</sub>=0, N<sub>1</sub>=32, N<sub>2</sub>=64 and N<sub>3</sub>=96 lb./ac.  
 (2) 4 levels of P<sub>2</sub>O<sub>5</sub> : P<sub>0</sub>=0, P<sub>1</sub>=32, P<sub>2</sub>=64 and P<sub>3</sub>=96 lb./ac.  
 (3) 2 levels of F.Y.M. : F<sub>0</sub>=0 and F<sub>1</sub>=5 C.L./ac.

N applied as A/S and P<sub>2</sub>O<sub>5</sub> as Super.

## 3. DESIGN :

- (i) 4×4×2 Fact. in R.B.D. (ii) (a) 32. (b) N.A. (iii) 4. (iv) (a) 42'×15'. (b) 36'×11'. (v) N.A.  
 (vi) Yes.

## 4. GENERAL :

- (i) Normal. (ii) N.A. (iii) Grain yield. (iv) (a) 1948—1953 (modified in 1950). (b) No. (c) N.A.  
 (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 1294 lb./ac.  
 (ii) 244.9 lb./ac.  
 (iii) Main effect of N is highly significant, that of P is significant while other effects not 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	F <sub>0</sub>	F <sub>1</sub>
N <sub>0</sub>	876	988	940	942	937	939	935
N <sub>1</sub>	1158	1199	1376	1264	1249	1241	1257
N <sub>2</sub>	1150	1389	1447	1489	1369	1337	1401
N <sub>3</sub>	1451	1476	1647	1912	1621	1633	1609
Mean	1159	1263	1352	1402	1294	1288	1301
F <sub>0</sub>	1180	1229	1409	1332	1288		
F <sub>1</sub>	1139	1298	1297	1472	1301		

S.E. of marginal mean of N or P =43.29 lb./ac.

S.E. of marginal mean of F =30.60 lb./ac.

S.E. of body of N×F or P×F table =61.22 lb./ac.

S.E. of body of N×P table =86.60 lb./ac.

Crop :- Wheat (*Rabi*).

Ref :- Mh. 53(280).

Site :- Agri. Res. Stn., Padegaon.

Type :- 'M'.

Object :—To find out the optimum requirement of N and P<sub>2</sub>O<sub>5</sub> with and without F.Y.M for Wheat.

## 1. BASAL CONDITIONS :

- (i) (a) Nil. (b) and (c) N.A. (ii) (a) 'B' type. (b) Refer soil analysis, Padegaon. (iii) 26.10 1952.  
 (iv) (a) N.A. (b) Drilled by 12" drill. (c) 40 lb./ac. (d) 12". (e) N.A. (v) Nil. (vi) R.R. Wheat.  
 (vii) Irrigated. (viii) 1 weeding. (ix) 16.35". (x) 8.3.1954.

## 2. TREATMENTS :

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

- (1) 4 levels of N : N<sub>0</sub>=0, N<sub>1</sub>=32, N<sub>2</sub>=64 and N<sub>3</sub>=96 lb./ac.  
 (2) 4 levels of P<sub>2</sub>O<sub>5</sub> : P<sub>0</sub>=0, P<sub>1</sub>=32, P<sub>2</sub>=64 and P<sub>3</sub>=96 lb./ac.  
 (3) 2 levels of F.Y.M. : F<sub>0</sub>=0 and F<sub>1</sub>=5 C.L./ac.

## 3. DESIGN :

- (i) 4×4×2 Fact. in R.B.D. (ii) (a) 32. (b) N.A. (iii) 4. (iv) (a) 35'×18'. (b) 28.3'×14'. (v) N.A.  
 (vi) Yes.

## 4. GENERAL :

- (i) N.A. (ii) Attack of rust was observed. (iii) Grain yield. (iv) (a) 1948—1953 (modified in 1950). (b) No.  
 (c) N.A. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 1012 lb./ac.  
 (ii) 245.5 lb./ac.  
 (iii) Main effects of N and interactions NP and NF 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>	P <sub>3</sub>	Mean	F <sub>0</sub>	F <sub>1</sub>
N <sub>0</sub>	881	915	917	973	922	894	950
N <sub>1</sub>	910	901	919	1029	940	936	944
N <sub>2</sub>	949	1061	1099	1236	1061	1086	1036
N <sub>3</sub>	1056	1191	1089	1146	1020	1143	1097
Mean	949	1017	1006	1071	1012	1015	1007
F <sub>0</sub>	983	1048	998	1028	1015		
F <sub>1</sub>	914	986	1014	1114	1007		

S.E. of marginal mean of N or P = 43.39 lb./ac.  
 S.E. of marginal mean of F = 30.68 lb./ac.  
 S.E. of body of N×P table = 86.80 lb./ac.  
 S.E. of body of N×F or P×F table = 61.37 lb./ac.

Crop :-Wheat (*Rabi*).

Ref :-Mh. 52(325).

Site :-Agri. Res. Stn., Padegaon.

Type :-'M'.

Object :-To study the effect of Calcium Cynamide on growth and yield of Wheat.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) *Bajri*. (c) Nil. (ii) (a) 'B' type. (b) Refer soil analysis, Padegaon. (iii) 31.10.1952.  
 (iv) (a) N.A. (b) Drilling. (c) 40 lb./ac. (d) 12". (e) N.A. (v) 5 C.L./ac. of F.Y.M. (vi) R.R. Wheat.  
 (vii) Irrigated. (viii) 2 weedings. (ix) 11.01". (x) 5.3.1953.

## 2. TREATMENTS :

1. A/S alone.
2. G.N.C.+A/S in 1 : 1 ratio
3. Calcium Cynamide alone.
4. G.N.C.+Calcium Cynamide in 1 : 1. ratio

Total N in top dressed is 40 lb./ac. Calcium Cynamide applied to soil a fortnight before sowing. Half dose of A/S and cake at sowing and half dose at tiling.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 3. (iv) (a) 56'×30'. (b) 45.376'×24'. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) Poor. (ii) Nil. (iii) Grain yield. (iv) (a) 1952—1953. (b) No. (c) Nil. (v) (a) Kopergaon. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 560.5 lb./ac.  
 (ii) 92.0 lb./ac.  
 (iii) Treatments do not differ significantly.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	616
2.	612
3.	545
4.	469
S.E./mean	= 53.0 lb./ac.

Crop :-Wheat (*Rabi*).

Ref :-Mh. 51(22).

Site :-Govt. Main Farm, Parbhani.

Type :-'M'.

Object :—To determine the highest yield obtainable under different manurial treatments.

1. BASAL CONDITIONS:

(i) (a) N.A. (b) Wheat. (c) N.A. (ii) (a) Medium black. (b) Refer soil analysis, Parbhani. (iii) 2.10.1951. (iv) (a) Harrowing, cleaning before sowing. (b) and (c) N.A. (d) 18" apart. (e) N.A. (v) Nil. (vi) P.W. 3. (vii) Irrigated. (viii) Bund making and hoeing. (ix) 4.03". (x) 1.3.1952.

2. TREATMENTS :

1. 100 lb./ac. of N+100 lb./ac. of  $P_2O_5$ .
2. 80 lb./ac. of N+ 80 lb./ac. of  $P_2O_5$ .
3. 60 lb./ac. of N+ 60 lb./ac. of  $P_2O_5$ .
4. 40 lb./ac. of N+ 40 lb./ac. of  $P_2O_5$ .

3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 6. (iv) (a) N.A. (b) 50'×13½'. (v) N.A. (vi) Yes.

4. GENERAL :

(i) and (ii) N.A. (iii) Grain yield. (iv) (a) 1951—N.A. (b) and (c) No. (v) (a) and (b) Nil. (vi) and (vii) Nil.

5. RESULTS :

- (i) 1480 lb./ac.  
 (ii) 215.4 lb./ac.  
 (iii) Treatment differences are not significant.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	1564
2.	1470
3.	1467
4.	1419
S.E./mean	=88.0 lb./ac.

Crop :- Wheat (*Rabi*).

Ref :- Mh. 52(42).

Site :- Govt. Main Farm, Parbhani.

Type :- 'M'.

Object :—To determine the highest yield obtainable under different manurial treatments.

1. BASAL CONDITIONS

(i) (a) N.A. (b) Groundnut. (c) 5200 lb./ac. of Paddy Fertilizer Mixture. (ii) (a) Medium black. (b) Refer soil analysis, Parbhani. (iii) 10.10.1952. (iv) (a) One ploughing and 5 harrowings before sowing. (b) Sown behind a two cultered seed drill. (c) N.A. (d) 18" apart. (e) N.A. (v) Nil. (vi) Wheat P.W.3. (vii) Irrigated. (viii) One cultivator and 2 weedings. (ix) 0.81". (x) 4.3.1953 to 9.3.1953.

2. TREATMENTS :

1. 100 lb./ac. of N+100 lb./ac. of  $P_2O_5$ .
2. 80 lb./ac. of N+ 80 lb./ac. of  $P_2O_5$ .
3. 60 lb./ac. of N+ 60 lb./ac. of  $P_2O_5$ .
4. 40 lb./ac. of N+ 40 lb./ac. of  $P_2O_5$ .

N as 'Paddy Fertilizer Mixture' and  $P_2O_5$  as Super. Manures applied in two equal doses, one at sowing and the other after two months.

3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 6. (iv) (a) 56'×16.5'. (b) 50'×13.5'. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) Satisfactory. (ii) N.A. (iii) Nil. (iv) (a) 1951—N.A. (b) No. (c) No. (v) (a) Nil. (b) Nil. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 2212 lb./ac.  
 (ii) 188.4 lb./ac.  
 (iii) Treatment differences are not significant.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	2286
2.	2280
3.	2127
4.	2157
S.E./mean	= 77.0 lb./ac.

Crop :- Wheat (*Rabi*).

Ref :- Mh. 53(19).

Site :- Govt. Main Farm, Parbhani.

Type :- 'M'.

Object:—To determine the highest yield obtainable under different manurial treatments.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) Yellow soyabean. (c) 200 lb./ac. of Super. (ii) (a) Medium light black soil. (b) Refer soil analysis, Parbhani. (iii) 12.10.1953. (iv) (a) Twice harrowing and twice cleaning of plots. (b) Sown by country seed drill. (c) Nil. (d) 18" apart. (e) Nil. (v) Nil. (vi) Wheat P W. 3. (vii) Irrigated. (viii) 1 bullock hoeing and 1 working of cultivator. (ix) 2.65". (x) 25.2.1954 to 28.2.1954.

## 2. TREATMENTS :

- 100 lb./ac. of N+100 lb./ac. of P<sub>2</sub>O<sub>5</sub>.
  - 80 lb./ac. of N+ 80 lb./ac. of P<sub>2</sub>O<sub>5</sub>.
  - 60 lb./ac. of N+ 60 lb./ac. of P<sub>2</sub>O<sub>5</sub>.
  - 40 lb./ac. of N+ 40 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) R.B.D. (ii) (a) 4. (b) N.A. (iii) 6 (iv) (a) 16.5'×56'. (b) 13.5'×50'. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) N.A. (iii) Nil. (iv) (a) 1951—contd. (b) No. (c) No. (v) (a) Nil. (b) Nil. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 1401 lb./ac.  
 (ii) 158.0 lb./ac.  
 (iii) Treatment difference are not significant.  
 (iv) Av yield of grain in lb./ac.

Treatment	Av. yield
1.	1526
2.	1376
3.	1316
4.	1384
S.E./mean	= 64.0 lb./ac.

Crop :- Wheat.

Ref :- Mh. 53(69).

Site :- Agricultural College Farm, Poona.

Type :- 'M'.

Object :- To study the availability of N from calcium cyanamide in comparison with A/S and G.N.C.

### 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Sann for green manuring. (c) Nil. (ii) (a) Medium black. (b) Refer soil analysis, Poona. (iii) 21st October 1953. (iv) (a) 2 harrowings in Sept. (b) to (e) N.A. (v) Sann green manured. (vi) Niphad-4. (vii) Irrigated. (viii) One interculturing and top dressing with 20 lb./ac. of N. (ix) 3.65". (x) 17th March 1954.

### 2. TREATMENTS :

1. Control.
2. 40 lb./ac. of N as A/S.
3. 40 lb./ac. of N as A/S and G.N.C. in 1 : 1 ratio.
4. 40 lb./ac. of N as calcium cyanamide.
5. 40 lb./ac. of N as calcium cyanamide and G.N.C. in 1 : 1 ratio.

### 3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 3. (iv) (a) 42' x 14'. (b) 34' x 10'. (v) 4' along length and 2' along breadth. (vi) Yes.

### 4. GENERAL :

(i) Normal. (ii) Nil. (iii) Grain yield. (iv) (a) 1952-1953. (b) No. (c) N.A. (v) (a), (b) No. (vi) Nil. (vii) This expt. was a failure in 1952.

### 5. RESULTS :

- (i) 1622 lb./ac.
- (ii) 161.8 lb./ac.
- (iii) Treatments do not differ significantly.
- (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	1580
2.	1601
3.	1762
4.	1580
5.	1591
S.E./mean	= 96.9 lb./ac

Crop :- Wheat (*Rabi*).

Ref :- Mh. 51(154).

Site :- Govt. Seed and Demonstration Farm, Sindewahi. Type :- 'M'.

Object :- To find out the proper time and method of application of fertilizers.

### 1. BASAL CONDITIONS :

(i) (a) N.A. (b) N.A. (c) N.A. (ii) (a) Medium black. (b) N.A. (iii) N.A. (iv) (a) to (e) N.A. (v) N.A. (vi) NP-52. (vii) Irrigated. (viii) N.A. (ix) Nil. (x) N.A.

### 2. TREATMENTS :

1. Control.
2. 20 lb./ac. of N as Ammo. Phos. drilled.
3. 20 lb./ac. of N as Ammo. Phos. broadcasted.
4. 20 lb./ac. of N as Ammo. Phos. applied at planting.
5. 20 lb./ac. of N as Ammo. Phos. applied at 2nd irrigation.

### 3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 5. (iv) (a) N.A. (b) 1/40 ac. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) N.A. (iii) Grain yield. (iv) (a) 1951—1956. (b) N.A. (c) N.A. (v) (a) N.A. (b) N.A. (vi) Nil. (vii) Originally the expt. was laid out as Latin square but as replication wise data was not available it was analysed as R.B.D.

## 5. RESULTS :

- (i) 260 lb./ac.  
 (ii) 74.68 lb./ac.  
 (iii) Treatments differ highly significantly.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	208
2.	412
3.	260
4.	276
5.	190
S.E./mean	= 33.38 lb./ac.

Crop :- Wheat (*Rabi*).

Ref :- Mh. 53(274).

Site :- Govt. Seed Demonstration Farm, Sindewahi. Type :- 'M'.

Object :- To find out the optimum dose of N to be given in the form of C/N and A/S.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) N.A. (c) N.A. (ii) (a) Medium black. (b) N.A. (iii) N.A. (iv) (a) to (e) N.A. (v) N.A. (vi) N.A. (vii) Irrigated. (viii) N.A. (ix) Nil (as it is *rabi* season). (x) N.A.

## 2. TREATMENTS :

All combinations of (1) and (2) .

(1) 2 sources of N :  $S_1 = A/S$  and  $S_2 = C/N$ .

(2) 3 doses of N :  $N_0 = 0$ ,  $N_1 = 15$  and  $N_2 = 30$  lb./ac.

## 3. DESIGN :

(i)  $3 \times 2$  Fact. in R.B.D. (ii) (a) 6. (b) N.A. (iii) 5. (iv) (a) N.A. (b) 1/80th ac. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) N.A. (iii) Grain yield. (iv) (a) 1953 N.A. (b) and (c) N.A. (v) (a) and (b) N.A. (vi) and (vii) N.A.

## 5. RESULTS :

- (i) 748 lb./ac.  
 (ii) 195.3 lb./ac.  
 (iii) Main effect of S alone is significant.  
 (iv) Av. yield of grain in lb./ac.

	$S_1$	$S_2$	Mean
$N_0$	—	—	680
$N_1$	862	647	754
$N_2$	901	721	811
Mean	882	684	

S.E. of any marginal mean = 61.8 lb./ac.  
 S.E. of body of table = 87.4 lb./ac.

Crop :- Wheat (*Rabi*).

Ref :- Mh. 48(70).

Site :- Govt. Expt. Farm, Tharsa.

Type :- 'M'.

Object :- To compare different sources of N for Wheat crop.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) Wheat. (c) N.A. (ii) (a) Medium black. (b) Refer soil analysis, Tharsa. (iii) 21.10.1948. (iv) (a) and (b) N.A. (c) 60 to 80 lb./ac. (d) 12". (e) N.A. (v) Nil. (vi) Improved Wheat (medium). (vii) Irrigated. (viii) 2 weedings. (ix) Nil. (x) 1st week of Feb. 1949.

## 2. TREATMENTS :

1. No manure.
2. 25 lb./ac. of N as cattle dung.
3. 10 lb./ac. of N as G.N.C. at sowing+15 lb./ac. of N as G.N.C. top dressed.
4. 10 lb./ac. of N as A/S at sowing drilled with seed+15 lb./ac. of N as A/S top dressed.
5. 10 lb./ac. of N as Ammo. Phos. with seed+15 lb./ac. of N as Ammo. Phos. top dressed.
6. 10 lb./ac. of N as F.Y.M. +7.5 lb./ac. of N as A/S with seed + 7.5 lb./ac. of N as A/S top dressed.
7. 10 lb./ac. of N as F.Y.M. basal dressing + 7.5 lb./ac. of N as Ammo. Phos. with seed + 7.5 lb./ac. of N as Ammo. Phos. top dressed.
8. 10 lb./ac. of N as F.Y.M. basal dressing + 7.5 lb./ac. of N as G.N.C. with seed + 7.5 lb./ac. of N as G.N.C. top dressed.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 8. (b) N.A. (iii) 8. (iv) (a) N.A. (b) 1/40 th ac. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) N.A. (iii) Nil. (iii) Grain yield. (iv) (a) 1940—N.A. (b) and (c) N.A. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 556 lb./ac.  
 (ii) 175.6 lb./ac.  
 (iii) Treatments do not differ significantly.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	455
2.	530
3.	605
4.	510
5.	620
6.	660
7.	650
8.	420
S.E./mean	= 62.1 lb./ac.

Crop :-Wheat (*Rabi*).

Ref :-Mh. 53(292).

Site :-Govt. Expt. Farm, Tharsa.

Type :-'M'.

Object :-To study the effect of N in different forms alone and in combination with P<sub>2</sub>O<sub>5</sub>.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) Gram and Wheat. (c) N.A. (ii) (a) Medium black soil. (b) Refer soil analysis, Tharsa. (iii) 26.10.1953. (iv) (a) 3 bakharrings. (b) *Tiffan* sowing. (c) 80 lb./ac. (d) and (e) N.A. (v) Nil. (vi) Howrah Wheat (medium). (vii) Unirrigated. (viii) 1 weeding. (ix) N.A. (x) 13 and 14.2.1954.

## 2. TREATMENTS:

1. Control.
2. 15 lb./ac. of N as A/S.
3. 15 lb./ac. of N as G.N.C.
4. 15 lb./ac. of  $P_2O_5$  as Super.
5. 15 lb./ac. of  $P_2O_5$  + 15 lb./ac. of N as A/S.
6. 15 lb./ac. of  $P_2O_5$  + 15 lb./ac. of N as G.N.C.
7. 7.5 lb./ac. of N as A/S + 7.5 lb./ac. of N as G.N.C. + 15 lb./ac. of  $P_2O_5$  as Super.

## 3. DESIGN:

- (i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 5. (iv) (a) 39'×39'. (b) 33'×33'. (v) 3' on all sides. (vi) Yes.

## 4. GENERAL:

- (i) Normal. Lodging to the extent of 10%. (ii) No. (iii) Grain and straw yield. (iv) 1951—N.A. (b) No. (c) N.A. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS:

- (i) 505 lb./ac.  
(ii) 136.7 lb./ac.  
(iii) Treatments do not differ significantly.  
(iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	472
2.	557
3.	541
4.	519
5.	577
6.	420
7.	450
S.E./mean	= 61.18 lb./ac.

Crop :-Wheat (*Rabi*).

Ref :-Mh. 51(176).

Site :-Govt. Expt. Farm, Tharsa.

Type :-'M'.

Obj.ct :-To find out a suitable combination of N and  $P_2O_5$  for Wheat crop.

## 1. BASAL CONDITIONS:

- (i) (a) to (c) N.A. (ii) (a) Low fertility soil. (b) Refer soil analysis, Tharsa. (iii) 14.11.1951. (iv) (a) N.A. (b) Sowing by *tiffan*. (c) 60 to 80 lb./ac. (d) 12". (e) N.A. (v) Nil. (vi) Improved Wheat. (medium). (vii) Irrigated. (viii) 1 interculturing. (ix) N.A. (x) 20.3.1952.

## 2. TREATMENTS:

All combinations of (1) and (2)

- (1) 5 levels of  $P_2O_5$  as Super :  $P_0=0$ ,  $P_1=15$ ,  $P_2=30$ ,  $P_3=45$  and  $P_4=60$  lb./ac.  
(2) 3 levels of N as A/S :  $N_0=0$ ,  $N_1=15$  and  $N_2=30$  lb./ac.

## 3. DESIGN:

- (i) 5×3 Fact. in R.B.D. (ii) (a) 15. (b) N.A. (iii) 3. (iv) (a) N.A. (b) 1/80th ac. (v) N.A. (vi) Yes.

## 4. GENERAL:

- (i) Normal. (ii) Nil. (iii) Grain yield. (iv) (a) 1951—1953. (b) No. (c) N.A. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS:

- (i) 749.8 lb./ac.  
(ii) 124.0 lb./ac.  
(iii) None of the effects is significant.

(iv) Av. yield of grain 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>	726.8	666.8	781.0	860.1	781.0	763.1
N <sub>1</sub>	773.4	733.4	640.1	773.4	853.4	754.8
N <sub>2</sub>	673.4	833.4	753.4	726.8	673.4	732.1
Mean	724.5	744.5	724.8	786.8	769.3	

S.E. of marginal mean of N = 37.8 lb./ac.

S.E. of marginal mean of P = 41.0 lb./ac.

S.E. of body of table = 71.0 lb./ac.

Crop :- Wheat (*Rabi*).

Ref :- Mh. 52(206).

Site :- Govt. Expt. Farm, Tharsa.

Type :- 'M'.

Object :—To find out a suitable combination of N and P<sub>2</sub>O<sub>5</sub> for Wheat.

## 1. BASAL CONDITIONS :

- (i) (a) N.A. (b) Wheat. (c) N.A. (ii) (a) Medium black. (b) Refer soil analysis, Tharsa. (iii) 1.11.1952.  
 (iv) (a) N.A. (b) Sowing by *tiffan*. (c) 80-lb./ac. (d) Between rows—9" and 4" plant to plant. (e) N.A.  
 (v) N.A. (vi) Wheat Hy—65. (vii) Irrigated. (viii) N.A. (ix) Nil. (x) 19.2.1953.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 5 levels of P<sub>2</sub>O<sub>5</sub> as Super : P<sub>0</sub>=0, P<sub>1</sub>=15, P<sub>2</sub>=30, P<sub>3</sub>=45 and P<sub>4</sub>=60 lb./ac.(2) 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.

Seed mixed with respective dose of manure.

## 3. DESIGN

- (i) 5×3 Fact. in R.B.D. (ii) (a) 15. (b) N.A. (iii) 3. (iv) (a) N.A. (b) 33'×16.5'. (v) N.A. (vi) Yes.

## 4. GENERAL :

- (i) Satisfactory. (ii) Nil. (iii) Grain yield. (iv) (a) 1951 to 1953. (b) No. (c) N.A. (v) (a) N.A. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 435.2 lb./ac.

(ii) 167.5 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>	P <sub>3</sub>	P <sub>4</sub>	Mean
N <sub>0</sub>	313.3	480.1	473.4	346.7	460.1	414.7
N <sub>1</sub>	360.0	553.4	513.4	340.0	413.4	436.1
N <sub>2</sub>	440.1	460.1	460.1	346.7	566.7	454.7
Mean	371.2	497.8	482.3	344.5	480.1	

S.E. of marginal mean of N = 43.2 lb./ac.

S.E. of marginal mean of P = 55.8 lb./ac.

S.E. of body of table = 96.7 lb./ac.



Crop :- Wheat (*Rabi*).  
Site :- Govt. Expt. Farm, Tharsa.

Ref :- Mh. 53(294).  
Type :- 'M'.

Object :- To find out a suitable combination of N and  $P_2O_5$  for Wheat crop (low fertility soil).

1. BASAL CONDITIONS :

(i) (a) N.A. (b) Wheat. (c) N.A. (ii) (a) Medium black soil. (b) Refer soil analysis, Tharsa. (iii) 30.10.1953. (iv) (a) 6 *bakharings*. (b) *Tiffan* sowing. (c) 80 lb./ac. (d) N.A. (e) N.A. (v) Nil. (vi) Hy-65 (medium). (vii) Irrigated. (viii) 2 weedings. (ix) Nil. (x) 4.2.1954 to 5.2.1954.

2. TREATMENTS :

All combinations of (1) and (2)

(1) 5 levels of  $P_2O_5$  :  $P_0=0$ ,  $P_1=15$ ,  $P_2=30$ ,  $P_3=45$  and  $P_4=60$  lb./ac.

(2) 3 levels of N :  $N_0=0$ ,  $N_1=15$  and  $N_2=30$  lb./ac.

Manures drilled with seed.

3. DESIGN :

(i)  $5 \times 3$  Fact. in R.B.D. (ii) (a) 15. (b) N.A. (iii) 3. (iv) (a) N.A. (b)  $33' \times 16.5'$ . (v) N.A. (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) Nil. (iii) Grain yield. (iv) (a) 1951 to 1953. (b) No. (c) N.A. (v) (a) N.A. (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 1473 lb./ac.

(ii) 225.4 lb./ac.

(iii) Main effect of N alone is highly significant.

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

	$P_0$	$P_1$	$P_2$	$P_3$	$P_4$	Mean
$N_0$	1467	1363	1226	1577	1732	1473
$N_1$	1480	1220	1257	1613	1627	1439
$N_2$	1754	1167	1430	1508	1674	1506
Mean	1567	1250	1304	1566	1677	

S.E. of marginal mean of N = 58.2 lb./ac.

S.E. of marginal mean of P = 75.1 lb./ac.

S.E. of body of table = 130.1 lb./ac.

Crop :- Wheat (*Rabi*).  
Site :- Govt. Expt. Farm, Tharsa.

Ref :- Mh. 52(207).  
Type :- 'M'.

Object :- To find out the optimum dose of N and  $P_2O_5$  on Wheat (high fertility soil).

1. BASAL CONDITIONS :

(i) (a) N.A. (b) Wheat. (c) N.A. (ii) (a) High fertility soil. (b) Refer soil analysis, Tharsa. (iii) 30.10.1952. (iv) (a) N.A. (b) Sowing by *tiffan*. (c) 60 to 80 lb./ac. (d) Spacing between rows—1'. (e) N.A. (v) Nil. (vi) Hy-65-4. (vii) Irrigated. (viii) 1 interculturing. (ix) Nil. (x) 17.2.1953.

2. TREATMENTS :

All combinations of (1) and (2)

(1) 5 levels of  $P_2O_5$  :  $P_0=0$ ,  $P_1=15$ ,  $P_2=30$ ,  $P_3=45$  and  $P_4=60$  lb./ac.

(2) 3 levels of N :  $N_0=0$ ,  $N_1=15$  and  $N_2=30$  lb./ac.

N as A/S and  $P_2O_5$  as Super applied mixed with seed.

## 3. DESIGN :

(i) 5×3 Fact. in R.B.D. (ii) (a) 15. (b) N.A. (iii) 3. (iv) (a) N.A. (b) 33'×16.5'. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) Satisfactory. (ii) Nil. (iii) Grain yield. (iv) (a) 1951—1953. (b) No. (c) N.A. (v) (a) N.A. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 623.7 lb./ac.  
 (ii) 87.04 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>	646.8	613.4	580.1	540.1	600.1	596.1
N <sub>1</sub>	620.1	620.1	633.4	586.7	686.8	629.4
N <sub>2</sub>	636.8	653.4	626.7	646.8	600.1	642.7
Mean	651.2	629.0	613.4	591.2	629.0	

S.E. of marginal mean of N = 22.41 lb./ac.  
 S.E. of marginal mean of P = 29.01 lb./ac.  
 S.E. of body of table = 50.25 lb./ac.

Crop :- Wheat (*Rabi*).

Ref Mh. 53(293).

Site :- Govt. Expt. Farm, Tharsa.

Type :- 'M'.

Object : -To determine the optimum dosage of N and P<sub>2</sub>O<sub>5</sub> for Wheat (high fertility soil).

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) Wheat. (c) N.A. (ii) (a) Medium black soil. (b) Refer soil analysis, Tharsa. (iii) 29.10.1953.  
 (iv) (a) 2 ploughings and 6 *bakharings*. (b) N.A. (c) 60 lb./ac. (d) 10" between lines and 3" between plants  
 (e) N.A. (v) Nil. (vi) Hy—65 (medium). (vii) Irrigated. (viii) 2 weedings. (ix) Nil. (x) 4, 5.2.1954.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 5 levels of P<sub>2</sub>O<sub>5</sub> : P<sub>0</sub>=0, P<sub>1</sub>=15, P<sub>2</sub>=30, P<sub>3</sub>=45 and P<sub>4</sub>=60 lb./ac.

(2) 3 levels of N : N<sub>0</sub>=0, N<sub>1</sub>=15 and N<sub>2</sub>=30 lb./ac.

N as A/S and P<sub>2</sub>O<sub>5</sub> as Super drilled with seed.

## 3. DESIGN :

(i) 5×3 Fact. in R.B.D. (ii) (a) 15. (b) N.A. (iii) 3. (iv) (a) N.A. (b) 33'×16.5'. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) Fairly good. (ii) Nil. (iii) Grain and straw yield. (iv) (a) 1951—1953. (b) No. (c) N.A. (v) (a) N.A. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 1836 lb./ac.  
 (ii) 202.3 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>	P <sub>3</sub>	P <sub>4</sub>	Mean
N <sub>0</sub>	1790	1937	1915	1867	1900	1882
N <sub>1</sub>	1774	1597	1738	1740	1943	1758
N <sub>2</sub>	1846	1902	1923	1813	1852	1867
Mean	1803	1812	1859	1807	1898	

S.E. of marginal mean of N = 52.3 lb./ac.  
 S.E. of marginal mean of P = 67.4 lb./ac.  
 S.E. of body of table = 116.8 lb./ac.

✓ Crop :-Wheat (Rabi).

Ref :-Mh. 50(80).

Site :-Govt. Seed and Demonstration Farm, Washim.

Type :-'M'.

Object :-To study the residual effect of manures applied in 1948.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Groundnut. (c) Nil. (ii) (a) Medium black. (b) N.A. (iii) 18.10.1950. (iv) (a) 5 *bakharings*. (b) N.A. (c) 45 lb./ac. (d) 18 lines/plot. (e) N.A. (v) Nil. (vi) N.P. 52. (vii) Unirrigated. (viii) N.A. (ix) 1.34°. (x) 22 to 24.2.1951.

## 2. TREATMENTS :

1. Control (no manure).
2. 20 lb./ac. of N as T.C.
3. 40 lb./ac. of N as T.C.
4. 20 lb./ac. of N as F.Y.M.
5. 40 lb./ac. of N as F.Y.M.
6. 10 lb./ac. of N as G.N.C.
7. 20 lb./ac. of N as G.N.C.
8. 10 lb./ac. of N as A/S.
9. 20 lb./ac. of N as A/S.

Manures applied in 1948.

## 3. DESIGN

(i) R.B.D. (ii) (a) 9. (b) N.A. (iii) 6. (iv) (a) N.A. (b) 66' × 16½'. (v) 2½' between plots. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Nil. (iii) Wheat grain yield. (iv) (a) 1948—N.A. (Residual effect from 1949). (b) Yes. (c) N.A. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 490.0 lb./ac.

(ii) 59.84 lb./ac.

(i i) Treatments do not differ significantly.

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

Treatment	Av. yield
1.	467
2.	463
3.	540
4.	497
5.	495
6.	493
7.	493
8.	466
9.	493
S.E./mean	=24.43 lb./ac.

Crop :- Wheat (*Rabi*). Ref :- Mh. 51(106).  
 ✓ Site :- Govt. Seed and Demonstration Farm, Washim. Type :- 'M'.

Object :- To study the effect of cotton seedcake in comparison with other manures on Wheat yield.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) and (c) N.A. (ii) (a) Medium black. (b) N.A. (iii) 28.10.1951. (iv) (a) N.A. (b) Sowing by *tiffan* with 3 pairs. (c) 50 lb./ac. (d) and (e) N.A. (v) Nil. (vi) HY-65-4. (vii) Unirrigated. (viii) N.A. (ix) 3.79". (x) 17.2.1952.

2. TREATMENTS :

1. 20 lb./ac. of N as G.N.C.
2. 20 lb./ac. of N as cotton seed cake decorticated.
3. 20 lb./ac. of N as cotton seed cake undecorticated.
4. 20 lb./ac. of N as A/S.
5. No manure (Control).

3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 5. (iv) (a) N.A. (b) 66' × 16½'. (v) 5' between plots. (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) Nil. (iii) Germination counts and grain yield. (iv) (a) 1951-1952. (b) N.A. (c) Nil. (v) (a) and (b) Nil. (vi) and (vii) Nil.

5. RESULTS:

- (i) 620 lb./ac.  
 (ii) 60.32 lb./ac.  
 (iii) Treatments do not differ significantly.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	608
2.	605
3.	628
4.	682
5.	577
S.E./mean	=26.96 lb./ac.

Crop :- Wheat (*Rabi*). Ref :- Mh. 52(89).  
 Site :- Govt. Seed and Demonstration Farm, Washim. Type :- 'M'.

Object :- To study the effect of Cotton seed cake in comparison with other manures on Wheat yield.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Mug-Udid* followed by *Jowar*. (c) Nil. (ii) (a) Medium black. (b) N.A. (iii) 26.10.1952. (iv) (a) N.A. (b) Sowing by *tiffan* with 3 pairs. (c) 50 lb./ac. (d) and (e) N.A. (v) Nil. (vi) Hy-65-4. (vii) Unirrigated. (viii) N.A. (ix) 1.48". (x) 14.2.1953.

2. TREATMENTS

1. 20 lb./ac. of N as G.N.C.
2. 20 lb./ac. of N as Cotton seed cake decorticated.
3. 20 lb./ac. of N as Cotton seed cake undecorticated.
4. 20 lb./ac. of N as A/S.
5. Control (no manure).

3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 5. (iv) (a) N.A. (b) 66' × 16½'. (v) 4' between plots. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Nil. (iii) Grain yield. (iv) (a) 1951-1952. (b) and (c) No. (v) (a) and (b) Nil. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 438 lb./ac.  
 (ii) 11.57 lb./ac.  
 (iii) Treatments differ highly significantly.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	459
2.	420
3.	428
4.	436
5.	445
S.E./mean	= 5.17 lb./ac.

Crop :- Wheat (*Rabi*).

Ref :- Mh. 53(264).

Site :- Govt. Seed and Demonstration Farm, Washim.

Type :- 'M'.

Object :- To study the effect of different doses of N in different forms.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) N.A. (c) N.A. (ii) (a) Medium black. (b) N.A. (iii) 25.10.1953. (iv) (a) N.A. (b) Sowing by *tiffan* with two pairs. (c) N.A. (d) 24 lines/plot. (e) N.A. (v) Nil. (vi) Hybrid-12. (vii) Unirrigated. (viii) Nil. (ix) 1.64°. (x) 15.2.1954.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 2 sources of N :  $S_1 = A/S$  and  $S_2 = C/N$ .

(2) 3 levels of N :  $N_0 = 0$ ,  $N_1 = 15$  and  $N_2 = 30$  lb./ac.

Fertilizers drilled with the seed.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 6. (iv) (a) N.A. (b)  $45^\circ-5^\circ \times 24'$ . (v) 3' between plots. (vi) Yes.

## 4. GENERAL :

(i) Normal. (ii) Nil. (iii) Germination counts and grain yield. (iv) 1953-continued. (b) N.A. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 514.5 lb./ac.  
 (ii) 12.06 lb./ac.  
 (iii) Main effects of N and S and control vs., others are highly significant. Interaction  $S \times N$  is not significant.  
 (iv) Av. yield of grain in lb./ac.

	$S_1$	$S_2$	Mean
$N_0$	—	—	496.7
$N_1$	522.5	506.7	514.6
$N_2$	537.1	527.2	532.1
Mean	529.8	516.9	

S.E. of marginal mean = 3.48 lb./ac.

S.E. of body of table = 4.90 lb./ac.

Crop :-Wheat (*Rabi*).

Ref :- Complex experiments (T.C.M.), 1953.

Centre :- Niphad (Maharashtra). Type :- 'M'.

Object .—I (a) To study the effect of types and levels of N and P on non-acid soils.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) N.A. (c) N.A. (ii) (a) Loam to clay loam in texture, medium to deep black in colour. (b) Deficient in organic matter, non-acidic in reaction, pH. varies from 7.5 to 8.0. (iii) 3.11.1953. (iv) (a) N.A. (b) N.A. (c) 40 lb./ac. (d) 10". (e) N.A. (v) N.A. (vi) Kenphad No. 25 (improved rust resistant variety). (vii) Irrigated. (viii) Two weedings and one intercultivation. (ix) 35.00". (x) 2nd and 3rd week of April, 1954.

## 2. TREATMENTS :

All combinations of (1) and (2), (3)+3 extra treatments.

(1) 3 levels of N :  $N_0=0$ ,  $N_1=20$  and  $N_2=40$  lb./ac.(2) 3 sources of N :  $S_1=A/S$ ,  $S_2=A/N$  and  $S_3=Urea$ .(3) 3 levels of  $P_2O_5$  :  $P_0=0$ ,  $P_1=20$  and  $P_2=40$  lb./ac. (as triple super).3 extra treatments are :  $T_1=60$  lb./ac. of N+40 lb./ac. of  $P_2O_5$ ,  $T_2=40$  lb./ac. of N+80 lb./ac. of  $P_2O_5$ ,  $T_3=60$  lb./ac. of N+80 lb./ac. of  $P_2O_5$ . N as A/S and  $P_2O_5$  as Super.

Triple super drilled a week before the seed was sown. Nitrogenous fertilizers were drilled at the time of sowing.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 12 plots/block and 3 blocks/replication. (b) N.A. (iii) 1. (iv) (a) N.A. (b) 44'×15'. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) Normal. (ii) Slight damage caused by rats. (iii) Grain yield. (iv) (a) 1953 to 1956. (b) No. (c) N.A. (v) (a) Kotah, Obedullaganj. (b) N.A. (vi) Nil. (vii) Nil.

## 5. RESULTS :

(i) 1245 lb./ac.

(ii) 376.2 lb./ac.

(iii) None of the effects and their interactions are significant

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

	$N_0$	$N_1$	$N_2$	Mean	$S_1$	$S_2$	$S_3$
$P_0$	1264	1276	994	1178	1247	1303	983
$P_1$	1195	1000	1436	1210	1285	1007	1338
$P_2$	1530	972	1533	1345	1474	1261	1300
Mean	1330	1084	1321	1244	1335	1190	1207
$S_1$	—	1112	1526	1319			
$S_2$	—	953	1112	1032			
$S_3$	—	1181	1325	1253			

 $T_1=1482$  lb./ac. $T_2=1035$  lb./ac. $T_3=1225$  lb./ac.In  $N \times P$  and  $S \times P$  tables.

S.E. of marginal means of N, P or S

=125.3 lb./ac.

S.E. of body of table

=217.1 lb./ac.

In  $S \times N$  table.

S.E. of marginal means of S

=153.5 lb./ac.

Crop :- Wheat (*Rabi*). Ref :- Complex experiments (T.C.M.), 1953.  
Centre :- Niphad (Maharashtra). 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 to clay loam in texture—medium to deep black in colour. (b) Deficient in organic matter ; non-acidic in reaction ; pH. varies from 7.5 to 8.0. (iii) 4.11.1953. (iv) (a) N.A. (b) N.A. (c) 40 lb./ac. (d) 10°. (e) N.A. (v) N.A. (vi) Kenphad-25 (improved rust resistant variety). (vii) Irrigated. (viii) Two weedings and one intercultivation. (ix) 35.00°. (x) April 1954.

2. TREATMENTS :

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

(1) 3 sources of N (each at 20 lb./ac of N) :  $S_1=A/S$ ,  $S_2=A/N$  and  $S_3=Urea$ .

(2) 2 times of application :  $T_1$ =at sowing and  $T_2$ =at first irrigation.

3. DESIGN :

(i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 44'×15'. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Normal, no lodging. (ii) Nil. (iii) Grain yield. (iv) (a) 1953 to 1956. (b) No. (c) N.A. (v) (a) Kotah, Banaras, Pusa, Satna, Paliad. (b) N.A. (vi) Nil. (vii) Nil.

5. RESULTS :

(i) 1070 lb./ac.  
(ii) 119.9 lb /ac.  
(iii) Main effects, control vs. others and interaction are not significant.  
(iv) Av. yield of grain in lb./ac.

	Control $S_1$	$S_2$ =1061 lb./ac.	$S_3$	Mean
$T_1$	1084	1114	990	1063
$T_2$	1089	1132	1176	1132
Mean	1086	1123	1083	1097

S.E. of marginal mean of S =42.4 lb./ac.  
S.E. of marginal mean of T =34.6 lb./ac.  
S.E. of body of table =59.9 lb./ac.

Crop :- Wheat (*Rabi*). Ref :- Complex experiments (T.C.M.), 1953.  
Centre :- Niphad (Maharashtra). Type :- 'M'.

Object :-To study the effect of artificial fertilizers in conjunction with organic manures.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) and (c) N.A. (ii) (a) Loam to clay loam in texture, medium to deep black in colour. (b) Deficient in organic matter; non-acidic in reaction pH. 7.5 to 8.0. (iii) 3.11.1953. (iv) (a) and (b) N.A. (c) 40 lb./ac. (d) 10°. (e) N.A. (v) N.A. (vi) Kenphad-25. (vii) Irrigated. (viii) Two weedings and one intercultivation. (ix) 35.00°. (x) 30.3.1954.

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

(3) 3 levels of F.Y.M. :  $F_0=0$ ,  $F_1=5$  C.L. and  $F_2=10$  C.L./ac.

$P_2O_5$  as triple super and N as A/S. Triple Super drilled a week before sowing and A/S drilled at the time of sowing. F.Y.M. spread over the plot evenly and mixed with the soil a week before sowing.

3. DESIGN :

(i) 3<sup>3</sup> factorial (confounded). (ii) (a) 9 plots/block and 3 blocks/replication. (b) N.A. (iii) 1. (iv) (a) N.A. (b) 40'×20'. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) Normal. (ii) Crop slightly damaged by rats. (iii) Grain yield. (iv) (a) 1953—1956. (b) No. (c) N.A. (v) (a) Obedullaganj. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 877 lb./ac.  
(ii) 164.4 lb./ac.  
(iii) Main effect of P alone 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	F <sub>0</sub>	F <sub>1</sub>	F <sub>2</sub>
P <sub>0</sub>	726	691	709	709	630	778	718
P <sub>1</sub>	846	948	1083	959	1071	756	1049
P <sub>2</sub>	890	833	1171	965	881	1016	997
Mean	821	824	987	877	861	850	921
F <sub>0</sub>	812	809	961				
F <sub>1</sub>	879	750	922				
F <sub>2</sub>	771	913	1079				

S.E. of any marginal mean = 54.8 lb./ac.  
S.E. of body of table = 94.9 lb./ac.

Crop :- Wheat (*Rabi*).

Ref :- Complex Experiments (T.C.M.), 1953.

Centre :- Niphad (Maharashtra). Type :- 'M'.

Object :- III To study the effect of Potash and minor elements on the yield of Wheat.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) N.A. (c) N.A. (ii) (a) Loam to clay loam in texture medium to deep black in colour. (b) Deficient in organic matter, non-acidic in reaction pH. 7.5 to 8.0. (iii) 6.11.1953. (iv) (a) and (b) N.A. (c) 40 lb./ac. (d) 10". (e) N.A. (v) N.A. (vi) Kenphad-25 (improved, rust resistant variety). (vii) Irrigated. (viii) Two weedings and one intercultivation. (ix) 35.00". (x) 31.3.1954 and 1.4.1954.

## 2. TREATMENTS :

A set of 32 out of 256 treatment combinations formed of 7 minor elements and K<sub>2</sub>O.

- A. Magnesium (Mg. Sulphate) at 0 and 2 cwt./ac.  
B. Iron (Ferrous Sulphate) at 0 and 100 lb./ac.  
C. Manganese (Mn. Sulphate) at 0 and 80 lb./ac.  
D. Zinc (Zn. Sulphate) at 0 and 20 lb./ac.  
E. Copper (Cu. Sulphate) at 0 and 20 lb./ac.  
F. Borax (granulated Borax) at 0 and 10 lb./ac.  
G. Molybdenum (Sod. Molybdate). at 0 and 2 oz./ac.  
K. Potassium (Pot. Sulphate) at 0 and 20 lb./ac.  
20 lb./ac. of N as A/S+20 lb./ac. of P<sub>2</sub>O<sub>5</sub> as Triple Super given to all the plots.

## 3. DESIGN :

(i) 1/8 of 2<sup>8</sup> factorial (confounded). (ii) (a) 8 plots/block and 4 blocks/replication. (b) N.A. (iii) 1. (iv) (a) N.A. (b) 44'×15' (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) Normal. (ii) Nil. (iii) Grain yield. (iv) (a) 1953—1956. (b) No. (c) N.A. (v) (a) and (b) No. (vi) and (vii) Nil.



Ref. : Complex Experiments (T.C.M.), 1953

5. RESULTS :

(i) 1307 lb./ac.

(ii) 193.3 lb./ac.

(iii) Main effects are not significant.

(iv) Mean and differential response in lb./ac.

Mean		A		B		C		D		E		F		G		K	
Factor	Response	-ve	+ve	-ve	+ve	-ve	+ve	-ve	+ve	-ve	+ve	-ve	+ve	-ve	+ve	-ve	+ve
A	-18.10	-	-	+100.38	-136.58	+22.22	-58.41	-63.36	+27.15	-73.23	+37.03	-128.36	+92.15	-98.74	+62.53	+60.06	-96.26
B	-11.52	+106.96	-130.00	-	-	Confounded		Confounded		+20.57	-43.61	-51.84	+28.80	Confounded		Confounded	
C	-91.33	-51.00	-131.65	Confounded		-	-	Confounded		Confounded		-323.36	+140.70	-116.01	-66.65	Confounded	
D	-13.99	-59.24	+31.27	Confounded		Confounded		-	-	+74.87	-102.85	+0.82	-28.80	-46.08	+18.10	Confounded	
E	-18.92	-74.05	+36.20	+13.16	51.01	Confounded		+69.94	-107.79	-	-	Confounded		Confounded		Confounded	
F	-15.63	-125.89	+94.62	-55.95	+24.68	-247.66	+216.40	-0.82	-30.44	Confounded		-	-	Confounded		Confounded	
G	-38.67	-119.31	+41.96	Confounded		-63.36	-13.99	-70.76	-6.58	Confounded		Confounded		-	-	Confounded	
K	-35.38	+42.79	-113.55	Confounded		Confounded		Confounded		Confounded		Confounded		Confounded		-	-

S.E. of mean response = 24.16 lb./ac.

S.E. of differential response = 34.16 lb./ac.

Crop :-Wheat (*Rabi*).

Ref :-Expts. on cultivators' fields Mh. 53(78).

Site :-Malegaon, (Nasik.)

Type :-'M'.

Object :-To find the response of irrigated Wheat under cultivators' farming conditions to different levels of N and  $P_2O_5$ .

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) *Bajri*. (c) N.A. (ii) Black. (iii) 5 C.L./ac. of F.Y.M. (iv) Local. (v) (a) N.A. (b) Cross-wise sowing. (c) N.A. (d) Distance between rows varying from 8" to 12". (e) N.A. (vi) N.A. (vii) Irrigated. (viii) N.A. (ix) 0.44". (x) N.A.

## 2. TREATMENTS :

O =Control.

 $N_1$  =20 lb./ac of N as A/S. $N_2$  =40 lb./ac. of N as A/S. $N_1'$  =20 lb./ac. of N as Urea. $N_1P$  =20 lb./ac. of N as A/S+20 lb./ac. of  $P_2O_5$  as Super. $N_2P$  =40 lb./ac. of N as A/S+20 lb./ac. of  $P_2O_5$  as Super.

A/S and Urea were applied in 2 doses. 1st dose was applied 8 days prior to sowing and 2nd dose was applied one month after sowing.  $P_2O_5$  as Super was applied in one dose.

## 3. DESIGN :

(i) and (ii) A list of villages, randomly selected from all the villages in the taluk was formed and a necessary number of suitable villages (growing wheat) were taken from the list retaining the serial order of the list. The site in a village was located by a randomly selected survey no. No. of exptal. sites 3. (Originally planned with 4). (iii) (a) 53'x41'. (b) 33'x33'. (iv) N.A.

## 4. GENERAL :

(i) N.A. (ii) No. (iii) Height, no. of tillerings, length of earhead, no. of grain per earhead were noted at random for each treatment. (iv) (a) 1953—1956. (b) and (c) N.A. (v) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 1927 lb./ac.

(ii) 308.4 lb./ac.

(iii) Treatment differences are not significant.

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

Treatment	Av. yield
O	1995
$N_1$	1604
$N_2$	1968
$N_1'$	1674
$N_1P$	2103
$N_2P$	2218
S.E./mean	=178.1 lb./ac.

Crop :-Wheat (*Rabi*).

Ref :- Expts. on cultivators' fields Mh. 53(59).

Site :-Baglan (Nasik )

Type :-'M'.

Object :-To find out the response of irrigated Wheat under cultivators' farming conditions to different levels of N and  $P_2O_5$ .

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) *Bajri* at 5 villages. Sunnhemp at 1 village. (c) N.A. (ii) Medium black. (iii) 5000 lb./ac. of F.Y.M. (iv) Local at 5 villages. Pusa-4 at 1 village. (v) (a) N.A. (b) Triplicate sowing. (c), (d) and (e) N.A. (vi) 3rd week of November to 1st of December 1953. (vii) Irrigated. (viii) N.A. (ix) 0.65". (x) 3rd and 4th week of March 1954.

## 2. TREATMENTS :

0 = Control.

 $N_1$  = 20 lb./ac. of N as A/S. $N_2$  = 40 lb./ac. of N as A/S. $N_1'$  = 20 lb./ac. of N as Urea. $N_1P$  = 20 lb./ac. of N as A/S+20 lb./ac. of  $P_2O_5$  as Super. $N_2P$  = 40 lb./ac. of N as A/S+20 lb./ac. of  $P_2O_5$  as Super.A/S and Urea were applied in two doses. 1st dose was applied 8 days prior to sowing and 2nd dose one month after sowing.  $P_2O_5$  as Super was given with 1st dose of N.

## 3. DESIGN :

- (i) and (ii) A list of villages, randomly selected from all the villages in a taluk was formed and a necessary number of suitable villages (growing wheat) were taken from the list retaining the serial order of the list. The site in a village was located by a randomly selected survey no. No. of experimental site 6.  
 (iii) (a) 53'×41'. (b) 33'×33'. (iv) N.A.

## 4. GENERAL :

- (i) N.A. (ii) No. (iii) Height, no. of tillering, length of earhead, no. of grain/earhead were noted at random for each treatment. (iv) (a) 1953—1956. (b) and (c) N.A. (v) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 1149 lb./ac.

(ii) 102.0 lb./ac.

(iii) Treatment differences are highly significant.

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

Treatment	Av. yield
0	978
$N_1$	1083
$N_2$	1173
$N_1'$	1084
$N_1P$	1244
$N_2P$	1333
S.E./mean	=41.69 lb./ac.

Crop :- Wheat (*Rabi*).

Ref :- Expts. on cultivator's fields Mh. 53 (50).

Site :- Kalwan (Nasik.)

Type :- 'M'.

Object :—To find the response of irrigated Wheat under cultivators' farming conditions to different levels of N and  $P_2O_5$ .

## 1. BASAL CONDITIONS :

- (i) (a) No. (b) *Bajri*. (c) N.A. (ii) Black. (iii) 5000 lb./ac. of F.Y.M. at one village and 4000 lb./ac. at the other village. (iv) Local. (v) (a) N.A. (b) Triplicate sowing. (c) to (e) N.A. (vi) Last week of Nov. 1953. (vii) Irrigated. (viii) N.A. (ix) 0.67". (x) 2nd week of March 1954.

## 2. TREATMENTS :

0 = Control.

 $N_1$  = 20 lb./ac. of N as A/S. $N_2$  = 40 lb./ac. of N as A/S. $N_1'$  = 20 lb./ac. of N as Urea. $N_1P$  = 20 lb./ac. of N as A/S+20 lb./ac. of  $P_2O_5$  as Super. $N_2P$  = 40 lb./ac. of N as A/S+20 lb./ac. of  $P_2O_5$  as Super.Half dose of A/S and Urea with  $P_2O_5$  was applied 8 days prior to sowing and remaining half of A/S and Urea was applied one month after sowing.

## 3. DESIGN :

(i), (ii) A list of villages, randomly selected from all villages in a taluk was formed and a necessary number of suitable villages (growing wheat) were taken from the list retaining the serial order of the list. The site in a village was located by a randomly selected survey no. No. of experimental site 2. (ii) (a) 53' x 41' (b) 33' x 33'. (iv) N.A.

## 4. GENERAL :

(i) N.A. (ii) No. (iii) Height, no. of tillering, length of earhead, no. of grain per earhead were noted at random for each treatment. (iv) (a) 1953—1956. (b) N.A. (c) N.A. (v) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 827 lb./ac.  
 (ii) 33.2 lb./ac.  
 (iii) Treatment differences are highly significant.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
0	665
N <sub>1</sub>	749
N <sub>2</sub>	855
N <sub>1</sub> '	804
N <sub>1</sub> P	914
N <sub>2</sub> P	976
S.E /mean	= 24.0 lb./ac.

Crop :- Wheat (*Rabi*).

Ref :- Expts. on cultivators' fields Mh. 53(81).

Site :- Chandor (Nasik.)

Type :- 'M'.

Object :- To find the response of Wheat under cultivators' farming conditions to different levels of N and P<sub>2</sub>O<sub>5</sub>.

## 1. BASAL CONDITIONS :

- (i) (a) N.A. (b) *Bajri* at two villages, Paddy at 1 village and Lucerne at 1 village. (c) No manure at two villages, 10 C.L./ac. of F.Y.M. at one village of paddy and 60 C.L./ac. of F.Y.M. at another village (ii) Black. (iii) 5 C.L./ac. of F.Y.M. (iv) Local. (v) (a) N.A. (b) Duplicate sowing. (c) to (e) N.A. (vi) N.A. (vii) Irrigated. (viii) N.A. (ix) 0.58". (x) Last week of February to 1st week of March 1954.

## 2. TREATMENTS :

- 0 = Control.  
 N<sub>1</sub> = 20 lb./ac. of N as A/S.  
 N<sub>2</sub> = 40 lb./ac. of N as A/S.  
 N<sub>1</sub>' = 20 lb./ac. of N as Urea.  
 N<sub>1</sub>P = 20 lb./ac. of N as A/S + 20 lb./ac. of P<sub>2</sub>O<sub>5</sub> as Super.  
 N<sub>2</sub>P = 40 lb./ac. of N as A/S + 20 lb./ac. of P<sub>2</sub>O<sub>5</sub> as Super.  
 Super and half of Urea and A/S were broadcasted 8 days prior to sowing and the remaining half of A/S and Urea was applied one month after sowing.

## 3. DESIGN :

(i), (ii) A list of villages, randomly selected from all the villages in the taluk was formed and a necessary number of suitable villages (growing wheat) were taken from the list retaining the serial order of the list. The site in a village was located by a randomly selected survey number. No. of experimental site 4. (iii) (a) 53' x 41'. (b) 33' x 33'. (iv) N.A.

## 4. GENERAL :

(i) N.A. (ii) No. (iii) Height, No. of tillering, length of earhead, No. of grain per earhead were noted at random for each treatment. (iv) (a) 1953—1956. (b) N.A. (c) N.A. (v) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 1858 lb./ac.  
 (ii) 224.4 lb./ac.  
 (i.i) Treatment differences are highly significant  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
0	1389
N <sub>1</sub>	1435
N <sub>2</sub>	1678
N <sub>1</sub> '	1794
N <sub>1</sub> P	2225
N <sub>2</sub> P	2625
S.E./mean	= 112.2 lb./ac.

Crop :- Wheat (*Rabi*).

Ref :- Expts. on cultivators' fields Mh. 53(82).

Site :- Niphad, (Nasik.)

Type :- 'M'.

Object :- To find the response of Wheat under cultivators' farming conditions to different levels of N and P<sub>2</sub>O<sub>5</sub>.

## 1. BASAL CONDITIONS :

- (i) (a) N.A. (b) *Kulthi* at one village—*Bajri* at other. (c) N.A. (ii) Deep black. (iii) 5 C L./ac. of F.Y.M.  
 (iv) Local at one village and Kenphad at other village. (v) (a) N.A. (b) Cross-wise sowing. (c) N.A.  
 (d) N.A. (e) N.A. (vi) N.A. (vii) Irrigated. (viii) N.A. (ix) 0.81". (x) N.A.

## 2. TREATMENTS

0 =Control

N<sub>1</sub> =20 lb /ac. of N as A/S.

N<sub>2</sub> =40 lb /ac. of N as A/S,

N<sub>1</sub>' =20 lb./ac. of N as Urea.

N<sub>1</sub>P=20 lb./ac. of N as A/S+20 lb./ac. P<sub>2</sub>O<sub>5</sub> as Super.

N<sub>2</sub>P=40 lb./ac. of N as A/S+20 lb./ac. of P<sub>2</sub>O<sub>5</sub> as Super.

Super and half of Urea and A/S were broadcasted 8 days prior to sowing and the remaining half dose of Urea and A/S was applied one month after.

## 3. DESIGN :

- (i) and (ii) A list of villages, randomly selected from all the villages in the Taluk was formed and a necessary number of suitable villages (growing wheat) were taken from the list retaining the serial order of the list. The site in a village was located by a randomly selected survey number. No. of experimental site 2. (iii)  
 (a) 53'×41'. (b) 33'×33'. (iv) N.A.

## 4. GENERAL :

- (i) N.A. (ii) No. (iii) Height, no. of tillerings, length of earhead and no. of grain per earhead. (iv) (a) 1953 to 1956. (b) N.A. (c) N.A. (v) N.A. (vi) Nil. (vii) Nil.

## 5. RESULTS :

- (i) 1323 lb./ac.  
 (ii) 96.8 lb./ac.  
 (iii) Treatments do not differ significantly.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
0	1060
N <sub>1</sub>	1365
N <sub>2</sub>	1410
N <sub>1</sub> '	1375
N <sub>1</sub> P	1330
N <sub>2</sub> P	1400
S.E./mean	= 68.4 lb./ac.

Crop :- Wheat (*Rabi*).

Ref :- Expts. on cultivators' fields Mh. 53(83).

Site :- Yeola (Nasik.)

Type :- 'M'.

Object : - To find the response of irrigated Wheat under cultivators' farming conditions to different levels of N and  $P_2O_5$ .

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) Sugarcane at one village, *Bajri* at other village. (c) 60 C.L./ac. of F.Y.M. to sugarcane. (ii) Deep black. (iii) 5 C.L./ac. of F.Y.M. (iv) Local at one village and Kenphad at other. (v) (a) N.A. (b) Duplicate sowing. (c) to (e) N.A. (vi) N.A. (vii) Irrigated. (viii) N.A. (ix) 0.39". (x) 2nd and 4th week of March 1954.

## 2. TREATMENTS :

0 = Control.

 $N_1$  = 20 lb./ac. of N as A/S. $N_2$  = 40 lb./ac. of N as A/S. $N_1'$  = 20 lb./ac. of N as Urea. $N_1P$  = 20 lb./ac. of N as A/S + 20 lb./ac. of  $P_2O_5$  as Super. $N_2P$  = 40 lb./ac. of N as A/S + 20 lb./ac. of  $P_2O_5$  as Super.

Super and half of Urea and A/S were broadcasted 8 days prior to sowing. The remaining half of A/S and Urea was applied one month after sowing.

## 3. DESIGN :

(i) and (ii) A list of villages, randomly selected from all the villages in the taluk was formed and a necessary number of suitable villages (growing wheat) were taken from the list retaining the order of the list. The site in the village was located by a randomly selected survey no. No. of experimental site 2. (iii) (a) 53' x 41'. (b) 33' x 33'. (iv) N.A.

## 4. GENERAL :

(i) N.A. (ii) No. (iii) Height, no. of tillering, length of earhead, no. of grain/earhead. (iv) (a) 1953-1956. (b) N.A. (c) N.A. (v) N.A. (vi) Nil. (vii) Nil.

## 5. RESULTS :

(i) 2148 lb./ac.

(ii) 312.4 lb./ac.

(iii) Treatments do not differ significantly.

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

Treatment	Av. yield
0	1678
$N_1$	2223
$N_2$	2169
$N_1'$	2113
$N_1P$	2395
$N_2P$	2313
S.E./mean	= 220.8 lb./ac.

Crop :- Wheat (*Rabi*).

Ref :- Expts. on cultivators' fields Mh. 53(84).

Site :- Sinnar. (Nasik.)

Type :- 'M'.

Object :—To find the response of irrigated Wheat under cultivators' farming conditions to different levels of N and  $P_2O_5$ .

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) *Bajra*. (c) N.A. (ii) Medium Black. (iii) 5 C.L./ac. (iv) Local. (v) (a) N.A. (b) Cross-wise sowing. (c) to (e) N.A. (vi) N.A. (vii) Irrigated. (viii) N.A. (ix) 0.76". (x) N.A.

## 2. TREATMENTS :

0 = Control.

 $N_1$  = 20 lb./ac. of N as A/S. $N_2$  = 40 lb./ac. of N as A/S. $N_1'$  = 20 lb./ac. of N as Urea. $N_1P$  = 20 lb./ac. of N as A/S + 20 lb./ac. of  $P_2O_5$  as super. $N_2P$  = 40 lb./ac. of N as A/S + 20 lb./ac. of  $P_2O_5$  as super.

Super and half of Urea and A/S were broadcasted 8 days prior to sowing, The remaining half of Urea and A/S was applied one month after sowing.

## 3. DESIGN :

(i) and (ii) A list of villages, randomly selected from all the villages in the Taluk was formed and a necessary number of suitable villages (growing wheat) were taken from the list, retaining the serial order of the list. The site in the village was located by randomly selected survey no. No. of experimental site 2. (iii) (a)  $53' \times 41'$ . (b)  $33' \times 33'$ . (iv) N.A.

## 4. GENERAL :

(i) N.A. (ii) No. (iii) Height, no. of tillering, length of earhead, no of grains in each earhead. (iv) (a) 1953-1956. (b) N.A. (c) Nil. (v) N.A. (vi) Nil. (vii) Nil.

## 5. RESULTS :

(i) 1237 lb./ac.

(ii) 43.6 lb./ac.

(iii) Treatments differ significantly.

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

Treatment	Av. yield.
0	1071
$N_1$	1155
$N_2$	1234
$N_1'$	1275
$N_1P$	1325
$N_2P$	1359
S.E./mean	= 30.8 lb./ac.

Crop :- Wheat (Rabi). Ref :- Expts. on cultivators' fields Mh. 53(87).

Site :- Malegaon. Nasik.

Type :- 'M'.

Object :- To find the response of irrigated Wheat under cultivators' farming conditions to different level of N and  $P_2O_5$ .

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) Bajra. (c) N.A. (ii) Black. (iii) 5 C.L./ac. of F.Y.M. (iv) Local. (v) (a) N.A. (b) Cross-wise-sowing. (c) N.A. (d) Spacing between rows varied from 9" to 12". (e) N.A. (vi) N.A. (vii) Irrigated. (viii) N.A. (ix) 0.44". (x) N.A.

## 2. TREATMENTS :

0 = Control.

 $N_1'$  = 20 lb./ac. of N as Urea. $N_2'$  = 40 lb./ac. of N as Urea. $N_1$  = 20 lb./ac. of N as A/S. $N_1'P$  = 20 lb./ac. of N as Urea + 20 lb./ac. of  $P_2O_5$  as Super. $N_2'P$  = 40 lb./ac. of N as Urea + 20 lb./ac. of  $P_2O_5$  as Super.

Super and half of Urea and A/S were broadcasted 8 days prior to sowing. The remaining half of A/S and Urea was applied one month after sowing.

## 3. DESIGN :

(i) and (ii) A list of villages, randomly selected from all the villages of the Taluk was formed and a necessary number of suitable villages (growing wheat) were taken from the list retaining the serial order of the list. The site in a village was located by a randomly selected survey no. Number of experimental site 6. (iii) (a)  $53' \times 41'$ . (b)  $33' \times 33'$ . (iv) N.A.

## 4. GENERAL :

(i) N.A. (ii) No. (iii) Height, no. of tillering, length of earhead, no. grain per earhead. (iv) (a) 1953-1956. (b) N.A. (c) N.A. (v) N.A. (vi) Nil. (vii) Nil.

## 5. RESULTS :

- (i) 1243 lb./ac.  
 (ii) 274.0 lb./ac.  
 (iii) Treatment differences are significant.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
O	1009
N <sub>1</sub> '	1233
N <sub>2</sub> '	1185
N <sub>1</sub>	1118
N <sub>1</sub> 'P	1533
N <sub>2</sub> 'P	1377
S.E./mean	= 111.6 lb./ac.

Crop :- Wheat (*Rabi*).

Ref :- Expts. on cultivators' fields Mh. 53(88).

Site :- Baglan (Nasik.)

Type :- 'M'.

Object :- To find the response of irrigated Wheat under cultivators farming conditions' to different levels of N and P<sub>2</sub>O<sub>5</sub>.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) *Bajri* at 5 villages. Sannhemp at 1 village. (c) N.A. (ii) Medium black. (iii) 5000 lb./ac. of F Y.M. (iv) Local at 5 villages and Pusa-4 at 1 village. (v) (a) N.A. (b) Triplicate sowing. (c) to (e) N.A. (vi) 3rd week of Nov. and 1st of Dec. 1953 (vii) Irrigated. (viii) N.A. (ix) 0.65". (x) 3rd and 4th week of March 1954.

## 2. TREATMENTS :

O = Control.  
 N<sub>1</sub>' = 20 lb./ac. of N as Urea.  
 N<sub>2</sub>' = 40 lb./ac. of N as Urea.  
 N<sub>1</sub> = 20 lb./ac. of N as A/S.  
 N<sub>1</sub>'P = 20 lb./ac. of N as Urea + 20 lb./ac. of P<sub>2</sub>O<sub>5</sub> as Super.  
 N<sub>2</sub>'P = 40 lb./ac. of N as Urea + 20 lb./ac. of P<sub>2</sub>O<sub>5</sub> as Super.  
 Super and half of Urea and A/S were broadcasted 8 days prior to sowing and remaining half of Urea and A/S was supplied one month after sowing.

## 3. DESIGN :

(i) and (ii) A list of villages randomly selected from all the villages of taluk was formed and a necessary number of suitable villages (growing Wheat) were taken from the list retaining the serial order of the list. The site in a village was located by a randomly selected survey no. No. of experimental site 4. (iii) (a) 53' x 41'. (b) 33' x 33'. (iv) N.A.

## 4. GENERAL :

(i) N.A. (ii) N.A. (iii) Height, no. of tillerings, length of earhead and no. of grain per earhead. (iv) (a) 1953-1956. (b) and (c) N.A. (v) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 1078 lb./ac.  
 (ii) 81.2 lb./ac.  
 (iii) Treatment differences are highly significant.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
O	881
N <sub>1</sub> '	1019
N <sub>2</sub> '	1134
N <sub>1</sub>	1046
N <sub>1</sub> 'P	1179
N <sub>2</sub> 'P	1210
S.E./mean	= 40.6 lb./ac.



Crop :- Wheat (*Rabi*).  
Site :- Chandori (Nasik.)

Ref :- Expt. on cultivators' fields, Mh. 53(89).  
Type :- 'M'.

Object :- To find the response of irrigated Wheat, under cultivators' farming conditions, to different levels of N and  $P_2O_5$ .

### 1. BASAL CONDITIONS :

(i) (a) N.A. (b) *Bajra* at 3 villages and Paddy at 1 village. (c) 10 to 15 C.L./ac. of F.Y.M. for *Bajra*. No manure for Paddy. (ii) Black at 3 places. Loamy or laterite at one village. (iii) 5 C.L./ac. of F.Y.M. (iv) Local at 3 villages and Niphad at 1 village. (v) (a) N.A. (b) Cross-wise sowing. (c) N.A. (d) Spacing between rows varied from 9" to 12". (e) N.A. (vi) 10 to 20.11.1953. (vii) Irrigated. (viii) N.A. (ix) 0.58". (x) 25.2.1954 to 17.3.1954.

### 2. TREATMENTS :

0 = Control.

$N_1'$  = 20 lb./ac. of N as Urea.

$N_2'$  = 40 lb./ac. of N as Urea.

$N_1$  = 20 lb./ac. of N as A/S.

$N_1'P$  = 20 lb./ac. of N as Urea + 20 lb./ac. of  $P_2O_5$  as Super.

$N_2'P$  = 40 lb./ac. of N as Urea + 20 lb./ac. of  $P_2O_5$  as Super.

Super and half of Urea and A/S were broadcasted 8 days prior to sowing and remaining half of Urea and A/S was supplied one month after sowing.

### 3. DESIGN :

(i) and (ii) A list of villages, randomly selected from all the villages of the taluk was formed and a necessary number of suitable villages (growing Wheat) was taken from the list retaining the serial order of the list. The site in a village was located by a survey no. No. of experimental sites = 4. (iii) (a) 53' x 41'. (b) 33' x 33'. (iv) N.A.

### 4. GENERAL :

(i) N.A. (ii) No. (iii) Height, no. of tillers, length of earhead, no. of grains per earhead and grain yield. (iv) (a) 1953—1956. (b) and (c) N.A. (v) N.A. (vi) and (vii) Nil.

### 5. RESULTS :

(i) 1660 lb./ac.

(ii) 137.6 lb./ac.

(iii) Treatment differences are significant.

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

Treatment	Av. yield
0	1095
$N_1'$	1559
$N_2'$	1664
$N_1$	1549
$N_1'P$	1952
$N_2'P$	2143
S.E./mean	= 68.8 lb./ac.

Crop :- Wheat (*Rabi*).  
Site :- Niphad (Nasik.)

Ref :- Expt. on cultivators' fields, Mh. 53(90).  
Type :- 'M'.

Object :- To find the response of irrigated Wheat, under cultivators' farming conditions, to different levels of N and  $P_2O_5$ .

### 1. BASAL CONDITIONS :

(i) (a) N.A. (b) *Bajra*. (c) N.A. (ii) Deep black. (iii) 5 C.L./ac. of F.Y.M. (iv) Local variety at 2 villages and Kenphad variety at 1 village. (v) (a) N.A. (b) Cross-wise sowing. (c) to (e) N.A. (vi) N.A. (vii) Irrigated. (viii) N.A. (ix) 0.81". (x) N.A.

## 2. TREATMENTS :

O =Control.

 $N_1'$  =20 lb./ac. of N as Urea. $N_2'$  =40 lb./ac. of N as Urea. $N_1$  =20 lb./ac. of N as A/S. $N_1'P$ =20 lb./ac. of N as Urea+20 lb./ac. of  $P_2O_5$  as Super. $N_2'P$ =40 lb./ac. of N as Urea+20 lb./ac. of  $P_2O_5$  as Super.

Super and half of Urea and A/S were broadcasted 8 days prior to sowing and the remaining half of Urea and A/S was supplied one month after sowing.

## 3. DESIGN :

(i) and (ii) A list of villages randomly selected from all the villages in a taluk was formed and a necessary number of suitable villages (growing wheat) was taken from the list retaining the serial order of the list. The site in a village was located by a randomly selected survey no. No. of experimental sites 3. (iii) (a) 53'×41'. (b) 33'×33'. (iv) N.A.

## 4. GENERAL :

(i) N.A. (ii) No. (iii) Height, no. of tillers, length of earhead, no. of grains per earhead and grain yield (iv) (a) 1953—1956. (b) and (c) N.A. (v) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 1387 lb./ac.

(ii) 158.8 lb./ac.

(iii) Treatment differences are not significant.

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

Treatment	Av. yield
O	1150
$N_1'$	1352
$N_2'$	1540
$N_1$	1278
$N_1'P$	1440
$N_2'P$	1560
S.E./mean	=91.60 lb./ac.

Crop :-Wheat (*Rabi*). Ref :-Expt. on cultivators' fields, Mh. 53(91).

Site :-Dindori (Nasik.) Type :-'M'.

Object :-To find the response of irrigated Wheat, under cultivators' farming conditions, to different levels of N and  $P_2O_5$ .

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) Paddy. (c) 6 C.L./ac. of F.Y.M. (ii) Medium black. (iii) 5 C.L./ac. of F.Y.M. (iv) Local. (v) (a) N.A. (b) Cross-wise sowing. (c) N.A. (d) Between rows 9". (e) N.A. (vi) N.A. (vii) Irrigated. (viii) N.A. (ix) 0.71". (x) N.A.

## 2. TREATMENTS :

O =Control.

 $N_1'$  =20 lb./ac. of N as Urea. $N_2'$  =40 lb./ac. of N as Urea. $N_1$  =20 lb./ac. of N as A/S. $N_1'P$ =20 lb./ac. of N as Urea+20 lb./ac. of  $P_2O_5$  as Super. $N_2'P$ =40 lb./ac. of N as Urea+20 lb./ac. of  $P_2O_5$  as Super.

Super and half of Urea and A/S were broadcasted 8 days prior to sowing and remaining half Urea and A/S was applied one month after sowing.

## 3. DESIGN :

(i) and (ii) A list of villages, randomly selected from all the villages of the taluk was formed and a necessary number of suitable villages (growing wheat) was taken from the list retaining the serial order of the list. The site in a village was located by a survey no. No. of experimental sites 2. (iii) (a) 53'×41'. (b) 33'×33'. (iv) N.A.

## 4. GENERAL :

- (i) N.A. (ii) No. (iii) Height, number of tillers, length of earhead, no. of grains per earhead and grain yield.  
 (iv) (a) 1953—1956. (b) and (c) N.A. (v) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 1564 lb./ac.  
 (ii) 62.0 lb./ac.  
 (iii) Treatment differences are significant.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
O	1096
N <sub>1</sub> '	1306
N <sub>2</sub> '	1399
N <sub>1</sub>	1320
N <sub>1</sub> 'P	1384
N <sub>2</sub> 'P	1681
S.E./mean	=44.0 lb./ac.

Crop :- Wheat (*Rabi*).

Ref :- Expt. on cultivators' fields, Mh. 53(92).

Site :- Yeola (Nasik).

Type :- 'M'.

Object :—To find the response of irrigated Wheat, under cultivators' farming conditions, to different levels of N and P<sub>2</sub>O<sub>5</sub>.

## 1. BASAL CONDITIONS :

- (i) (a) N.A. (b) *Bajra* at one village and *Tag* at other village. (c) 15 to 20 C.L. of F.Y.M. to *Bajra* crop.  
 (ii) Deep black. (iii) 5 C.L./ac. of F.Y.M. (iv) Local at one village and Kenphad variety at other village.  
 (v) (a) N.A. (b) Duplicate sowing. (c) N.A. (d) and (e) N.A. (vi) 5th to 9th of December 1954.  
 (vii) Irrigated. (viii) N.A. (ix) 0.39°. (x) 2nd and 4th week of March 1954.

## 2. TREATMENTS :

- O =Control.  
 N<sub>1</sub>' =20 lb./ac. of N as Urea.  
 N<sub>2</sub>' =40 lb./ac. of N as Urea.  
 N<sub>1</sub> =20 lb./ac. of N as A/S.  
 N<sub>1</sub>'P=20 lb./ac. of N as Urea+20 lb./ac. of P<sub>2</sub>O<sub>5</sub> as Super.  
 N<sub>2</sub>'P=40 lb./ac. of N as Urea+20 lb./ac. of P<sub>2</sub>O<sub>5</sub> as Super.  
 Super and half of Urea and A/S were broadcasted 8 days prior to sowing and the remaining half was supplied one month after sowing.

## 3. DESIGN :

- (i) and (ii) A list of villages, randomly selected from all the villages in a taluk was formed and a necessary number of suitable villages (growing wheat) was taken from the list retaining the serial order of the list. The site in a village was located by a randomly selected survey no. No of experimental sites=2. (iii) (a) 53'×41'. (b) 33'×33'. (iv) N.A.

## 4. GENERAL :

- (i) N.A. (ii) No. (iii) Height, no. of tillers, length of earhead, no. of grains per earhead and grain yield.  
 (iv) (a) 1953 to 1956. (b) N.A. (c) N.A. (v) N.A. (vi) Nil. (vii) Nil.

## 5. RESULTS :

- (i) 1351 lb./ac.  
 (ii) 413.2 lb./ac.  
 (iii) Treatment differences are not significant.

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

Treatment	Av. yield
0	890
N <sub>1</sub> '	1120
N <sub>2</sub> '	1185
N <sub>1</sub>	1290
N <sub>1</sub> 'P	1560
N <sub>2</sub> 'P	2060
S.E./mean	=292.4 lb./ac.

Crop :- Wheat (*Rabi*).

Ref :- Expt. on cultivators' fields, Mh. 53(93).

Site :- Sinnar (Nasik)

Type :- 'M'.

Object :- To find the response of irrigated Wheat, under cultivators' farming conditions, to different levels of N and P<sub>2</sub>O<sub>5</sub>.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) *Bojra*. (c) N.A. (ii) Medium black. (iii) 5 C.L./ac. of F.Y.M. (iv) Local. (v) (a) N.A. (b) Cross-wise sowing. (c) N.A. (d) and (e) N.A. (vi) N.A. (vii) Irrigated. (viii) N.A. (ix) 0.76". (x) N.A.

## 2. TREATMENTS :

0 = Control.

N<sub>1</sub>' = 20 lb./ac. of N as Urea.N<sub>2</sub>' = 40 lb./ac. of N as Urea.N<sub>1</sub> = 20 lb./ac. of N as A/S.N<sub>1</sub>'P = 20 lb./ac. of N as Urea + 20 lb./ac. of P<sub>2</sub>O<sub>5</sub> as Super.N<sub>2</sub>'P = 40 lb./ac. of N as Urea + 20 lb./ac. of P<sub>2</sub>O<sub>5</sub> as Super.

Super and half of Urea and A/S was broadcasted 8 days prior to sowing and the remaining half was supplied one month after sowing.

## 3. DESIGN :

(i) and (ii) A list of villages, randomly selected from all the villages in a taluk was formed and a necessary number of suitable villages (growing wheat) was taken from the list. The site in a village was located by randomly selected survey no. No. of experimental sites = 2. (iii) (a) 53' × 41'. (b) 33' × 33'. (iv) N.A.

## 4. GENERAL :

(i) N.A. (ii) No. (iii) Height, number of tillers, length of earheads, number of grains per earhead and grain yield. (iv) (a) 1953 to 1956. (b) N.A. (c) N.A. (v) N.A. (vi) Nil. (vii) Nil.

## 5. RESULTS :

(i) 1207 lb./ac.

(ii) 28.8 lb./ac.

(iii) Treatment differences are highly significant.

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

Treatment	Av. yield
0	950
N <sub>1</sub> '	1194
N <sub>2</sub> '	1295
N <sub>1</sub>	1234
N <sub>1</sub> 'P	1287
N <sub>2</sub> 'P	1280
S.E./mean	=20.00 lb./ac.

Crop :- Wheat (*Rabi*)

Ref :- Expt. on cultivators' fields, Mh. 53(94).

Site :- Nandgaon (Nasik.)

Type :- 'M'.

Object :- To find the response of irrigated Wheat, under cultivators' normal practices, to different levels of N and  $P_2O_5$ .

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) *Bajra*. (c) 5 to 6 C.L./ac. of F.Y.M. at one village. 15 to 16 C.L./ac. of F.Y.M. at 2nd village. (ii) Medium Black (iii) 5 C.L./ac. of F.Y.M. (iv) Local. (v) (a) N.A. (b) Duplicate sowing at one place. No. of rows harvested at 2nd place is 44. (c) N.A. (d) Spacing between rows 9". (e) N.A. (vi) 30.11.1953 to 1.12.1953. (vii) Irrigated. (viii) N.A. (ix) 2.02". (x) 3.3.1954 at one village. 13.3.1954 at 2nd village.

## 2. TREATMENTS :

O = Control.

 $N_1'$  = 20 lb./ac. of N as Urea. $N_2'$  = 40 lb./ac. of N as Urea. $N_1$  = 20 lb./ac. of N as A/S. $N_1'P_1$  = 20 lb./ac. of N as A/S + 20 lb./ac. of  $P_2O_5$  as Super. $N_2'P$  = 40 lb./ac. of N as A/S + 20 lb./ac. of  $P_2O_5$  as Super.

Super and half of Urea and A/S were broadcasted 8 days prior to sowing and the remaining half one month after sowing.

## 3. DESIGN :

(i) and (ii) A list of villages randomly selected from all the villages in a taluk was formed and a necessary number of suitable villages was taken from the list retaining the serial order of the list. The site in the village was located by randomly selected survey no. No. of experimental site = 2. (iii) (a) 53' x 41'. (b) 33' x 33'. (iv) N.A.

## 4. GENERAL :

(i) N.A. (ii) No. (iii) Height, no. of tillers, length of earhead, number of grains per earhead and grain yield (iv) (a) 1953—1956. (b) N.A. (c) N.A. (v) N.A.

## 5. RESULTS :

(i) 1299 lb./ac.

(ii) 228.0 lb./ac.

(iii) Treatment differences are significant.

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

Treatment	Av. yield
O	918
$N_1'$	1385
$N_2'$	1170
$N_1$	1278
$N_1'P$	1373
$N_2'P$	1670
S.E /mean	= 161.2 lb./ac.

Crop :- Wheat (*Rabi*).

Ref :- Mh. 51(166).

Site :- Govt. Exptl. Farm, Nagpur.

Type :- 'MV'.

Object :- To study the effect of N in combination with  $P_2O_5$  on yield of different varieties of Wheat.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Wheat. (c) N.A. (ii) (a) Black cotton. (b) Refer soil analysis, Nagpur. (iii) 4 and 5.11.1951. (iv) (a) N.A. (b) Sowing by 10" *Tiffan*. (c) 50 lb./ac. (d) and (e) N.A. (v) Nil. (vi) As per treatments. (vii) Unirrigated. (viii) 1 weeding and 2 hoeings. (ix) 5.28". (x) 21 and 22.3.52.

## 2. TREATMENTS :

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

- (1) 3 varieties :  $V_1=NP=52$ ,  $V_2=Hawara$  and  $V_3=AO=90$ .  
 (2) 3 doses of N as A/S :  $N_0=0$ ,  $N_1=10$  and  $N_2=20$  lb./ac. of N.  
 (3) 3 doses of  $P_2O_5$  as Super :  $P_0=0$ ,  $P_1=10$  and  $P_2=20$  lb./ac.

## 3. DESIGN :

(i)  $3^3$  confounding. (ii) (a) 9 plots/block ; 3 blocks/replication. (b) N.A. (iii) 2. (iv) (a) N.A. (b)  $66' \times 16\frac{1}{2}'$ . (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) Normal. (ii) Nil. (iii) Grain yield. (iv) (a) N.A. (b) No. (c) N.A. (v) (a) N.A. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 628 lb./ac.  
 (ii) 136.4 lb./ac.  
 (iii) None of the effects is significant.  
 (iv) Av. yield of grain in lb./ac.

	$N_0$	$N_1$	$N_2$	Mean	$V_1$	$V_2$	$V_3$
$P_0$	637	603	477	572	537	610	570
$P_1$	583	680	750	671	693	680	640
$P_2$	637	713	577	642	533	717	677
Mean	619	665	601	628	588	669	629
$V_1$	580	647	537				
$V_2$	657	760	590				
$V_3$	620	590	677				

S.E. of any marginal mean = 32.16 lb./ac.  
 S. E. of body of table = 55.70 lb./ac.

Crop :- Wheat (*Rabi*).

Ref :- Mh. 52(154).

Site :- Govt. Exptl. Farm, Nagpur.

Type :- 'MV'.

Object :- To study the effect of N in combination with  $P_2O_5$  on yield of different varieties of Wheat.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Wheat. (c) Nil. (ii) (a) Black cotton soil. (b) Refer soil analysis, Nagpur. (iii) 26.10.1952.  
 (iv) (a) N.A. (b) Drilled with *Argada*. (c) 50 lb./ac. (d) N.A. (e) N.A. (v) Nil. (vi) As per treatments. (vii) Unirrigated. (viii) N.A. (ix) 0.70". (x) 21.2.1953.

## 2. TREATMENTS :

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

- (1) 3 varieties :  $V_1=NP-2$ ,  $V_2=AO-90$  and  $V_3=Hansa 3$ .  
 (2) 3 levels of N as A/S :  $N_0=0$ ,  $N_1=10$  and  $N_2=20$  lb./ac.  
 (3) 3 levels of  $P_2O_5$  as Super :  $P_0=0$ ,  $P_1=10$  and  $P_2=20$  lb./ac.

## 3. DESIGN :

(i)  $3^3$  confounded. (ii) (a) 9 plots/block ; 3 blocks/replication. (b) N.A. (iii) 2. (iv) (a) N.A. (b)  $66' \times 16\frac{1}{2}'$ . (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) Nil. (iii) Grain yield. (iv) (a) N.A. (b) No. (c) N.A. (v) (a) N.A. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS

- (i) 590.4 lb./ac.  
 (ii) 255.2 lb./ac.  
 (iii) All the main effects and their 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>	546.5	640.3	559.4	582.1	531.9	566.9	646.1
P <sub>1</sub>	602.8	573.6	606.1	594.2	534.4	659.5	588.6
P <sub>2</sub>	610.3	605.3	570.3	595.3	553.6	578.6	653.7
Mean	586.5	606.4	578.6	590.4	539.9	601.7	629.4
V <sub>1</sub>	473.6	558.6	587.8				
V <sub>2</sub>	652.7	613.6	538.6				
V <sub>3</sub>	631.9	646.9	609.4				

S.E. of any marginal mean = 60.2 lb./ac.  
 S.E. of body of table = 104.2 lb./ac.

Crop : Wheat (*Rabi*).

Ref. : Complex experiments (T.C.M.), 1953.

Centre : Niphad (Maharashtra) Type :- 'M'

Object : VIII, To study the effect of N and P on yield of different varieties of Wheat.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) N.A. (ii) (a) Loam to clay loam in texture, medium to deep black in colour. (b) Deficient in organic matter, non-acidic in reaction, pH. 7.5 to 8.0 (iii) 5.11.53. (iv) (a) N.A. (b) N.A. (c) 40 lb./ac. (d) 10". (e) N.A. (v) N.A. (vi) As under treatments. (vii) Irrigated. (viii) Two weedings and one intercultivation- (ix) 35.00". (x) 26, 27.3.1953.

## 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 varieties :- V<sub>1</sub>=Niphad-4 ; V<sub>2</sub>=Kenphad No. 25 and V<sub>3</sub>=B.N. No. 177.

N as A/S and P<sub>2</sub>O<sub>5</sub> as Triple Super.

Triple super drilled one week before sowing and A/S drilled at the time of sowing.

## DESIGN :

(i) 3<sup>3</sup> Fact. (confounded) (ii) (a) 9 plots/block ; 3 blocks/replication. (b) N.A. (iii) 1. (iv) (a) N.A. (b) 40' x 20' (vi) N.A. (vii) Nil.

## 4. GENERAL :

(i) Normal (ii) Nil. (iii) Grain yield. (iv) (a) 1953-56. (b) No (c) N.A. (v) (a) Kotah, Banaras, Pura, and Paliad (b) N.A. (vi) Nil. (vii) Nil.

## 5. RESULTS

- (i) 1357 lb./ac.  
(ii) 110.3 lb./ac.  
(iii) Main effects and their 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>	1141	1453	1463	1352	1323	1426	1308
P <sub>1</sub>	1275	1297	1263	1279	1183	1445	1209
P <sub>2</sub>	1322	1486	1513	1440	1449	1542	1330
Mean	1246	1412	1413	1357	1318	1471	1282
V <sub>1</sub>	1197	1456	1302				
V <sub>2</sub>	1396	1522	1495				
V <sub>3</sub>	1146	1259	1442				

S.E. of any marginal mean = 36.7 lb./ac.

S.E. of body of table = 63.7 lb./ac.

Crop : Wheat (*Rabi*).  
Site : Agri. Res. Stn., Jalgaon.

Ref :- Mh. 49 (31).  
Type :- 'C'

Object :- To find out a suitable date and spacing for sowing Wheat in Khandesh tract.

## 1. BASAL CONDITIONS :

- (i) (a) No. (b) Cotton. (c) N.A. (ii) (a) Deep black cotton type having a depth of 10 to 13 feet  
(b) Refer soil analysis, Jalgaon. (iii) According to treatments. (iv) (a) N.A. (b) Drilling. (c) 50 lb./ac.  
(d) According to treatments. (e) N.A. (v) Nil. (vi) *Gulab* (Mid-late) (vii) Unirrigated (viii) N.A.  
(ix) Nil. (x) 19 to 22.2.1950.

## 2. TREATMENTS :

Main-plot treatments :

5 sowing dates : D<sub>1</sub>=8.10.49, D<sub>2</sub>=15.10.49, D<sub>3</sub>=22.10.49, D<sub>4</sub>=29.10.49 and D<sub>5</sub>=8.11.49.

Sub-plot treatments :

2 spacings between rows :- S<sub>1</sub>=13" and S<sub>2</sub>=16"

## 3. DESIGN :

- (i) Split-plot (ii) (a) 5 main-plots/block ; 2 sub-plots/main-plot. (b) N.A. (iii) 6. (iv) (a) Main-plot  
39' x 44'-4" (b) Sub-plot 33' x 17'-4". (v) 2 rows on either side. (vi) Yes.

## 4. GENERAL :

- (i) Normal. (ii) Nil. (iii) Grain and chaff yield. (iv) (a) 1947-50. (b) No. (c) N.A. (v) (a)  
Karad, Mohol, Niphad, Padegaon, Shahada. (b) N.A. (vi) Nil. (vii) Expt. failed in 1948.

## 5. RESULTS :

- (i) 1101 lb./ac.  
(ii) (a) 117.40 lb./ac,  
(b) 123.06 lb./ac.  
(iii) Main plot treatments, sub-plot treatments and their interactions 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>	D <sub>5</sub>	Mean
S <sub>1</sub>	1052	1053	1163	1206	1080	1111
S <sub>2</sub>	1134	995	1155	1055	1119	1092
Mean	1093	1025	1159	1131	1099	1101

S.E. of difference of two

1. D marginal means =47.9 lb./ac.
2. S marginal means =31.8 lb./ac.
3. S means at a level of D =69.8 lb./ac.
4. D means at a level of S =71.0 lb./ac.

Crop : Wheat (*Rabi*).

Ref :- Mh. 50(42)

Site : Agri. Res. Stn., Jalagaon.

Type :- 'C'.

Object :—To find out a suitable date and spacing for sowing Wheat in Khandesh tract.

## 1. BASAL CONDITIONS :

(i) (a) No. (b) Cotton. (c) N.A. (ii) (a) Deep black cotton type having a depth of 10 to 13 feet. (b) Refer to soil analysis, Jalagaon. (iii) According to treatments. (iv) (a) 1 ploughing, 5 to 6 harrowings. (b) Drilling. (c) 50 lb./ac. (d) According to treatments. (e) N.A. (v) Nil. (vi) *Gulab* (Mid-late). (vii) Unirrigated. (viii) N.A. (ix) 0 inches 91 cents. (x) 15 to 25.2.1951.

## 2. TREATMENTS :

Main-plot treatments :

Sowing dates : D<sub>1</sub>=6.10.50. (Two weeks before normal sowing date) D<sub>2</sub>=13.10.50. (one week before normal sowing date) D<sub>3</sub>=20.10.50. (Normal sowing date) D<sub>4</sub>=27.10.50. (One week after normal sowing date) D<sub>5</sub>= 3.11.50. (Two weeks after normal sowing date)

Sub-plot treatments :

2 spacings between rows : S<sub>1</sub>=13" and S<sub>2</sub>=16".

## 3. DESIGN :

(i) Split-plot. (ii) (a) 5 main-plots/block ; 2 sub-plots/main-plot. (b) N.A. (iii) 6. (iv) (a) 39'×21'-8" and 30'×2'-3" (main-plot) 39'×44'-4". (b) Sub 33'×17'-4". (v) 2 rows on either side and 3' on either end. (vi) Yes.

## 4. GENERAL :

(i) This year the rain fall was less than average. (ii) New plants dried in early stage and infection of loose-smut was observed to some extent. (iii) Grain and chaff yield. (iv) (a) 1947—1950. (b) No. (c) N.A. (v) (a) Karad, Mohol, Niphad, Padegaon and Shahada. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 915.0 lb./ac.
- (ii) (a) 71.39 lb./ac.
- (b) 97.56 lb./ac.

(iii) Main-plot treatments and sub-plot treatments 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>	Mean
S <sub>1</sub>	820	944	986	1039	1026	963
S <sub>2</sub>	766	770	989	888	923	867
Mean	793	857	987	964	974	915

S.E. of difference of two

1. D marginal means =29.10 lb./ac.
2. S marginal means =25.10 lb./ac.
3. S means at the same level of D =56.33 lb./ac.
4. D means at the same level of S =49.35 lb./ac.

Crop :- Wheat (*Rabi*).  
Site :- Agri. Res. Stn., Jalagaon.

Ref :- Mh. 53(135).  
Type :- 'C'.

Object :- To find out a suitable spacing and seedrate for dry Wheat

1. BASAL CONDITIONS :

(i) (a) No. (b) Cotton. (c) N.A. (ii) (a) Deep black type having a depth of 10 to 13 feet. (b) Refer soil analysis, Jalagaon. (iii) 24.10.1953. (iv) (a) N.A. (b) Drilling. (c) As per treatments. (d) As per treatments. (e) N.A. (v) Nil. (vi) *Gulab* (mid-late). (vii) Unirrigated. (viii) N.A. (ix) 0.48". (x) 14.2.1954.

2. TREATMENTS :

Main-plot treatments :

3 seedrates :  $R_1=30$ ,  $R_2=40$  and  $R_3=50$  lb./ac.

Sub-plot treatments :

2 spacings between rows :  $S_1=9"$  and  $S_2=12"$ .

3. DESIGN :

(i) Split-plot. (ii) (a) 3 main-plots/block 2 sub-plots/main-plot. (b) N.A. (iii) 6. (iv) (a)  $42' \times 21'$  (main-plot)  $84' \times 63'$ . (b)  $36' \times 15'$ . (v) 3' around the net plot. (vi) Yes.

4. GENERAL

(i) Germination was quite satisfactory. Growth of the crop was vigorous. General condition of the crop was satisfactory. (ii) Plants dried up to some extent by the attack of white ants. (iii) Grain and chaff yield. (iv) (a) 1952 -1954. (b) N.A. (c) N.A. (v) N.A. (b) N.A. (vi) Nil. (vii) Experiment failed in 1952.

5. RESULTS :

(i) 827 lb./ac.

(ii) (a) 223.6 lb./ac.

(b) 123.2 lb./ac.

(iii) Main-plot treatments, sub-plot treatments and interaction are not significant.

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

	$R_1$	$R_2$	$R_3$	Mean
$S_1$	861	826	765	817
$S_2$	761	860	888	836
Mean	811	843	826	827

S.E. of difference of two

1. R marginal means = 91.3 lb./ac.

2. S marginal means = 41.1 lb./ac.

3. S means at a level of R = 72.6 lb./ac.

4. R means at a level of S = 104.9 lb./ac.

Crop :-Wheat (*Rabi*).  
Site :- Agri. Res. Stn., Karad.

Ref :-Mh. 48(96).  
Type :-'C'.

Object :-To study the effect of different spacings with different sowing dates on yield of Wheat.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) and (c) N.A. (ii) (a) Medium black. (b) N.A. (iii) As per treatments. (iv) (a) N.A. (b) and (c) N.A. (d) As per treatments. (e) N.A. (v) Nil. (vi) N.A. (vii) Unirrigated. (viii) N.A. (ix) N.A. (x) N.A.

## 2. TREATMENTS:

## Main-plot treatments:

5 sowing dates :  $D_1=1.10.1948$ ,  $D_2=8.10.1948$ ,  $D_3=15.10.1948$ ,  $D_4=22.10.1948$  and  $D_5=29.10.1948$ .

## Sub-plot treatments:

2 spacings between rows :  $S_1=12''$  and  $S_2=15''$ .

## 3. DESIGN:

(i) Split-plot. (ii) (a) 5 main-plots/replication ; 2 sub-plots/main-plot. (b) N.A. (iii) 6. (iv) (a) N.A. (b)  $35' \times 15'$ . (v) N.A. (vi) Yes.

## 4. GENERAL:

(i) Not good. Highly affected by *hariyali* (weeds). (ii) Nil. (iii) Grain yield. (iv) (a) 1948—contd. (b) and (c) No. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS:

- (i) 108.8 lb./ac.  
 (ii) (a) 76.01 lb./ac.  
 (b) 29.74 lb./ac.  
 (iii) Main effects and interaction are not significant.  
 (iv) Av. yield of grain in lb./ac.

	$S_1$	$S_2$	Mean
$D_1$	74	62	68
$D_2$	81	61	71
$D_3$	135	126	131
$D_4$	156	136	146
$D_5$	117	141	129
Mean	113	105	

## S.E. of difference of two

1. D marginal means = 31.04 lb./ac.  
 2. S marginal means = 7.68 lb./ac.  
 3. S means at the same level of D = 17.17 lb./ac.  
 4. D means at the same level of S = 33.33 lb./ac.

Crop :-Wheat (*Rabi*).

Ref :-Mh. 48(21).

Site :-Agri. Res. Stn., Kopergaon.

Type :-'C'.

Object :-To find out a suitable date and spacing for sowing Wheat crop so as to avoid rust and obtain high yield.

## 1. BASAL CONDITIONS:

(i) (a) Nil. (b) Sann. (c) Nil. (ii) (a) Medium black, A type. (b) Refer soil analysis, Kopergaon. (iii) As per treatments. (iv) (a) N.A. (b) Drilling. (c) [50 lb./ac. (d) N.A. (e) —. (v) 2 bags/ac. of G.N.C. on 10.10.1948 and Sulphur dusting. (vi) Niphad 4 (early). (vii) Irrigated. (viii) 1 weeding. (ix) Nil. (x) 2.3.1949.

## 2. TREATMENTS:

## Main-plot treatments:

5 dates of sowing :  $D_1=10.10.1948$ ,  $D_2=20.10.1948$ ,  $D_3=30.10.1948$ ,  $D_4=9.11.1948$  and  $D_5=19.11.1948$ .

## Sub-plot treatments:

2 spacings between rows :  $S_1=12''$  and  $S_2=15''$ .

## 3. DESIGN:

(i) Split-plot. (ii) (a) 5 main-plots/replications ; 2 sub-plots/main-plot. (b) N.A. (iii) 6. (iv) (a)  $41' \times 20'$ . (b) Sub-plot  $33' \times 15'$  and main-plot  $36' \times 69'$  (net). (v) N.A. (vi) Yes.

## 4. GENERAL:

(i) Satisfactory. (ii) Crop affected by rust. (iii) Height, length of the pannicle, no of grain/pannicle and grain yield. (iv) (a) 1948—1950. (b) Yes. (c) N.A. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS:

- (i) 1001 lb./ac.  
 (ii) (a) 403 lb./ac.  
 (b) 178 lb./ac.  
 (iii) None of the main effects and interaction is significant.  
 (iv) Av. yield of grain in lb./ac.

	S <sub>1</sub>	S <sub>2</sub>	Mean
D <sub>1</sub>	1111	1171	1141
D <sub>2</sub>	1236	1125	1180
D <sub>3</sub>	1048	1045	1047
D <sub>4</sub>	847	1021	934
D <sub>5</sub>	703	703	703
Mean	989	1013	1001

S.E. of difference of two

- |                                   |                |
|-----------------------------------|----------------|
| 1. D marginal means               | =164.5 lb./ac. |
| 2. S marginal means               | = 45.8 lb./ac. |
| 3. S means at the same level of D | =102.5 lb./ac. |
| 4. D means at the same level of S | =179.7 lb./ac. |

Crop :-Wheat (*Rabi*).

Ref :-Mh. 49(36)/48(21).

Site :-Agri. Res. Stn., Kopergaon.

Type :-'C'.

Object :—To find a suitable date and spacing for sowing Wheat crop so as to avoid rust and obtain high yield.

## 1. BASAL CONDITIONS:

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) (a) Medium black. (b) Refer soil analysis, Kopergaon. (iii) As per treatments. (iv) (a) 2 harrowings and 2 levelings. (b) Drilling. (c) 50 lb./ac. (d) N.A. (e) —. (v) Top-dressing of 20 lb./ac. of N as G.N.C. at the time of sowing on 9.10.1949. 10 lb./ac. of N as A/S at the time of flowering on 28.11.1949. (vi) Niphad 4. (vii) Irrigated. (viii) 1 weeding. (ix) Nil. (x) 20.2.1950.

## 2. TREATMENTS:

Main-plot treatments:

5 dates of sowing : D<sub>1</sub>=10.10.1949, D<sub>2</sub>=20.10.1949, D<sub>3</sub>=30.10.1949, D<sub>4</sub>=9.11.1949 and D<sub>5</sub>=19.11.1949.

Sub-plot treatments:

2 spacings between rows : S<sub>1</sub>=12" and S<sub>2</sub>=15".

## 3. DESIGN:

(i) Split-plot. (ii) (a) 5 main-plots/replication; 2 sub-plots/main-plot. (b) N.A. (iii) 6. (iv) (a) Gross main-plot: 40'×41' and 38'×41'. Sub-plot: 20'×41' for 15" spacing and 19'×41' for 12" spacing. (b) Sub-plot: 15'×33' for 15" spacing and 15'×33' for 12" spacing. (v) 4' along the head lines for both spacings. 2 rows on each side. (vi) Yes.

## 4. GENERAL

(i) Good. (ii) Nil. (iii) Grain yield. (iv) (a) 1948—1950. (b) Yes. (c) N.A. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 1291 lb./ac.  
 (ii) (a) 373.8 lb./ac.  
 (b) 201.4 lb./ac.  
 (iii) None of the main effects and interaction is significant.  
 (iv) Av. yield of grain in lb./ac.

	S <sub>1</sub>	S <sub>2</sub>	Mean
D <sub>1</sub>	1345	1263	1304
D <sub>2</sub>	1322	1315	1319
D <sub>3</sub>	1227	1210	1218
D <sub>4</sub>	1350	1352	1351
D <sub>5</sub>	1351	1180	1266
Mean	1319	1264	1291

## S.E. of difference of two

1. D marginal means = 152.6 lb./ac.  
 2. S marginal means = 52.0 lb./ac.  
 3. S means at the same level of D = 116.3 lb./ac.  
 4. D means at the same level of S = 173.4 lb./ac.

Crop :- Wheat (*Rabi*).

Ref :- Mh. 50(50)/49(26)/48(21).

Site :- Agri. Res. Stn., Kopergaon.

Type :- 'C'.

Object :- To find out a suitable date and spacing for sowing Wheat crop so as to avoid rust and obtain high yield.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Sann. (c) Nil. (ii) (a) Medium black. (b) Refer soil analysis, Kopergaon. (iii) As per treatments. (iv) (a) 1 ploughing and 2 harrowings. (b) Drilling. (c) 50 lb./ac. (d) As per treatments. (e) —. (v) Top dressing 20 lb./ac. of N as G.N.C. at the time of sowing and 4 lb. 11 oz./sub-plot of G.N.C. at flowering and 10 lb./sub-plot as A/S at flowering. Manuring on 10 and 12.10.1950. (vi) Niphad 4 (early). (vii) 12 irrigations as and when required. (viii) 1 weeding. (ix) Nil. (x) 22.3.1951 to 30.3.1951.

## 2. TREATMENTS :

## Main-plot treatments :

5 dates of sowing : D<sub>1</sub>=10.10.1950, D<sub>2</sub>=20.10.1950, D<sub>3</sub>=30.10.1950, D<sub>4</sub>=9.11.1950, and D<sub>5</sub>=19.11.1950.

## Sub-plot treatments :

2 spacings between rows : S<sub>1</sub>=12" and S<sub>2</sub>=15".

## 3. DESIGN :

(i) Split-plot. (ii) (a) 5 main-plots/replication ; 2 sub-plots/main-plot. (b) N.A. (iii) 6. (iv) (a) Sub-plot 20'×36' for 15" spacing and 19'×30' for 12" spacing. (b) Sub-plot 15'×24' for 15" spacing and 15'×24' for 12" spacing. (v) 2 rows on either sides 3' at either head-lines. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Nil. (iii) Grain yield and straw yield. (iv) (a) 1948 to 1950. (b) Yes. (c) N.A. (v) (a) N.A. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 1670 lb./ac.  
 (ii) (a) 219.8 lb./ac.  
 (b) 203.2 lb./ac.  
 (iii) Main effect of D is highly significant. Main effect of S is significant and interaction is not significant.

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

	S <sub>1</sub>	S <sub>2</sub>	Mean
D <sub>1</sub>	1686	1791	1739
D <sub>2</sub>	1873	1941	1907
D <sub>3</sub>	1671	1719	1695
D <sub>4</sub>	1440	1668	1554
D <sub>5</sub>	1479	1437	1458
Mean	1630	1711	1670

S.E. of difference of two

1. D marginal means = 89.7 lb./ac.
2. S marginal means = 52.5 lb./ac.
3. S means at the same level of D = 117.3 lb./ac.
4. D means at the same level of S = 122.1 lb./ac.

Crop :- Wheat (*Rabi*).

Ref :- Mh. 48(33).

Site :- Agri. Res. Stn., Mohol.

Type :- 'C'.

Object :—To see the effect of different spacings and sowing dates on the yield of Wheat crop.

**1. BASAL CONDITIONS :**

(i) (a) No definite rotation followed. (b) *Jowar*. (c) Nil. (ii) (a) Medium black. (b) Refer soil analysis, Mohol. (iii) 16.9.1948. (iv) (a) N.A. (b) Drilling. (c) 40 lb./ac. (d) As per treatments. (e) —. (v) Nil. (vi) Wheat (*Jay*). (vii) Unirrigated. (viii) 2 interculturings. (ix) 5.38". (x) 31.1.1949.

**2. TREATMENTS :**

Main-plot treatments :

5 dates of sowing : D<sub>1</sub>=16.9.1948, D<sub>2</sub>=23.9.1948, D<sub>3</sub>=30.9.1948 (normal date of sowing), D<sub>4</sub>=7.10.1948 and D<sub>5</sub>=14.10.1948.

Sub-plot treatments :

2 spacings between rows : S<sub>1</sub>=12" and S<sub>3</sub>=15".

**3. DESIGN :**

(i) Split-plot. (ii) (a) 5 main-plots/replication and 2 sub-plots/main-plot. (b) N.A. (iii) 6. (iv) (a) 39'×20'. (b) 33'×15'. (v) 2 rows on either side and 3' of rows on either ends. (vi) Yes.

**4. GENERAL :**

(i) Much variation in the growth of crop. (ii) Rust was seen on wheat. (iii) Grain yield. (iv) (a) 1948—1949 to 1950. (b) No. (c) N.A. (v) (a) Jalagaon, Karad, Niphad, Padegaon, Shahada. (b) N.A. (vi) Nil. (vii) Reasons are not known for very great variation in yield.

**5. RESULTS:**

(i) 64 lb./ac.

(ii) (a) 102.3 lb./ac.

(b) 84.14 lb./ac.

(iii) None of the main effects and interaction is significant.

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

	S <sub>1</sub>	S <sub>2</sub>	Mean
D <sub>1</sub>	35	46	41
D <sub>2</sub>	28	40	34
D <sub>3</sub>	64	59	62
D <sub>4</sub>	72	75	74
D <sub>5</sub>	108	108	108
Mean	61	66	64

S.E. of difference of two

1. D marginal means =41.8 lb./ac.
2. S marginal means =21.7 lb./ac.
3. S means at the same level of D =48.6 lb./ac.
4. D means at the same level of S =54.1 lb./ac.

Crop :- Wheat (*Rabi*).

Ref :- Mh. 49(55).

Site :- Agri. Res. Stn., Mohol.

Type :- 'C'.

Object :—To see the effect of different spacings and sowing dates on the yield of Wheat crop.

## 1. BASAL CONDITIONS :

(i) (a) No definite rotation. (b) Groundnut. (c) Nil. (ii) (a) Medium black. (b) Refer soil analysis, Mohol. (iii) 16, 23 and 30.9.1949, 7 and 14.10.1949. (iv) (a) N.A. (b) Drilling. (c) 40 lb./ac. (d) As per treatments. (e)—. (v) Nil. (vi) *Jay*. (vii) Unirrigated. (viii) Interculturing 6 times. (ix) 1.14". (x) 6, 10 and 16th January 1950.

## 2. TREATMENTS :

Main-plot treatments :

5 dates of sowing : D<sub>1</sub>=16.9.1949, D<sub>2</sub>=23.9.1949, D<sub>3</sub>=30.9.1949 (normal sowing date), D<sub>4</sub>=7.10.1949 and D<sub>5</sub>=14.10.1949.

Sub-plot treatments :

2 spacings between rows : S<sub>1</sub>=12" and S<sub>2</sub>=15".

## 3. DESIGN

(i) Split-plot. (ii) (a) 5 main-plots/replication, 2 sub-plots/main-plot. (b) N.A. (iii) 6. (iv) (a) 39'×20' (b) 33'×15'. (v) 2 rows on either side and 3' of rows on either ends. (vi) Yes.

## 4. GENERAL :

(i) The general growth of the crop was normal. (ii) Nil. (iii) Grain yield. (iv) (a) 1948—1949. (b) No. (c) N.A. (v) (a) Jalagaon, Karad, Niphad, Padegaon and Shahada. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 198 lb./ac.
- (ii) (a) 51.34 lb./ac.  
(b) 26.29 lb./ac.
- (iii) Main effect of D alone is significant.

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

	S <sub>1</sub>	S <sub>2</sub>	Mean
D <sub>1</sub>	149	138	143
D <sub>2</sub>	210	205	207
D <sub>3</sub>	207	208	207
D <sub>4</sub>	213	222	217
D <sub>5</sub>	214	214	214
Mean	159	197	198

S.E. of difference of two

1. D marginal means =20.96 lb./ac.
2. S marginal means = 6.77 lb./ac.
3. S means at the same level of D =15.36 lb./ac.
4. D means at the same level of S =23.27 lb./ac.

Crop :- Wheat (*Rabi*).

Ref :- Mh. 49(90).

Site :- Govt. Expt. Farm, Nagpur.

Type :- 'C'.

Object :—To study the effect of different seed rates and different spacings on yield of Wheat.

## 1. BASAL CONDITIONS :

(i) (a) No particular crop rotation followed. (b) N.A. (c) N.A. (ii) (a) Black cotton soil. (b) Refer soil analysis, Nagpur. (iii) 6, 7.11.1949. (iv) (a) N.A. (b) N.A. (c) and (d) As per treatments. (e)—. (v) Nil. (vi) NP—52. (vii) Unirrigated. (viii) N.A. (ix) 1.95%. (x) 23.2.1950.

## 2. TREATMENTS :

Main-plot treatments :

4 spacings between lines : S<sub>1</sub>=6", S<sub>2</sub>=9", S<sub>3</sub>=12" and S<sub>4</sub>=15".

Sub-plot treatments :

3 seed rates ; R<sub>1</sub>=40, R<sub>2</sub>=50 and R<sub>3</sub>=60 lb./ac.

## 3. DESIGN :

(i) Split-plot. (ii) (a) 4 main-plots/replication and 3 sub-plots/main-plot. (b) N.A. (iii) 5. (iv) (a) N.A. (b) 66' x 16½'. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) Satisfactory. (ii) General damage due to foot rot. (iii) Grain and straw yield. (iv) (a) 1949—1952. (b) No. (c) N.A. (v) (a) N.A. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 747.2 lb./ac.
- (ii) (a) 208.4 lb./ac.  
(b) 72.0 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>	S <sub>4</sub>	Mean
R <sub>1</sub>	688.0	792.0	720.0	776.0	744.0
R <sub>2</sub>	752.0	824.0	704.0	752.0	758.0
R <sub>3</sub>	728.0	808.0	664.0	760.9	740.2
Mean	722.7	808.0	696.0	762.9	747.2

S.E. of difference of two

1. S marginal means =76.1 lb./ac.
2. R marginal means =22.8 lb./ac.
3. R means at the same level of S =45.5 lb./ac.
4. S means at the same level of R =84.7 lb./ac.



Crop :- Wheat (*Rabi*).  
Site :- Govt. Exptl. Farm, Nagpur.

Ref :- Mh, 50(108).  
Type :- 'C'.

Object :- To study the effect of spacings (line to line) and different seed rates on the yield of Wheat.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) and (c) N.A. (ii) (a) Medium black. (b) Refer soil analysis, Nagpur. (iii) 22.10.1950. (iv) (a) and (b) N.A. (c) and (d) As per treatments. (e) N.A. (v) Nil. (vi) N.P.52. (vii) Unirrigated. (viii) N.A. (ix) 3.23". (x) N.A.

2. TREATMENTS :

Main-plot treatments :

4 spacings between lines :  $S_1=6''$ ,  $S_2=9''$ ,  $S_3=12''$  and  $S_4=15''$ .

Sub-plot treatments :

3 seed rates :  $R_1=40$ ,  $R_2=50$  and  $R_3=60$  lb./ac.

3. DESIGN :

(i) Split-plot. (ii) (a) 4 main-plots/replication and 3 sub-plots/main-plot. (b) N.A. (iii) 5. (iv) (a) N.A. (b)  $40' \times 15'$ . (v) N.A. (vi) Yes.

4. GENERAL :

(i) N.A. (ii) N.A. (iii) Grain yield. (iv) (a) 1949—1953. (b) No. (c) N.A. (v) (a) and (b) N.A. (vi) and (vii) N.A.

5. RESULTS :

(i) 624.7 lb./ac.  
(ii) (a) 144.5 lb./ac.  
(b) 87.6 lb./ac.  
(iii) Main effects of S and R are significant while interaction is not significant.  
(iv) Av. yield of grain in lb./ac.

	$S_1$	$S_2$	$S_3$	$S_4$	Mean
$R_1$	414.4	657.0	582.3	614.4	569.9
$R_2$	507.4	740.9	644.3	682.6	643.8
$R_3$	452.5	753.8	752.1	675.3	658.4
Mean	458.1	717.2	659.5	657.4	624.7

S.E. of difference of two

1. S marginal means = 52.7 lb./ac.
2. R marginal means = 27.6 lb./ac.
3. R means at the same level of S = 55.4 lb./ac.
4. S means at the same level of R = 69.4 lb./ac.

Crop :- Wheat (*Rabi*).  
Site :- Govt. Exptl. Farm, Nagpur.

Ref :- Mh. 51(119).  
Type :- 'C'.

Object :- To find out suitable line to line spacing and seed rate for Wheat in Nagpur tract.

1. BASAL CONDITIONS :

(i) (a) No particular rotation followed. (b) Wheat. (c) N.A. (ii) (a) Black cotton soil. (b) Refer soil analysis, Nagpur. (iii) 6.11.1951. (iv) (a) 3 ploughings. (b) Drilling. (c) and (d) As under treatments. (e) —. (v) Nil. (vi) N.P.52 (early). (vii) Unirrigated. (viii) N.A. (ix) Negligible (*Rabi* season). (x) 10.3.1952.

## 2. TREATMENTS :

Main-plot treatments :

4 spacings between lines :  $S_1=6''$ ,  $S_2=9''$ ,  $S_3=12''$  and  $S_4=15''$ .

Sub-plot treatments :

3 seed rates :  $R_1=40$ ,  $R_2=50$  and  $R_3=60$  lb./ac.

## 3. DESIGN :

(i) Split-plot. (ii) (a) 4 main-plots/replication and 3 sub-plots/main-plot. (b) N.A. (iii) 5. (iv) (a) N.A. (b)  $40' \times 15'$ . (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) Normal. (ii) N.A. (iii) Grain yield. (iv) (a) and (b) N.A. (c) No. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 565 lb./ac.

(ii) (a) 117.9 lb./ac.

(b) 83.7 lb./ac.

(iii) None of the effects is significant.

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

	$S_1$	$S_2$	$S_3$	$S_4$	Mean
$R_1$	588	552	501	566	552
$R_2$	552	545	501	595	548
$R_3$	552	646	545	639	595
Mean	564	581	516	600	565

S.E. of difference of two

1. S marginal means = 43.1 lb./ac.
2. R marginal means = 26.4 lb./ac.
3. R means at the same level of S = 52.9 lb./ac.
4. S means at the same level of R = 61.2 lb./ac.

Crop :- Wheat (*Rabi*).

Ref :- Mh. 52(134).

Site :- Govt. Exptl. Farm, Nagpur.

Type :- 'C'.

Object :- To find out most suitable line to line spacing and seed rate for Wheat in Nagpur tract.

## 1. BASAL CONDITIONS :

(i) (a) No particular rotation followed. (b) Wheat. (c) N.A. (ii) (a) Black cotton. (b) Refer soil analysis, Nagpur. (iii) 29.10.1952. (iv) (a) 4 *bakharings* and 2 ploughings. (b) *Tiffan* sowings. (c) and (d) As under treatments. (e) —. (v) Nil. (vi) N.P. 52 (early). (vii) Unirrigated. (viii) N.A. (ix) 1.78". (x) 20.2.1953.

## 2. TREATMENTS :

Main-plot treatments :

4 spacings between lines :  $S_1=6''$ ,  $S_2=9''$ ,  $S_3=12''$  and  $S_4=15''$ .

Sub-plot treatments :

3 seed rates :  $R_1=40$ ,  $R_2=50$  and  $R_3=60$  lb./ac.

## 3. DESIGN :

(i) Split-plot. (ii) (a) 4 main-plots/replication and 3 sub-plots/main-plot. (b) N.A. (iii) 5. (iv) (a) N.A. (b) Sub-plot  $40' \times 15'$ ; main-plot size  $40' \times 45'$ . (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) Normal. (ii) Nil. (iii) Grain yield. (iv) (a) 1950—1951 (b) No. (c) N.A. (v) (a) N.A. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 544.7 lb./ac.  
 (ii) (a) 128.7 lb./ac.  
 (b) 50.8 lb./ac.  
 (iii) Only the main effect of R 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
R <sub>1</sub>	480.9	584.4	546.3	486.4	524.5
R <sub>2</sub>	520.9	580.8	711.5	625.6	532.2
R <sub>3</sub>	568.1	711.5	517.3	511.8	577.2
Mean	523.2	625.6	517.3	511.8	544.7

## S.E. of difference of two

1. S marginal means =46.9 lb./ac.  
 2. R marginal means =16.0 lb./ac.  
 3. R means at the same level of S =32.3 lb./ac.  
 4. S means at the same level of R =53.8 lb./ac.

Crop :- Wheat (*Rabi*).

Site :- Agri. Res. Stn., Niphad.

Ref :- Mh. 48(27).

Type :- 'C'.

Object :—To ascertain the economic seed rate for Wheat.

## 1. BASAL CONDITIONS :

(i) (a) No particular. (b) Lucerne. (c) F.Y.M. and G.N.C. (amount N.A.). (ii) (a) Loamy—Medium—depth upto 6', (b) A good percentage of silt ; clay and fine sand ; pH—7.5 to 8. (iii) 16.11.1948. (iv) (a) N.A. (b) Sowing by drilling with 3 coultered drill 10". (c) As under treatments. (d) N.A. (e) —. (v) 5 C.L./ac. of F.Y.M. (vi) N—4. (vii) Irrigated. (viii) N.A. (ix) 3.89". (x) N.A.

## 2. TREATMENTS :

5 seed rates :

1. 40 lb./ac.  
 2. 50 lb./ac.  
 3. 60 lb./ac.  
 4. 70 lb./ac.  
 5. 80 lb./ac.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 6. (iv) (a) 45'×20'. (b) 32.75'×16.5'. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) The general growth of the crop was normal. (ii) Nil. (iii) Grain yield. (iv) (a) 1944—1945 to 1948—1949 (*Rabi*). (b) No. (c) N.A. (v) (a) Kopergaon and Jalagaon. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 1456 lb./ac.  
 (ii) 90.85 lb./ac.  
 (iii) Treatment differences are significant.

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

Treatment	Av. yield
1.	1560
2.	1465
3.	1468
4.	1408
5.	1380
S.E./mean	=37.05 lb./ac.

Crop :- Wheat (*Rabi*).

Ref :-Mh. 48(26).

Site :-Agri. Res. Stn., Niphad.

Type :-'C'.

Object :-To ascertain the proper time of sowing of dry Wheat with suitable spacing.

## 1. BASAL CONDITIONS:

(i) (a) No particular. (b) Gram. (c) Nil. (ii) (a) Loamy—Medium—depth upto 6 feet. (b) A good percentage of silt-clay and fine sand ; pH—7.5 to 8. (iii) As per treatments. (iv) (a) N.A. (b) Drilled with 3 coultured drill. (c) 40 lb./ac. (d) As per treatments. (e) —. (v) 5 C.L./ac. of F.Y.M. (vi) *Vijay*. (vii) Unirrigated. (viii) N.A. (ix) 3.89". (x) N.A.

## 2. TREATMENTS :

Main-plot treatments:

5 dates of sowing :  $D_1=24.9.1948$ ,  $D_2=1.10.1948$ ,  $D_3=8.10.1948$ ,  $D_4=15.10.1948$  and  $D_5=22.10.1948$ .

Sub-plot treatments :

2 spacings :  $S_1=10''$  and  $S_2=13''$ .

## 3. DESIGN :

(i) Split-plot. (ii) (a) 5 main-plots/replication and 2 sub-plots/main-plot. (b) N.A. (iii) 6. (iv) (a) Main-plot :  $36' \times 25'-5''$ ; Sub-plot :  $36' \times 12'-6''$  for  $S_1$  and  $36' \times 13'$  for  $S_2$ . (b) Main-plot :  $30' \times 21'-8''$ ; Sub-plot :  $30' \times 10'-10''$ . (v) 3' on either length wise direction and 2 rows on either breadth wise direction (vi) Yes.

## 4. GENERAL :

(i) and (ii) N.A. (iii) Grain yield. (iv) (a) 1948 to 1951. (b) No. (c) N.A. (v) (a) Jalagaon, Karad, Mohol, Padegaon and Shahada. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS:

(i) 530 lb./ac.

(ii) (a) 36.37 lb./ac.

(b) 22.29 lb./ac.

(iii) Main effect of D alone is significant.

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

	$S_1$	$S_2$	Mean
$D_1$	400	378	389
$D_2$	372	562	467
$D_3$	572	546	559
$D_4$	644	600	622
$D_5$	618	604	511
Mean	521	538	530

S.E. of difference of two

1. D marginal means

=14.83 lb./ac.

2. S marginal means

= 5.75 lb./ac.

3. S means at the same level of D

=12.86 lb./ac.

4. D means at the same level of S

=17.41 lb./ac.

Crop :-Wheat (*Rabi*).  
Site :-Agri. Res. Stn., Niphad.

Ref :-Mh. 49(42).  
Type :- 'C'.

Object :-To find out the optimum spacing and date of sowing.

1. BASAL CONDITIONS :

(i) (a) No particular. (b) Gram. (c) Nil. (ii) (a) Loamy—Medium—depth upto 6 feet. (b) A good percentage of silt-clay and fine sand ; pH 7.5 to 8. (iii) As per treatments. (iv) (a) N.A. (b) Drilling. (c) 40 lb./ac. (d) Between rows : as per treatments and between plants : irregular. (e) —. (v) 5 C.L./ac. of F.Y.M. (vi) Wheat *Vijay*. (vii) Unirrigated. (viii) N.A. (ix) Nil. (x) 19.2.1950.

2. TREATMENTS :

Main-plot treatments :

5 dates of sowing :  $D_1=24$  to 26.9.1949,  $D_2=1$  to 3.10.1949,  $D_3=8$  to 10.10.1949,  $D_4=15$  to 17.10.1949 and  $D_5=22$  to 24.10.1949.

Sub-plot treatments :

2 spacings :  $S_1=10''$  and  $S_2=13''$ .

3. DESIGN :

(i) Split-plot. (ii) (a) 5 main-plots/replication and 2 sub-plots/main-plot. (b) N.A. (iii) 6. (iv) (a) Sub-plot :  $36' \times 12'-6''$  for  $S_1$  and  $36' \times 13'$  for  $S_2$ . (b) Main-plot :  $30' \times 21'-8''$  and sub-plot :  $30' \times 10'-10''$ . (v) Two rows on either side and 3' of rows on either end. (vi) Yes.

4. GENERAL :

(i) Late rains and heavy rains in the middle of October affected the crop. The crop was below normal. (ii) Crop affected by seedling blight and slightly from loose smut. (iii) Grain yield. (iv) (a) 1948 to 1951. (b) No. (c) N.A. (v) (a) Jalagaon, Karad, Mohol, Padegaon and Shahada. (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 245.0 lb./ac.  
(ii) (a) 79.32 lb./ac.  
(b) 46.63 lb./ac.  
(iii) Only the main effect of S is highly significant.  
(iv) Av. yield of grain in lb./ac.

	$S_1$	$S_2$	Mean
$D_1$	204	200	202
$D_2$	239	237	238
$D_3$	226	215	220
$D_4$	316	296	306
$D_5$	370	250	260
Mean	251	240	245

S.E. of difference of two

- |                                   |                |
|-----------------------------------|----------------|
| 1. D marginal means               | =32.66 lb./ac. |
| 2. S marginal means               | =12.03 lb./ac. |
| 3. S means at the same level of D | =27.29 lb./ac. |
| 4. D means at the same level of S | =37.50 lb./ac. |

Crop :- Wheat (*Rabi*).  
Site :- Agri. Res. Stn., Niphad.

Ref :- Mh. 50(58).  
Type :- 'C'.

Object :-To find the proper time of sowing with different spacing for dry Wheat.

1. BASAL CONDITIONS :

(i)(a) No particular rotation followed. (b) Gram. (c) Nil. (ii) (a) Loamy-medium-depth upto 6'. (b) A good percentage of silt-clay and fine sand ; pH 7.5 to 8. (iii) As per treatments. (iv) (a) N.A. (b) Drilling. (c) 40 lb./ac. (d) As under treatments. (e) —. (v) 5 C.L./ac. of F.Y.M. (vi) *Vijay*. (vii) Unirrigated. (viii) Hand weeding. (ix) Nil. (x) 20th and 21st February 1951.

**2. TREATMENTS :****Main-plot treatments :**4 dates of sowing :  $D_1=1.10.1950$ ,  $D_2=8.10.1950$ ,  $D_3=15.10.1950$  and  $D_4=22.10.1950$ .**Sub-plot treatments :**2 spacings :  $S_1=10''$  and  $S_2=13''$ .**3. DESIGN :**(i) Split-plot. (ii) (a) 4 main-plots/replication ; 2 sub-plots/main-plot. (b) N.A. (iii) 6. (iv) (a) Main-plot :  $36' \times 25'-6''$  ; sub-plot :  $36' \times 12'-6''$  for  $S_1$  and  $36' \times 13'$  for  $S_2$ . (b) Sub-plot :  $30' \times 10'-10''$  for  $S_1$  and  $S_2$ . (v) 3' on either length wise direction and 2 rows on either breadth wise. (vi) Yes.**4. GENERAL :**

(i) Normal. (ii) Nil. (iii) Grain yield. (iv) (a) 1948—1951. (b) No. (c) N.A. (v) (a) Jalagaon, Karad, Mohol, Padegaon and Shahada. (b) N.A. (vi) and (vii) Nil.

**5. RESULTS :**

(i) 326.0 lb./ac.

(ii) (a) 47.80 lb./ac.

(b) 24.20 lb./ac.

(iii) Main effect of D is highly significant and main effect of S is significant. Interaction is not significant.

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

	$S_1$	$S_2$	Mean
$D_1$	275	264	269
$D_2$	314	311	312
$D_3$	364	367	365
$D_4$	380	332	356
Mean	333	318	326

**S.E. of difference of two**

1. D marginal means = 19.50 lb./ac.
2. S marginal means = 6.99 lb./ac.
3. S means at the same level of D = 13.97 lb./ac.
4. D means at the same level of S = 21.91 lb./ac.

**Crop :- Wheat (Rabi).****Ref :- Mh. 48(98).****Site :- Agri. Res. Stn., Padegaon.****Type :- 'C'.****Object :-** To find out whether there is any inter-relation between sowing dates and spacing on incidence of on Wheat (irrigated).**1. BASAL CONDITIONS :**

(i) (a) N.A. (b) N.A. (c) N.A. (ii) (a) 'B' type soil. (b) Refer soil analysis, Padegaon. (iii) As under treatments. (iv) (a) N.A. (b) N.A. (c) N.A. (d) As under treatments. (e) —. (v) 5 C.L./ac. of F.Y.M. (vi) Niphad—4. (vii) As under treatments. (viii) N.A. (ix) 22.47" (x) 13.2.1949.

**2. TREATMENTS :****Main-plot treatments :**5 dates of sowing :  $D_1=6.10.1948$ ,  $D_2=13.10.1948$ ,  $D_3=20.10.1948$ ,  $D_4=27.10.1948$  and  $D_5=3.11.1948$ .**Sub-plot treatments :**2 spacings :  $S_1=12''$  and  $S_2=15''$ .**3. DESIGN :**(i) Split-plot. (ii) (a) 5 main-plots/replication ; 2 sub-plots/main-plot. (b) N.A. (iii) 6. (iv) (a) Sub-plot :  $14' \times 46'$  for  $S_1$  and  $15' \times 46'$  for  $S_2$ . (b)  $10' \times 40'$ . (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) N.A. (iii) Grain yield. (iv) (a) 1948-1949 (variety changed in 1951-1952.), (b) N.A. (c) Nil. (v) (a) Jalgaon, Shahada and Mohol. (b) N.A. (vi) and (vii) Nil.

## RESULTS :

- (i) 358 lb./ac.  
 (ii) (a) 128.5 lb./ac.  
 (b) 80.7 lb./ac.  
 (iii) Main effect of D alone is highly significant.  
 (iv) Av. yield of grain in lb./ac.

	S <sub>1</sub>	S <sub>2</sub>	Mean
D <sub>1</sub>	279	266	272
D <sub>2</sub>	356	297	327
D <sub>3</sub>	349	356	352
D <sub>4</sub>	245	310	278
D <sub>5</sub>	563	559	561
Mean	358	357	358

## S.E. of difference of two

1. D marginal means =52.5 lb./ac.
2. S marginal means =20.0 lb./ac.
3. S means at the same level of D =46.6 lb./ac.
4. D means at the same level of S =61.9 lb./ac.

Crop :- Wheat (*Rabi*).

Ref :- Mh. 49(121).

Site :- Agri. Res. Stn., Padegaon.

Type :- 'C'.

Object :—To find out whether there is any inter relation between sowing dates and spacings on incidence of rust on Wheat crop.

## 1. BASAL CONDITIONS :

(i) (a) No fixed rotation. (b) and (c) N.A. (ii) (a) B type soil. (b) Refer soil analysis, Padegaon. (iii) As per treatments. (iv) (a) to (c) N.A. (d) As per treatments. (e) —. (v) 5 C.L./ac. of F.Y.M. (vi) Niphad-4. (vii) Irrigated. (viii) Nil. (ix) 23.32°. (x) 24.2.1950.

## 2. TREATMENTS :

Main-plot treatments :

5 sowing dates : D<sub>1</sub>=6.10.1949, D<sub>2</sub>=13.10.1949, D<sub>3</sub>=20.10.1949, D<sub>4</sub>=27.10.1949 and D<sub>5</sub>=3.11.1949.

Sub-plot treatments :

2 spacings : S<sub>1</sub>=12" and S<sub>2</sub>=15".

## 3. DESIGN :

(i) Split-plot. (ii) (a) 5 main-plots/replication and 2 sub-plots/main-plot. (b) N.A. (iii) 6. (iv) (a) N.A. (b) 25' x 17.42'. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) Normal. (ii) Rust appeared in the middle of Dec. 1949. (iii) Grain yield. (iv) (a) 1948 to N.A. (b) No. (c) N.A. (v) (a) Jalgaon, Shahada and Mohol. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 1119 lb./ac.  
 (ii) (a) 261.5 lb./ac.  
 (b) 204.0 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>	Mean
D <sub>1</sub>	897	1022	959
D <sub>2</sub>	1064	1160	1112
D <sub>3</sub>	1232	1177	1204
D <sub>4</sub>	1012	1139	1076
D <sub>5</sub>	1312	1177	1244
Mean	1103	1135	1119

S.E. of difference of two

1. D marginal means = 106.8 lb./ac.
2. S marginal means = 52.6 lb./ac.
3. S means at the same level of D = 117.8 lb./ac.
4. D means at the same level of S = 149.9 lb./ac.

Crop :- Wheat (*Rabi*).

Ref :- Mh. 50(147).

Site :- Agri. Res. Stn., Padegaon.

Type :- 'C'.

Object :—To find out whether there is any inter-relation between sowing date and spacing on incidence of rust on Wheat.

## 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) B type. (b) Refer soil analysis, Padegaon. (iii) As per treatments. (iv) (a) to (c) N.A. (d) As per treatments. (e) —. (v) 5 C.L./ac. of F.Y.M. on 3.12.1950. (vi) Niphad-4. (vii) Irrigated. (viii) One weeding. (ix) 22.91". (x) 24.2.1951.

## 2. TREATMENTS :

Main-plot treatments :

5 dates of sowing : D<sub>1</sub>=6.10.1950, D<sub>2</sub>=13.10.1950, D<sub>3</sub>=20.10.1950, D<sub>4</sub>=27.10.1950 and D<sub>5</sub>=3.11.1950.

Sub-plot treatments :

2 spacings : S<sub>1</sub>=12" and S<sub>2</sub>=15".

## 3. DESIGN :

(i) Split-plot. (ii) (a) 5 main-plots/replication and 2 sub-plots/main-plot. (b) N.A. (iii) 6. (iv) (a) Sub-plot : 29'×21.5' for S<sub>1</sub> and 30'×21.5' for S<sub>2</sub>. (b) Sub-plot : 25'×17.42'. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) Normal. (ii) Nil. (iii) Grain yield. (iv) (a) 1948—N.A. (b) N.A. (c) No. (v) (a) Shahada, Niphad, Mohol and Jalagaon. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 832 lb./ac.

(ii) (a) 282.0 lb./ac.

(b) 184.6 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
D <sub>1</sub>	686	680	683
D <sub>2</sub>	868	667	768
D <sub>3</sub>	762	820	791
D <sub>4</sub>	1025	989	1007
D <sub>5</sub>	873	947	910
Mean	843	821	832

S.E. of difference of two

1. D marginal means =115.1 lb./ac.
2. S marginal means = 47.7 lb./ac.
3. S means at the same level of D =106.6 lb./ac.
4. D means at the same level of S =137.6 lb./ac.

Crop :-Wheat (*Rabi*).  
 Site :-Agri. Res. Stn., Padegaon.

Ref :-Mh. 51(216)-  
 Type :-'C'.

Object :-To find out the optimum spacing and sowing date for Wheat.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) Sugarcane. (c) 300 lb./ac. of N. (ii) (a) B type. (b) Refer soil analysis, Padegaon. (iii) As per treatments. (iv) (a) Nil. (b) Hand sowing. (c) 40 lb./ac. (d) As per treatments. (e) N.A. (v) Nil. (vi) R.R. variety. (vii) Irrigated. (viii) One weeding. (ix) 14.68". (x) 1.3.1952 for first two sowing dates and 14.3.1952 for last three sowing dates.

## 2. TREATMENTS :

Main-plot treatments :

5 dates of sowing : D<sub>1</sub>=6.10.1951, D<sub>2</sub>=13.10.1951, D<sub>3</sub>=20.10.1951, D<sub>4</sub>=27.10.1951 and D<sub>5</sub>=3.11.1951.

Sub-plot treatments :

2 spacings : S<sub>1</sub>=12" and S<sub>2</sub>=15".

## 3. DESIGN :

(i) Sp it-plot. (ii) (a) 5 main-plots/replication and 2 sub-plots/main-plot. (b) N.A. (iii) 6. (iv) (a) Sub-plot : 29'×21.5' for S<sub>1</sub> and 30'×21.5' for S<sub>2</sub>. (b) Sub-plot : 25'×17.42'. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) Normal. (ii) Nil. (iii) Grain yield. (iv) (a) 1948—N.A. (modified in 1951—1952 with different variety) (b) No. (c) Nil. (v) (a) Shahada, Niphad, Mohol and Jalagaon. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 1494 lb./ac.
- (ii) (a) 238.6 lb./ac.  
(b) 163.5 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
D <sub>1</sub>	1506	1373	1440
D <sub>2</sub>	1410	1484	1447
D <sub>3</sub>	1417	1473	1445
D <sub>4</sub>	1675	1579	1627
D <sub>5</sub>	1586	1442	1514
Mean	1519	1470	

S.E. of difference of two

1. D marginal means = 97.4 lb./ac.
2. S marginal means = 42.2 lb./ac.
4. S means at the same level of D = 94.4 lb./ac.
4. D means at the same level of S = 118.0 lb./ac.

Crop :-Wheat (*Rabi*).

Ref :-Mh. 48(49).

Site :-Agri. Res. Stn., Shahada.

Type :-'C'.

Object :—To determine the suitable sowing date and spacing for maximum yield of Wheat.

**1. BASAL CONDITIONS :**

(i) (a) No definite rotation. (b) Chafa gram. (c) Nil. (ii) (a) Medium black. (b) N.A. (iii) As per treatments. (iv) (a) N.A. (b) Drilled. (c) 65 lb./ac. (d) As per treatments. (e) N.A. (v) Nil. (vi) N.A. (vii) Unirrigated. (viii) Nil. (ix) *Rabi* season hence rainfall negligible. (x) 7 and 8.1.1949; 20, 23 and 25.2.1949 and 4, 5 and 6.3.1949.

**2. TREATMENTS :**

Main-plot treatments :

5 sowing dates : D<sub>1</sub>=3.10.1948, D<sub>2</sub>=6.10.1948, D<sub>3</sub>=13.10.1948, D<sub>4</sub>=20.10.1948 and D<sub>5</sub>=27.10.1948.

Sub-plot treatments :

2 spacings : S<sub>1</sub>=10" and S<sub>2</sub>=13".

**3. DESIGN :**

(i) Split-plot. (ii) (a) 5 main-plots/replication and 2 sub-plots/main-plot. (b) 36'×51'. (iii) 6. (iv) (a) Sub-plot : 36'×25' for S<sub>1</sub> and 36'×26' for S<sub>2</sub>. (b) 30'×21'-8". (v) 2 rows on either side and 3' of rows on either end of plot. (vi) Yes.

**4. GENERAL :**

(i) Not satisfactory (ii) Some of the plants died due to the attack of white ants on their roots. (iii) Weight of grain and bhusa yield. (iv) (a) 1948—1949 to 1950—1951. (b) and (c) No. (v) (a) Padegaon, Jalagaon, Mohol and Niphad. (b) N.A. (vi) Many plants after germination became dry and died. Some plants died when they were in earhead stage. This is probably due to soil being unfavourable to wheat crop. (vii) Originally it was proposed that the first date of sowing be 29.9.1948; but due to the rain, it was done on 3.10.1948.

**5. RESULTS**

- (i) 145.5 lb./ac.
- (ii) (a) 77.07 lb./ac.
- (b) 32.17 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
D <sub>1</sub>	130	132	131
D <sub>2</sub>	122	99	110
D <sub>3</sub>	144	142	143
D <sub>4</sub>	138	181	160
D <sub>5</sub>	173	198	186
Mean	141.5	150.5	145.5

S.E. of difference of two

1. D marginal means = 31.26 lb./ac.
2. S marginal means = 8.33 lb./ac.
3. S means at the same level of D = 18.77 lb./ac.
4. D means at the same level of S = 33.51 lb./ac.

Crop :- Wheat (*Rabi*)

Ref :- Mh. 49(6).

Site :- Agri. Res. Stn., Shahada.

Type :- 'C'.

Object :- To find out the optimum sowing date and spacing for high yield in dry land.

## 1. BASAL CONDITIONS :

(i) (a) No definite rotation. (b) Lucerne. (c) Nil. (ii) (a) Medium black. (b) N.A. (iii) As per treatments.  
 (iv) (a) N.A. (b) Drilled. (c) 65 lb./ac. (d) N.A. (e) —. (v) N.A. (vi) N.A. (vii) Unirrigated.  
 (viii) Nil. (ix) 37.30°. (x) 1, 2, 3, 14 and 21.2.1950.

## 2. TREATMENTS :

Main-plot treatments :

5 sowing dates : D<sub>1</sub>=6.10.1949, D<sub>2</sub>=20.10.1949, (Local sowing date), D<sub>3</sub>=27.10.1949, D<sub>4</sub>=3.11.1949  
 and D<sub>5</sub>=10.11.1949.

Sub-plot treatments :

2 spacings : S<sub>1</sub>=10" and S<sub>2</sub>=13".

## 3. DESIGN :

(i) Split-plot. (ii) (a) 5 main-plots/replication and 2 sub-plots/main-plot. (b) N.A. (iii) 6. (iv) (a) Main-plot : 36' × 51' ; sub-plot : 36' × 25' for S<sub>1</sub> and 36' × 26' for S<sub>2</sub>. (b) 30' × 21' 8". (v) Two rows on either side ; 3' length of row on either end of net plot. (vi) Yes.

## 4. GENERAL :

(i) Crop was normal except for the fact that there was 3" rain on 12th October which slightly affected treatment D<sub>1</sub>. (ii) Nil. (iii) Weight of grain. (iv) (a) 1948-49 to 1950-51. (b) No. (c) No. (v) (a) Padegaon, Jalagaon, Mohol and Nipad. (b) N.A. (c) N.A. (vi) Since there was continuous rains from 25th Sept. to 1st Oct., soil was not in a condition for drilling hence the first sowing was done on 6.10.1949. Due to 3" rain on 12th Oct. night, sowing of 13th had to be postponed by 7 days and 2nd sowing could be done only on 20.10.1949. (vii) Expt. failed in 1950.

## RESULTS :

- (i) 386.9 lb./ac.
- (ii) (a) 113.3 lb./ac.
- (b) 88.5 lb./ac.
- (iii) Main effect of D alone is highly significant.

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

	S <sub>1</sub>	S <sub>2</sub>	Mean
D <sub>1</sub>	164	187	175
D <sub>2</sub>	374	370	372
D <sub>3</sub>	501	517	509
D <sub>4</sub>	478	521	499
D <sub>5</sub>	369	388	378
Mean	377	397	387

S.E. of difference of two

1. D marginal means =46.2 lb./ac.
2. S marginal means =23.0 lb./ac.
3. S means at the same level of D =51.1 lb./ac.
4. D means at the same level of S =58.7 lb./ac.

Crop :- Wheat (*Rabi*).

Ref :- Mh. 48(71)

Site :- Govt. Exptl. Farm, Tharsa.

Type :- 'C'.

Object :- To find out the optimum seed rate for Wheat crop (irrigated).

## 1. BASAL CONDITIONS :

(i) (a) Wheat-Wheat—Gram. (b) Wheat. (c) N.A. (ii) (a) Black medium soil. (b) Refer soil analysis, Tharsa. (iii) 10.10.1948. (iv) (a) N.A. (b) N.A. (c) As per treatments. (d) N.A. (e) —. (v) Nil. (vi) Imported wheat (medium). (vii) Irrigated. (viii) N.A. (ix) Nil (*Rabi* season). (x) 1st week of Feb. 1949.

## 2. TREATMENTS :

Three seed rates :—

1. 40 lb./ac.
2. 50 lb./ac.
3. 60 lb./ac.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 3. (b) N.A. (iii) 6. (iv) (a) N.A. (b) 1/40th of an acre (dimensions N.A.) (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) Normal. (ii) Nil. (iii) Grain yield. (iv) (a) 1940-41 to 1948-49. (b) No. (c) N.A. (v) (a) N.A. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 766 lb./ac.
- (ii) 210.5 lb./ac.
- (iii) Treatments do not differ significantly.
- (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	767
2.	733
3.	800
S.E./mean	=85.9 lb./ac.

Crop :- Wheat (*Rabi*).

Ref :- Mh. 48(72).

Site :- Govt. Exptl. Farm, Tharsa.

Type :- 'C'.

Object :- To find out the optimum seed rate for Wheat crop (unirrigated).

1. BASAL CONDITIONS :

(i) (a) Wheat—Wheat—Gram. (b) Wheat. (c) N.A. (ii) (a) *Morand* no. II (medium black). (b) Refer soil analysis, Tharsa. (iii) 10th Oct. 1948. (iv) (a) N.A. (b) *Tiffan* sowing. (c) As per treatments. (d) 12". (e) —. (v) Nil. (vi) Improved Wheat (medium). (vii) Unirrigated. (viii) 2 weedings on 24.10.1948 and 16.12.1948. (ix) Nil (*Rabi* season). (x) First week of Feb. 1949.

2. TREATMENTS :

Three seed rates :

1. 40 lb./ac.
2. 50 lb./ac.
3. 60 lb./ac.

3. DESIGN :

(i) R.B.D. (ii) (a) 3. (b) N.A. (iii) 6. (iv) (a) N.A. (b) 1/40th of an acre. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Grain yield. (iv) (a) 1940-41 to 1948-49. (b) No. (c) N.A. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

- (i) 907 lb./ac.
- (ii) 95.48 lb./ac.
- (iii) Treatments do not differ significantly.
- (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	860
2.	933
3.	957 -
S.E./mean	= 38.99 lb./ac.

Crop :- Wheat (*Rabi*).

Ref :- Mh. 52(145).

Site :- Govt. Exptl. Farm, Nagpur.

Type :- 'D'.

Object :- To study the effect of hormones and chemicals for the control of weeds.

1. BASAL CONDITIONS :

(i) (a) No particular crop rotation followed. (b) Wheat. (c) Nil. (ii) (a) Black cotton soil. (b) Refer soil analysis, Nagpur. (iii) Last week of Oct-1952. (iv) (a) 2 ploughings and 5 *bakharings*. (b) to (e) N.A. (v) Nil. (vi) N.A. (vii) Unirrigated. (viii) N.A. (ix) 1.78". (x) Last week of Feb. 1953.

2. TREATMENTS :

1. Control.
2. Hand weeding.
3. Feronoxene.
4. Chloroxene.
5. Feronoxene and Diesel oil.  
(Details N.A.).

3. DESIGN :

(i) L. Sq. (ii) (a) 5. (b) N.A. (iii) 5. (iv) (a) N.A. (b) 24' × 15'. (v) N.A. (vi) Yes.

4. GENERAL :

(i) N.A. (ii) Nil. (iii) Grain yield. (iv) (a) N.A. (b) and (c) N.A. (v) (a) and (b) N.A. (vi) and (vii) Nil.

**5. RESULTS :**

- (i) 551 lb./ac.  
 (ii) 56.87 lb./ac.  
 (iii) Treatments do not differ significantly.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	495
2.	565
3.	582
4.	536
5.	575
S.E./mean	= 25.42 lb./ac.

Crop :- Wheat. (*Rabi*).  
 Site :- Govt. Exptl. Farm, Nagpur.

Ref :- Mh. 53(227).  
 Type :- 'D'.

Object :—To study the effect of hormones and chemicals on weeds of Wheat crop.

**1. BASAL CONDITIONS :**

(i) (a) No particular crop rotation followed. (b) Wheat. (c) N.A. (ii) (a) Black cotton soil. (b) Refer soil analysis, Nagpur. (iii) Last week of October 1953. (iv) (a) 2 ploughings and 5 *bakharings*. (b) By *Tiffan*. (c) 60 lb./ac. (d) N.A. (e) —. (v) Nil. (vi) N.A. (vii) Unirrigated. (viii) N.A. (ix) 1.58". (x) Last week of Feb. 1954.

**2. TREATMENTS :**

- Control (No hormones or chemical or weeding).
- Hand weeding.
- Feronoxene.
- Chloroxene.
- Feronoxene and Diesel oil.  
(Details N.A.).

**3. DESIGN :**

(i) L.Sq. (ii) (a) 5. (b) N.A. (iii) 5. (iv) (a) N.A. (b) 24' × 15'. (v) N.A. (vi) Yes.

**4. GENERAL :**

(i) N.A. (ii) Nil. (iii) Grain yield. (iv) (a) N.A. (b) N.A. (c) N.A. (v) (a) N.A. (b) N.A. (vi) and (vii) Nil.

**5. RESULTS :**

- (i) 495 lb./ac.  
 (ii) 211.8 lb./ac.  
 (iii) Treatments do not differ significantly.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield.
1.	483
2.	530
3.	467
4.	518
5.	475
S.E./mean	=94.7 lb./ac.

Crop :- Wheat (*Rabi*).  
Site :- Agri. Res. Stn., Niphad.

Ref :- Mh. 48(93).  
Type :- 'D'.

Object :- To control the incidence of loose-smut in Wheat by seed treatment.

1. BASAL CONDITIONS :

(i) (a) No fixed rotation. (b) N.A. (c) N.A. (ii) (a) Medium black loamy. (b) Refer soil analysis, Niphad. (iii) N.A. (iv) (a) 2 ploughings and 1 harrowing. (b) Drilling. (c) 40 lb./ac. (d) 12" between rows. (e) —. (v) Nil. (vi) *Broach* in all cases except. Tr. 7. (vii) Unirrigated. (viii) N.A. (ix) N.A. (x) N.A.

2. TREATMENTS :

Seed treated with :

1. Control.
2.  $\frac{1}{2}$  hour solar heat.
3. 1 hour solar heat.
4.  $1\frac{1}{2}$  hours solar heat.
5. 2 hours solar heat.
6. N.P. 165.
7. Untreated seed of *Vijay*.

3. DESIGN :

(i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 4. (iv) (a) 25'×21'. (b) 23'—4"×18'. (v) N.A. (vi) Yes.

4. GENERAL :

(i) N.A. (ii) N.A. (iii) Grain yield. (iv) (a) 1948—N.A. (b) First year of the expt. (c) Nil. (v) (a) N.A. (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 302 lb./ac.  
(ii) 6.30 lb./ac.  
(iii) Treatments differ highly significantly.  
(iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	297
2.	316
3.	312
4.	382
5.	300
6.	164
7.	345
S.E./mean	=3.15 lb./ac.

Crop :- Wheat (*Rabi*).  
Site :- Agri. Res. Stn., Niphad.

Ref :- Mh. 48(94).  
Type :- 'D'.

Object :- To control the incidence of blight disease on Wheat seedlings.

1. BASAL CONDITIONS :

(i) (a) Not fixed. (b) and (c) N.A. (ii) (a) Medium black loamy. (b) Refer soil analysis, Niphad. (iii) 24.10.1948. (iv) (a) 2 ploughings and 1 harrowing. (b) Drilling. (c) 40 lb./ac. (d) 12" between rows. (e) —. (v) Nil. (vi) *Vijay*. (vii) Unirrigated. (viii) N.A. (ix) N.A. (x) N.A.

2. TREATMENTS :

Seed treated with :

1. Cereson.
2. Untreated.

3. DESIGN :

(i) R.B.D. (ii) (a) 2. (b) N.A. (iii) 10. (iv) (a) 36'×30'. (b) 30.5'×26.67'. (v) N.A. (vi) Yes.

## 4. GENERAL:

(i) N.A. (ii) N.A. (iii) Grain yield. (iv) (a) 1948—N.A. (b) First year. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS:

(i) 525 lb./ac  
 (ii) 34.92 lb./ac.  
 (iii) Treatments differ highly significantly.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	554
2.	497
S.E./mean	= 11.0 lb./ac.

Crop :- Wheat (*Rabi*).

Site :- Agri. Res. Stn., Niphad.

Ref :- Mh. 48(95).

Type :- 'D'.

Object :- To control the incidence of blight disease on Wheat seedlings.

## 1. BASAL CONDITIONS :

(i) (a) No particular. (b) and (c) N.A. (ii) (a) Medium black loamy. (b) Refer soil analysis, Niphad. (iii) 24.10.1948. (iv) (a) 1 harrowing and 2 ploughings. (b) Drilling. (c) 40 lb./ac; (d) 12' between rows. (e) —. (v) Nil. (vi) *Vijay*. (vii) Unirrigated. (viii) N.A. (ix) N.A. (x) N.A.

## 2. TREATMENTS :

1. Ceres. n treated.  
 2. T.M.T.D.  
 3. Spergon.  
 4. A.A. Grano.  
 5. Untreated.  
 (Details N.A.).

## 3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 4. (iv) (a) 36' × 30'. (b) 30.5' × 26.67'. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) N.A. (iii) Grain yield. (iv) (a) 1948-49. (b) First year of the experiment. (c) No. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 489 lb./ac.  
 (ii) 46.05 lb./ac.  
 (iii) Treatments differ significantly.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	447
2.	512
3.	516
4.	487
5.	486
S.E./mean	= 23.0 lb./ac.



Crop :- Jowar (*Kharif*).

Ref :- Mh. 53(238).

Site :- Govt. Seed and Demonstration Farm, Achalpur.

Type :- 'M'.

Object :- To compare C/N with A/S on yield of Jowar.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Jowar. (c) N.A. (ii) (a) Medium black. (b) N.A. (iii) 16.7.1953. (iv) (a) 2 heavy and 3 light *bakharings*. (b) By *tiffan*. (c) 60 lb./ac. (d) 15" between rows. (e) N.A. (v) Nil. (vi) N.A. (vii) Unirrigated. (viii) 4 hoeings and 1 weeding. (ix) 34.91". (x) 16.12.1953.

## TREATMENTS :

All combinations of (1) and (2)

(1) 4 levels of N :  $N_0=0$ ,  $N_1=15$ ,  $N_2=30$  and  $N_3=45$  lb./ac. of N.(2) 2 sources of N :  $S_1=A/S$  and  $S_2=C/N$ .

## 3. DESIGN :

(i)  $2 \times 4$  Fact. in R.B.D. (ii) (a) 8. (b) N.A. (iii) 5. (iv) (a) N.A. (b)  $66' \times 16\frac{1}{2}'$ . (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) Normal. (ii) Nil. (iii) Grain yield. (iv) (a) No. (b) No. (c) N.A. (v) (a), (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 1850 lb./ac.

(ii) 778.8 lb./ac.

✓ (iii) No effect is significant.

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

Control = 1679 lb./ac.				
	$N_1$	$N_2$	$N_3$	Mean
$S_1$	1952	1983	2061	1999 ✓
$S_2$	1600	1693	2154	1816
Mean	1776	1838	2007	

S.E. of N or control mean

= 246.2 lb./ac.

S.E. of S means

= 201.1 lb./ac.

S.E. of control vs. any other mean in the table

= 426.5 lb./ac.

S.E. of body of table

= 348.1 lb./ac.

✓ Crop :- Jowar (*Kharif*).

Ref :- Mh. 49(105).

Site :- Govt. Seed and Demonstration Farm, Achalpur.

Type :- 'M'.

Object :- To study the effect of different organic and inorganic manures on Jowar yield.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) N.A. (c) N.A. (ii) (a) Medium black. (b) N.A. (iii) 21.7.1949. (iv) (a), (b) N.A. (c) 10 lb./ac. (d) 15" line to line. (e) N.A. (v) Nil. (vi) N.A. (vii) Unirrigated. (viii) 3 hoeings and 2 weedings. (ix) 38.39". (x) 11.12.1949.

## 2. TREATMENTS :

1. Control (no manure).

✓ 2. 20 lb./ac. of N as T.C.

3. 40 lb./ac. of N as T.C.

✓ 4. 20 lb./ac. of N as Cattle dung.

5. 40 lb./ac. of N as Cattle dung.

6. 10 lb./ac. of N as G.N.C.

✓ 7. 20 lb./ac. of N as G.N.C.

8. 10 lb./ac. of N as A/S.

✓ 9. 20 lb./ac. of N as A/S.

Manuring on 20.7.1949.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 9. (b) N.A. (iii) 6. (iv) (a) N.A. (b) 66'×16½'. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Nil. (iii) Grain and *kadbi* yield. (iv) (a) 1949—continued. (b) No. (c) N.A. (v) (a) Akola. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 2201 lb./ac.  
 (ii) 368.3 lb./ac.  
 ✓ (iii) Treatments do not differ significantly.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	2100
✓ 2.	2146
3.	2266
✓ 4.	2246
5.	2026
6.	2153
✓ 7.	2253
8.	2153
✓ 9.	2466

S.E./mean = 150.4 lb./ac.

Crop :- Jowar (*Kharif*).

Ref :- Mh. 50(132)

Site :- Govt. Seed and Demonstration Farm, Achalpur.

Type :- 'M'.

✓ Object :- To study the effect of different organic and inorganic manures on *Jowar* yield.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Jowar. (c) N.A. (ii) (a) Medium black. (b) N.A. (iii) 21.7.1950. (iv) (a) and (b) N.A. (c) 10 lb./ac. (d) 15" line to line. (e) N.A. (v) Nil. (vi) N.A. (vii) Unirrigated. (viii) 3 hoeings and 2 weedings. (ix) 22.78". (x) 14.1.1951.

## 2. TREATMENTS :

1. Control (No manure).
  2. 20 lb./ac. of N as T.C.
  3. 40 lb./ac. of N as T.C.
  4. 20 lb./ac. of N as Cattle dung.
  5. 40 lb./ac. of N as Cattle dung.
  6. 10 lb./ac. of N as G.N.C.
  7. 20 lb./ac. of N as G.N.C.
  8. 10 lb./ac. of N as A/S.
  9. 20 lb./ac. of N as A/S.
- Manures applied on 13.7.1950.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 9. (b) N.A. (iii) 6. (iv) (a) N.A. (b) 66'×16½'. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) N.A. (iii) Grain yield. (iv) (a) 1949—Contd. (b) No. (c) N.A. (v) (a) Akola. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 1218 lb./ac.  
 (ii) 224.8 lb./ac.  
 ✓ (iii) Treatments do not differ significantly.

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

Treatment	Av. yield
✓ 1.	1186
✓ 2.	1246
3.	1133
✓ 4.	1320
5.	1146
6.	1160
✓ 7.	1353 ✓
8.	1246
✓ 9.	1173
S.E./mean	=91.8 lb./ac.

Crop :- Jowar, (*Kharif*).

Ref :- Mh. 51(185)

Site :- Govt. Seed & Demonstration Farm, Achalpur. Type :- 'M'.

Object :- To study the effect of different organic and inorganic manures on *Jowar* yield.

1. BASAL CONDITIONS :

- (i) (a) Cotton—*Jowar*-Groundnut. (b) Cotton. (c) N.A. (ii) (a) Medium black. (b) N.A. (iii) 20.7.1951.  
 (iv) (a) N.A. (b) N.A. (c) 10 lb./ac. (d) 15" line to line. (e) N.A. (v) Nil. (vi) *Saoner* (medium.)  
 (vii) Unirrigated. (viii) 4 hoeings and 1 weeding. (ix) 26.30". (x) 4, 5.1.1952.

2. TREATMENTS :

- ✓ 1. Control (no manure).  
 ✓ 2. 20 lb./ac. of N as T.C.  
 3. 40 lb./ac. of N as T.C.  
 ✓ 4. 20 lb./ac. of N as Cattle dung.  
 5. 40 lb./ac. of N as Cattle dung.  
 6. 10 lb./ac. of N as G.N.C.  
 ✓ 7. 20 lb./ac. of N as G.N.C.  
 8. 10 lb./ac. of N as A/S.  
 ✓ 9. 20 lb./ac. of N as A/S.  
 Manuring on 19 and 20.7.1951.

3. DESIGN :

- (i) R.B.D. (ii) (a) 9. (b) N.A. (iii) 6. (iv) (a) N.A. (b) 1/40th ac. (v) N.A. (vi) Yes.

4. GENERAL :

- (i) Good. (ii) Nil. (iii) Grain and *bhusa* yield. (iv) (a) 1949-contd. (b) No. (c) N.A. (v) (a) Akola.  
 (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

- (i) 1606 lb./ac.  
 (ii) 302.2 lb./ac.  
 (iii) Treatments do not differ significantly.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	1533
2.	1643
3.	1657
4.	1506
5.	1513
6.	1556
7.	1583
8.	1658
9.	1805
S.E./mean	=123.4 lb./ac.

Crop :-Jowar (*Kharif*).

Ref :-Mh. 52(225).

Site :-Govt. Seed and Demonstration Farm, Achalpur. Type :-'M'.

Object :-To study the effect of different organic and inorganic manures on *Jowar* yield.

## 1. BASAL CONDITIONS :

- (i) (a) Cotton—*Jowar*—Groundnut. (b) Cotton. (c) N.A. (ii) (a) Medium black. (b) N.A. (iii) 1.8.1952. (iv) (a) 2 heavy and 3 light *bakharings*. (b) N.A. (c) 10 lb./ac. (d) 15" line to line. (e) N.A. (v) Nil. (vi) *Saoner* (medium). (vii) Unirrigated. (viii) 2 hoeings and 1 weeding. (ix) 12.09". (x) 5.1.1953.

## 2. TREATMENTS :

1. Control (no manure).
  2. 20 lb./ac. of N as T.C.
  3. 40 lb./ac. of N as T.C.
  4. 20 lb./ac. of N as Cattle dung.
  5. 40 lb./ac. of N as Cattle dung.
  6. 10 lb./ac. of N as G.N.C.
  7. 20 lb./ac. of N as G.N.C.
  8. 10 lb./ac. of N as A/S.
  9. 20 lb./ac. of N as A/S.
- Manuring on 1.8.1952

## 3. DESIGN :

- (i) R.B.D. (ii) (a) 9. (b) N.A. (iii) 6. (iv) (a) N.A. (b) 66'×16½'. (v) N.A. (vi) Yes.

## 4. GENERAL :

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

## 5. RESULTS :

- (i) 681 lb./ac.  
 (ii) 402.0 lb./ac.  
 (iii) Treatments do not differ significantly.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
✓ 1.	542
✓ 2.	899
3.	506
✓ 4.	788
5.	864
6.	626
✓ 7.	623
8.	490
✓ 9.	789
S.E./mean	=164.2 lb./ac.

Crop :-Jowar (*Kharif*).

Ref :-Mh. 53(236).

Site :-Govt. Seed and Demonstration Farm, Achalpur.

Type :-'M'.

Object :-To study the effect of different organic and inorganic manures on *Jowar* yield.

## 1. BASAL CONDITIONS:

- (i) (a) Nil. (b) *Jowar*. (c) N.A. (ii) (a) Medium black. (b) N.A. (iii) 12.7.1953. (iv) (a) 2 heavy and 3 light *bakharings* in April. (b) and (c) N.A. (d) 15" line to line. (e) N.A. (v) Nil. (vi) *Saoner* (medium). (vii) Unirrigated. (viii) 3 hoeings, 1 thinning and 1 weeding. (ix) 34.91" (x) 2.1.1954.

## 2. TREATMENTS :

1. Control (no manure).
2. 20 lb./ac. of N as T.C.
3. 40 lb./ac. of N as T.C.
4. 20 lb./ac. of N as Cattle dung.
5. 40 lb./ac. of N as Cattle dung.
6. 10 lb./ac. of N as G.N.C.
7. 20 lb./ac. of N as G.N.C.
8. 10 lb./ac. of N as A/S.
9. 20 lb./ac. of N as A/S.

## 3. DESIGN :

- (i) R.B.D. (ii) (a) 9. (b) N.A. (iii) 6. (iv) (a) N.A. (b) 66'×16½'. (v) N.A. (vi) Yes.

## 4. GENERAL :

- (i) Normal. (ii) Nil. (iii) Grain yield. (iv) (a) 1949—1953. (b) and (c) N.A. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 1159 lb./ac.  
 (ii) 472.4 lb./ac.  
 (iii) Treatments do not differ significantly.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
✓ 1.	1189
✓ 2.	1400
3.	1200
✓ 4.	899
5.	1217
6.	983
✓ 7.	873
8.	1413
✓ 9.	1260
S.E./mean	=192.9 lb./ac.

Crop :- Jowar (*Kharif*).

Ref :- Mh. 50(133).

Site :- Govt. Seed and Demonstration Farm, Achalpur.

Type :- 'M'.

Object :- To study the residual effect of different organic and inorganic manures on *Jowar* yield.

## 1. BASAL CONDITIONS :

- (i) (a) *Jowar* after *Jowar*. (b) *Jowar*. (c) As per treatments. (ii) (a) Medium black. (b) N.A. (iii) 21.7.1950.  
 (iv) (a) N.A. (b) N.A. (c) 10 lb./ac. (d) 15" line to line. (e) N.A. (v) Nil. (vi) N.A. (vii) Unirrigated.  
 (viii) 3 hoeings and 2 weedings. (ix) 22.78". (x) 13.1.1951.

## 2. TREATMENTS :

- ✓ 1. Control (no manure).
- ✓ 2. 20 lb./ac. of N as T.C.
3. 40 lb./ac. of N as T.C.
- ✓ 4. 20 lb./ac. of N as Cattle dung.
5. 40 lb./ac. of N as Cattle dung.
6. 10 lb./ac. of N as G.N.C.
- ✓ 7. 20 lb./ac. of N as G.N.C.
8. 10 lb./ac. of N as A/S.
- ✓ 9. 20 lb./ac. of N as A/S.

Manures applied to previous *Jowar* crop.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 9. (b) N.A. (iii) 6. (iv) (a) N.A. (b) 66' x 16½'. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) N.A. (iii) Grain yield. (iv) (a) 1950—N.A. (b) Yes. (c) N.A. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 1266 lb./ac.  
 (ii) 265.2 lb./ac.  
 (iii) Treatments do not differ significantly.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
✓ 1.	1266
✓ 2.	1300
3.	1293
✓ 4.	1233
5.	1146
6.	1260
✓ 7.	1380*
8.	1200
✓ 9.	1320
S.E./mean	= 108.3 lb./ac.

Crop :- Jowar (*Kharif*).

Ref :- Mh. 53 (235).

Site :- Govt. Seed and Demonstration Farm, Achalpur.

Type :- 'M'.

Object :- To study the residual effect of different organic and inorganic manures on *Jowar* yield.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Jowar*. (c) As per treatments. (ii) (a) Medium black. (b) N.A. (iii) 12.7.1953. (iv) (a) 2 heavy and 3 light *bakharings*. (b) Sowing by *tiffan*. (c) to (e) N.A. (v) Nil. (vi) N.A. (vii) Unirrigated. (viii) 2 hoeings, 1 weeding and 1 thinning. (ix) 34.91". (x) 3.1.1954.

## 2. TREATMENTS :

1. Control (no manure).
2. 20 lb./ac. of N as T.C.
3. 40 lb./ac. of N as T.C.
4. 20 lb./ac. of N as Cattle dung.
5. 40 lb./ac. of N as Cattle dung.
6. 10 lb./ac. of N as G.N.C.
7. 20 lb./ac. of N as G.N.C.
8. 10 lb./ac. of N as A/S.
9. 20 lb./ac. of N as A/S.

Manures applied to previous year *Jowar* crop.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 9. (b) N.A. (iii) 6. (iv) (a) N.A. (b) 66' x 16½'. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) Normal. (ii) Nil. (iii) Grain yield. (iv) (a) 1950—N.A. (b) and (c) N.A. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 1568 lb./ac.  
 (ii) 532.4 lb./ac.  
 (iii) Treatments do not differ significantly.

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

Treatment	Av. yield
1.	1680
2.	1527
3.	1360
4.	1320
5.	2033
6.	1260
7.	1687
8.	1537
9.	1710
S.E./mean	= 217.4 lb./ac.

Crop :- Jowar (*Kharif*).

Ref :- Mh. 51 (186).

Site :- Govt. Seed and Demonstration Farm, Achalpur. Type :- 'M'.

Object :- To judge the manurial value of cotton seed cake on *Jowar* yield.

## 1. BASAL CONDITIONS :

(i) (a) Cotton—*Jowar*—Groundnut. (b) Cotton. (c) N.A. (ii) (a) Medium black. (b) N.A. (iii) 16.7.1951.  
 (iv) (a) 1 ploughing and 3 *bakharings*. (b) N.A. (c) 10 lb./ac. (d) 18" x 9". (e) N.A. (v) Nil.  
 (vi) *Saoner* (medium). (vii) Unirrigated. (viii) 4 hoeings and 1 weeding. (ix) 26.30". (x) 26, 27.12.1951.

## 2. TREATMENTS :

1. 20 lb./ac. of N as G.N.C.  
 2. 20 lb./ac. of N as decorticated cotton seed cake.  
 3. 20 lb./ac. of N as updecorticated cotton seed cake.  
 4. 20 lb./ac. of N as A/S.  
 Manuring on 16.7.1951.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 5. (iv) (a) N.A. (b) 1/40th ac. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Nil. (iii) Grain and *bhusa* yield. (iv) (a) 1951—N.A. (b) No. (c) N.A. (v) (a) Akola and Nagpur. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 2181 lb./ac.  
 (ii) 204.2 lb./ac.  
 (iii) Treatments do not differ significantly.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	2080
2.	2276
3.	2224
4.	2144
S.E./mean	= 91.3 lb./ac.

Crop :- Jowar (*Rabi*).

Ref :- Mh. 48(80).

Site :- Agri. Res. Stn., Akluj.

Type :- 'M'.

Object :- To study the effect of Bone Super as top dressing of *rabi Jowar*.

## 1. BASAL CONDITIONS :

- (i) (a) N.A. (b) Sugarcane. (c) 375 lb./ac. of N as A/S+G.N.C. in 1:1 ratio, (ii) (a) D type. (b) Refer soil analysis, Akluj. (iii) September 1948. (iv) (a) Ploughing and harrowing. (b) N.A. (c) N.A. (d) and (e) N.A. (v) Nil. (vi) M.35-1. (vii) Irrigated. (viii) Weeding. (ix) 6.49°. (x) February 1949.

## 2. TREATMENTS :

1. No manure.
2. 56 lb./ac. of Bone Super.
3. 56 lb./ac. of Bone Super+56 lb./ac. of A/S.
4. 56 lb./ac. of A/S.
5. 150 lb./ac. of G.N.C.

## 3. DESIGN :

- (i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 6. (iv) (a) N.A. (b) 0.50 *gunthas*. (v) N.A. (vi) Yes.

## 4. GENERAL :

- (i) No lodging. (ii) Nil, (iii) Grain yield. (iv) (a) 1946-1948. (b) No. (c) Nil. (v) (a) Kopergaon, Deolali and Lakhmapur. (b) N.A. (vi) No reason given for low yields. (vii) Nil.

## 5. RESULTS :

- (i) 445 lb./ac.  
 (ii) 165.6 lb./ac.  
 (iii) Treatments differ significantly.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	380
2.	507
3.	387
4.	424
5.	529
S.E./mean	= 67.6 lb./ac.

Crop :- Jowar (*Kharif*).

Ref :- Mh. 51(92).

Site :- Govt. Exptl. Farm, Akola.

Type :- 'M'.

Object :- To study the residual effect of manures applied to Cotton crop in the form of F.Y.M. and C/N in previous year.

## 1. BASAL CONDITIONS :

- (i) (a) Cotton—*Jowar*. (b) Cotton. (c) As per treatments. (ii) (a) Black cotton soil. (b) Refer soil analysis, Akola. (iii) 24.7.1951. (iv) (a) 2 *bakharings*. (b) Sowing by *tiffan*. (c) 8 to 10 lb./ac. (d) 18"×12". (e) N.A. (v) Nil. (vi) *Saoner* (late). (vii) Unirrigated. (viii) 2 hoeings and 1 weeding. (ix) 24.32". (x) 4.1.1952.

## 2. TREATMENTS :

All combinations of (1) and (2)+a control (no manure).

(1) 3 levels of N :  $N_1=20$ ,  $N_2=30$  and  $N_3=40$  lb./ac. of N.(2) 3 sources of N :  $S_1=F.Y.M.$ ,  $S_2=C/N$  and  $S_3=F.Y.M.+C/N$  in the ratio 1 : 1.

Manures applied to previous crop cotton.



## 3. DESIGN

(i) R.B.D. (ii) (a) 10. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 66' × 16½'. (v) One row on either side of a plot. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Nil. (iii) Grain yield. (iv) (a) 1951 to 1953. (b) Yes. (c) N.A. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 1376 lb./ac.  
 (ii) 250.8 lb./ac.  
 (iii) None of the effects is significant.  
 (iv) Av. yield of grain in lb./ac.

Control = 1180 lb./ac.				
	N <sub>1</sub>	N <sub>2</sub>	N <sub>3</sub>	Mean
S <sub>1</sub>	1358	1468	1145	1324
S <sub>2</sub>	1503	1485	1340	1443
S <sub>3</sub>	1458	1368	1458	1428
Mean	1439	1440	1314	

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

= 72.4 lb./ac.  
 = 125.4 lb./ac.

Crop :- Jowar (*Kharif*).

Ref :- Mh. 52(122).

Site :- Govt. Exptl. Farm, Akola.

Type :- 'M'.

Object :- To study the residual effect of manures (F.Y.M and C/N) applied to cotton crop in previous year

## 1. BASAL CONDITIONS :

(i) (a) Cotton—Jowar. (b) Cotton. (c) As per treatments. (ii) (a) Black cotton soil. (b) Refer soil analysis, Akola. (iii) 25.6.1952. (iv) (a) and (b) N.A. (c) 8—10 lb./ac. (d) 18" × 12". (e) N.A. (v) Nil. (vi) Improved Soaner (late). (vii) Unirrigated. (viii) 4 hoeings, 2 weedings. (ix) 22.03". (x) 26.11.1952.

## 2. TREATMENTS :

All combinations of (1) and (2) + a control (no manure).

(1) 3 levels of N : N<sub>1</sub>=20, N<sub>2</sub>=30 and N<sub>3</sub>=40 lb./ac.

(2) 3 sources of N : S<sub>1</sub>=F.Y.M., S<sub>2</sub>=C/N and S<sub>3</sub>=F.Y.M.+C/N in the ratio 1 : 1.

Manures applied to previous cotton crop.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 10. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 66' × 16½'. (v) One row on either side of a plot. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) Nil. (iii) Grain yield. (iv) (a) 1951 to 1953. (b) Yes. (c) N.A. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 435 lb./ac.  
 (ii) 264.0 lb./ac.  
 (iii) Main effects of N, S and their interaction are not significant. "Control vs. others" effect is not significant.

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

	Control =447 lb./ac.			Mean
	N <sub>1</sub>	N <sub>2</sub>	N <sub>3</sub>	
S <sub>1</sub>	492	380	412	428
S <sub>2</sub>	275	540	457	424
S <sub>3</sub>	437	480	427	448
Mean	401	467	432	

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

= 76.2 lb./ac.  
=132.0 lb./ac.

Crop :- Jowar (*Khariif*).

Ref :- Mh. 51(93)

Site :- Govt. Exptl. Farm, Akola.

Type :- 'M'.

Object :- To test the residual effect of manures applied to Cotton crop in the previous year.

## 1. BASAL CONDITIONS :

(i) (a) Cotton-Jowar. (b) Cotton. (c) As per treatments. (ii) (a) Black cotton soil. (b) Refer soil analysis, Akola. (iii) 24.7.1951. (iv) (a) 2 *bakharings*. (b) Sowing by *tiffan*. (c) 8-10 lb./ac. (d) 18" x 12". (e) N.A. (v) Nil. (vi) *Saxner* (late). (vii) Unirrigated. (viii) 2 hoeings and weeding. (ix) 24.32". (x) 3.1.1952.

## 2. TREATMENTS :

All combinations of (1) and (2) + a control (no manure).

(1) 3 levels of N : N<sub>1</sub>=20, N<sub>2</sub>=30 and N<sub>3</sub>=40 lb./ac.(2) 3 sources of N : S<sub>1</sub>=G.N.C., S<sub>2</sub>=C/N and S<sub>3</sub>=G.N.C.+C/N in the ratio 1 : 1.

Manures applied to previous crop cotton.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 10. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 66' x 16½'. (v) One row on either side of the plot. (vi) Yes.

## 4. GENERAL :

(i) Normal. (ii) Nil. (iii) Grain yield. (iv) (a) 1951 to 1954. (b) Yes. (c) N.A. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 1158 lb./ac.

(ii) 182.5 lb./ac.

(iii) No effect is significant.

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

Control =1070 lb./ac.

	Control =1070 lb./ac.			Mean
	N <sub>1</sub>	N <sub>2</sub>	N <sub>3</sub>	
S <sub>1</sub>	1160	1218	1128	1169
S <sub>2</sub>	1125	1335	1158	1205
S <sub>3</sub>	1188	1103	1098	1130
Mean	1158	1219	1127	

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

=52.68 lb./ac.  
=91.24 lb./ac.

Crop :- Jowar (*Kharif*).  
Site :- Govt. Exptl. Farm, Akola.

Ref :- Mh. 52 (121)  
Type :- 'M'.

Object :- To study the residual effect of manures (G.N.C. and C/N) applied during previous year to Cotton crop.

1. BASAL CONDITIONS :

(i) (a) Cotton-Jowar. (b) Cotton. (c) As per treatments. (ii) (a) Black cotton soil. (b) Refer soil analysis, Akola. (iii) 24.6.1952. (iv) (a) and (b) N.A., (c) 8-10 lb./ac. (d) 18" x 12". (e) N.A. (v) Nil. (vi) Improved *Saoner* (late). (vii) Unirrigated. (viii) 4 hoeings and 2 weedings. (ix) 22.03". (x) 27.11.1952.

2. TREATMENTS :

All combinations of (1) and (2) + a control (no manure)

(1) 3 levels of N :  $N_1=20$ ,  $N_2=30$  and  $N_3=40$  lb./ac.

(2) 3 sources of N :  $S_1=G.N.C.$ ,  $S_2=C/N$  and  $S_3=G.N.C.+C/N$  in 1 : 1. ratio  
Manures applied to previous crop cotton.

3. DESIGN :

(i) R.B.D. (ii) (a) 10. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 66' x 16½'. (v) One row on either side of the plot. (vi) Yes.

4. GENERAL :

(i) Below normal. (ii) Nil. (iii) Grain yield. (iv) (a) 1951 to 1953. (b) Yes (c) N.A. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 244 lb./ac.

(ii) 179.3 lb./ac.

(iii) No effect is significant.

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

Control = 127 lb./ac.

	$N_1$	$N_2$	$N_3$	Mean
$S_1$	245	265	450	320
$S_2$	192	180	107	159
$S_3$	322	297	250	290
Mean	253	247	269	

S.E. of marginal mean of S or N = 51.77 lb./ac.  
S.E. of body of table = 89.66 lb./ac.

Crop :- Jowar (*Kharif*).  
Site :- Govt. Exptl. Farm, Akola.

Ref :- Mh. 48(45).  
Type :- 'M'.

✓ Object :- To test the effect of the application of different manures in varying quantities by different methods.

1. BASAL CONDITIONS :

(i) (a) Cotton-Jowar. (b) Cotton. (c) 5 C.L./ac. of F.Y.M. + 550 lb./ac. of G.N.C. (ii) (a) Black cotton soil. (b) Refer soil analysis, Akola. (iii) 14.7.1948. (iv) (a) 1 heavy and 1 light *bakharing*. (b) Sowing by *tiffan*. (c) 8-10 lb./ac. (d) 18" x 12". (e) —. (v) Nil. (vi) *Saoner* (late). (vii) Unirrigated (viii) Nil. (ix) 31.52". (x) 24.12.1948.

2. TREATMENTS :

✓ All combinations of (1) and (2) + a control (no manure).

(1) 2 manures :  $N_1=10$  lb./ac. of N drilled with seed and  $N_2=20$  lb./ac. of N ; half drilled with seed and half top dressed.

(2) 4 sources of N :  $S_1=G.N.C.$ ,  $S_2=A/S$ ,  $S_3=Red$  label mixture and  $S_4=F.Y.M.$

## 3. DESIGN :

- (i) R.B.D. (ii) (a) 9. (b) N.A. (iii) 6. (iv) (a) N.A. (b)  $66' \times 16\frac{1}{2}'$ . (v) One row on either side of a plot. (vi) Yes.

## 4. GENERAL :

- (i) Satisfactory. (ii) Nil. (iii) Grain yield. (iv) (a) 1945—1949. (b) No. (c) N.A. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 976 lb./ac.  
 (ii) 175.9 lb./ac.  
 (iii) Main effect of N is significant while main effect of S, interaction  $S \times N$  and control vs. others are not significant.  
 (iv) Av. yield of grain in lb./ac.

Control=877 lb./ac.

	S <sub>1</sub>	S <sub>2</sub>	S <sub>3</sub>	S <sub>4</sub>	Mean
N <sub>1</sub>	880	1000	933	966	945
✓ N <sub>2</sub>	1023	1198	1000	903	1031
Mean	951	1099	965	934	

S.E. of marginal mean of N = 35.92 lb./ac.  
 S.E. of marginal mean of S = 50.79 lb./ac.  
 S.E. of body of table = 71.83 lb./ac.

Crop :- Jowar (*Kharif*).

Site :- Govt. Exptl. Farm, Akola.

Ref :- Mh. 49(72).

Type :- 'M'.

Object :—To test the effect of the application of different manures in varying quantities by different methods of application.

## 1. BASAL CONDITIONS :

- (i) (a) Cotton—*Jowar*. (b) Cotton. (c) 5 C.L./ac. of F.Y.M.+550 lb./ac. of G.N.C. (ii) (a) Black cotton soil. (b) Refer soil analysis, Akola. (iii) 24.7.1949. (iv) (a) 1 heavy and 1 light *bakharings*. (b) Sowing by *tiffan*. (c) 8 to 10 lb./ac. (d)  $18'' \times 12''$ . (e) N.A. (v) Nil. (vi) *Saoner* (late). (vii) Unirrigated. (viii) 3 hoeings and 1 weeding. (ix) 42.93". (x) 19.1.1950.

## 2. TREATMENTS :

All combinations of (1) and (2) + a control (no manure)

- (1) 2 manures : N<sub>1</sub>=10 lb./ac. of N drilled with seed and N<sub>2</sub>=20 lb./ac. of N, half drilled with seed and half top dressed.

- (2) 4 sources of N : S<sub>1</sub>=G.N.C., S<sub>2</sub>=A/S, S<sub>3</sub>='Red label' mixture and S<sub>4</sub>=F.Y.M.

## 3. DESIGN :

- (i) R.B.D. (ii) (a) 9. (b) N.A. (iii) 6. (iv) (a) N.A. (b)  $66' \times 16\frac{1}{2}'$ . (v) One row on either side of a plot. (vi) Yes.

## 4. GENERAL :

- (i) Fair. (ii) Nil. (iii) Grain yield. (iv) (a) 1945—1949. (b) No. (c) N.A. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 880 lb./ac.  
 (ii) 102.6 lb./ac.  
 (iii) Main effect of S and "control vs. others" are significant while N and interaction  $N \times S$  are not significant.

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

Control=777 lb./ac.					
	S <sub>1</sub>	S <sub>2</sub>	S <sub>3</sub>	S <sub>4</sub>	Mean
N <sub>1</sub>	822	970	858	863	877
N <sub>2</sub>	867	998	875	895	909
Mean	844	984	866	877	

S.E. of marginal mean of N =29.62 lb./ac.  
 S.E. of marginal mean of S =20.95 lb./ac.  
 S.E. of body of table =41.90 lb./ac.

Crop :-Jowar (*Kharif*).

Ref :-Mh. 48(44).

Site :-Govt. Exptl. Farm, Akola.

Type :-'M'.

Object :-To find out the effect of 20 lb./ac. of N in the form of G.N.C., and A/S singly and in combination.

## 1. BASAL CONDITIONS :

(i) (a) Cotton—*Jowar*. (b) Cotton- (c) 5 C.L./ac. of F.Y.M.+550 lb./ac. of G.N.C. (ii) (a) Black cotton soil. (b) Refer soil analysis, Akola. (iii) 14.7.1948. (iv) (a) 1 heavy and 2 light *bakharings*. (b) Sowing by *tiffan*. (c) 8 to 10 lb./ac. (d) 18"×12". (e) N.A. (v) Nil. (vi) Improved *Saoner* (late). (vii) Unirrigated. (viii) 2 hoeings and 1 weeding. (ix) 31.52". (x) 24.12.1948.

## 2. TREATMENTS :

1. No manure.
  2. 20 lb./ac. of N as G.N.C.
  3. 20 lb./ac. of N as A/S.
  4. 20 lb./ac. of N as Cattle dung (F.Y.M.).
  5. 10 lb./ac. of N as G.N.C.+10 lb./ac. of N as A/S.
  6. 10 lb./ac. of N as F.Y.M.+10 lb./ac. of N as A/S.
- Manuring on 24.6.1948.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 6. (iv) (a) N.A. (b) 66'×16½'. (v) One row on either side of each plot. (vi) Yes.

## 4. GENERAL :

(i) Normal. (ii) Nil. (iii) Grain and *kadbi* yield. (iv) (a) 1945—1949. (b) No. (c) N.A. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 997 lb./ac.
- (ii) 142.0 lb./ac.
- ✓ (iii) Treatments do not differ significantly.
- (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	910
2.	987
3.	1073
4.	990
5.	978
6.	1042
S.E./mean	=57.98 lb./ac.

Crop :- Jowar (*Kharif*).  
Site :- Govt. Exptl. Farm, Akola.

Ref :- Mh. 49(71).  
Type :- 'M'.

Object :- To study the effect of 20 lb./ac. of N in the form of G.N.C., F.Y.M. and A/S applied alone and in combination.

1. BASAL CONDITIONS:

(i) (a) Cotton—Jowar. (b) Cotton. (c) 5 C.L./ac. of F.Y.M. + 550 lb./ac. of N as G.N.C. (ii) (a) Black cotton soil. (b) Refer soil analysis, Akola. (iii) 24.7.1949. (iv) (a) 1 heavy and 3 light *bakharings*. (b) Sowing by *tiffan*. (c) 8 to 10 lb./ac. (d) 18" × 12". (e) N.A. (v) Nil. (vi) Improved *saoner* (late). (vii) Unirrigated. (viii) 3 hoeings and 1 weeding. (ix) 42.93". (x) 18.1.1950.

2. TREATMENTS:

1. No manure.
  2. 20 lb./ac. of N as G.N.C.
  3. 20 lb./ac. of N as A/S.
  4. 20 lb./ac. of N as Cattle dung (F.Y.M.).
  5. 10 lb./ac. of N as G.N.C. + 10 lb./ac. of N as A/S.
  6. 10 lb./ac. of N as F.Y.M. + 10 lb./ac. of N as A/S.
- Time and method of application N.A.

3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 6. (iv) (a) N.A. (b) 66' × 16½'. (v) One row on either side of each plot. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) Grain and fodder yield. (iv) (a) 1945—1949. (b) No. (c) N.A. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

- (i) 935 lb./ac.  
(ii) 118.6 lb./ac.  
/ (iii) Treatments do not differ significantly.  
(iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	898
2.	922
3.	967
4.	917
5.	950
6.	953
S.E./mean	=48.43 lb./ac.

Crop :- Jowar (*Kharif*).  
Site :- Govt. Exptl. Farm, Akola.

Ref :- Mh. 48(38).  
Type :- 'M'.

Object :- To study the residual effect of manures applied to cotton crop in previous year.

1. BASAL CONDITIONS :

(i) (a) Cotton—Jowar. (b) Cotton. (c) As per treatments. (ii) (a) Black cotton soil. (b) Refer soil analysis, Akola. (iii) 12.7.1948. (iv) (a) 1 heavy and 2 light *bakharings*. (b) Sowing by *tiffan*. (c) 8 to 10 lb./ac. (d) 18" × 12". (e) N.A. (v) Nil. (vi) *Saoner* (late). (vii) Unirrigated. (viii) 3 hoeings and 2 weedings. (ix) 31.52". (x) 27.12.1948.

2. TREATMENTS :

1. Control (no manure).
  2. 40 lb./ac. of N as F.Y.M.
  3. 20 lb./ac. of N as F.Y.M. + 20 lb./ac. of N as *pondretta* compost.
  4. 40 lb./ac. of N as *pondretta* compost.
  5. 20 lb./ac. of N as F.Y.M. + 20 lb./ac. of N as G.N.C.
  6. 40 lb./ac. of N as G.N.C.
  7. 20 lb./ac. of N as F.Y.M. + 20 lb./ac. of N as 'red label' mixture.
  8. 40 lb./ac. of N as 'red label' mixture.
- Manure: applied to cotton crop in previous year.

## 3. DESIGN :

(i) R.B.D. (ii) 8. (b) N.A. (iii) 6. (iv) (a) 35'×36'. (b) 33'×33'. (v) One row on either side of each plot. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Powdery mildew attack in Nov. 1948. No control measures. (iii) Grain and *kadbi* yield. (iv) (a) 1946—49. (b) Yes. (c) N.A. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 862 lb./ac.  
 (ii) 133.8 lb./ac.  
 (iii) Treatments do not differ significantly.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	913
2.	827
3.	817
4.	887
5.	903*
6.	797
7.	888
8.	865
S.E /mean	= 54.63 lb./ac.

Crop :- Jowar (*Kharif*).

Ref :-Mh. 49(65).

Site :-Govt. Exptl. Farm, Akola.

Type :-'M'.

Object :-To study the residual effect of manures applied to Cotton crop in previous year.

## 1. BASAL CONDITIONS :

(i) (a) Cotton—*Jowar*. (b) Cotton. (c) As per treatments. (ii) (a) Black cotton soil. (b) Refer soil analysis, Akola. (iii) 14.7.1949. (iv) (a) 2 *bakharings*. (b) Sowing by *tiffan*. (c) 8 to 10 lb./ac. (d) 18"×12". (e) N.A. (v) Nil. (vi) *Saoner* (late). (viii) Unirrigated. (viii) 2 hoeings, 2 weedings and 1 thinning. (ix) 42.93". (x) 18.1.1950.

## 2. TREATMENTS :

1. Control (no manure).
2. 40 lb./ac. of N as F.Y.M.
3. 20 lb./ac. of N as F.Y.M. +20 lb./ac. of N as *pondretta* compost.
4. 40 lb./ac. of N as *pondretta* compost.
5. 20 lb./ac. of N as F.Y.M +20 lb./ac. of N as G.N.C.
6. 40 lb./ac. of N as G.N.C.
7. 20 lb./ac. of N as F.Y.M. + 20 lb./ac. of N as 'red label' mixture.
8. 40 lb./ac. of N as 'red label' mixture.

Manures applied to cotton crop in previous year.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 8. (b) N.A. (iii) 6. (iv) (a) 35'×36'. (b) 33'×33'. (v) One row on either side of each plot. (vi) Yes.

## 4. GENERAL :

(i) Fair. (ii) Nil. (iii) Grain yield. (iv) (a) 1946—49. (b) Yes. (c) N.A. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS:

(i) 877 lb./ac.  
 (ii) 197.7 lb./ac.  
 (iii) Treatments do not differ significantly.

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

Treatment	Av. yield
1.	822
2.	997
3.	792
4.	793
5.	950
6.	925
7.	943
8.	893
S.E./mean	= 80.7 lb./ac.

Crop :- Jowar (*Khariif*).

Ref :- Mh. 48(39).

Site :- Govt. Exptl. Farm, Akola.

Type :- 'M'.

Object :—To test the residual effect of manures applied to Groundnut crop during previous year on *Jowar* yield.

## 4. BASAL CONDITIONS :

(i) (a) Groundnut—*Jowar*. (b) Groundnut. (c) As per treatments. (ii) (a) Black cotton soil. (b) Refer soil analysis, Akola. (iii) 12.7.1948. (iv) (a) 1 heavy and 2 light *bakharings*. (b) Sowing by *tiffan*. (c) 10 lb/ac. (d) 18" × 12". (e) N.A. (v) Nil. (vi) *Saoner* (late). (vii) Unirrigated (viii) 3 hoeings, 2 weedings and 1 thinning. (ix) 31.52". (x) 26.12.1948.

## 2. TREATMENTS :

1. Control (no manure).
  - × 2. 10 lb./ac. of N as G.N.C.
  - ✓ 3. 20 lb./ac. of N as G.N.C.
  4. 30 lb./ac. of N as G.N.C.
  5. 40 lb./ac. of N as G.N.C.
- Manures applied to groundnut crop in 1947.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 6. (iv) (a) N.A. (b) 66' × 16½'. (v) One row on either side of each plot. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Nil. (iii) Grain yield. (iv) (a) 1946-49. (b) Yes. (c) N.A. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 975 lb./ac.
- (ii) 145.9 lb./ac.
- (iii) Treatments do not differ significantly.
- (iv) Av. yield of grain in lb/ac.

Treatment	Av. yield
1.	1022
2.	917
3.	947
4.	1023
5.	967
S.E./mean	= 59.57 lb./ac.



Crop :- Jowar (*Khariif*).

Ref :- Mh. 49(66).

Site :- Govt. Exptl. Farm, Akola.

Type :- 'M'.

Object :—To test the residual effect of manures applied to Groundnut crop in previous year on *Jowar* yield.

## 1. BASAL CONDITIONS :

(i) (a) Groundnut—*Jowar*. (b) Groundnut. (c) As per treatments. (ii) (a) Black cotton soil. (b) Refer soil analysis, Akola. (iii) 14.7.1949. (iv) (a) 1 heavy and 1 light *bakharings*. (b) Sowing by *tiffan*. (c) 10 lb./ac. (d) 18" × 12". (e) N.A. (v) Nil. (vi) *Saoner* (late). (vii) Unirrigated. (viii) 2 hoeings and 2 weedings. (ix) 42.93". (x) 18.1.1950.

## 2. TREATMENTS :

1. Control (no manure).
  2. 10 lb./ac. of N as G.N.C.
  3. 20 lb./ac. of N as G.N.C.
  4. 30 lb./ac. of N as G.N.C.
  5. 40 lb./ac. of N as G.N.C.
- Manures applied to groundnut crop in 1948.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 6. (iv) (a) N.A. (b) 66' × 16½'. (v) One row on either side of each plot. (vi) Yes.

## 4. GENERAL :

(i) Satisfactory. (ii) Nil. (iii) Grain yield. (iv) (a) 1946 to 1949. (b) Yes. (c) N.A. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 1461 lb./ac.
- (ii) 137.9 lb./ac.
- (iii) Treatments do not differ significantly.
- (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	1353
2.	1443
3.	1457
4.	1502
5.	1552
S E./mean	=56.3 lb./ac.

Crop :- Jowar (*Khariif*).

Ref :- Mh. 53(172).

Site :- Govt. Exptl. Farm, Akola.

Type :- 'M'.

Object :—To compare and test the effect of different doses of A/S and C/N on the yield of *Jowar*.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Cotton. (c) 30 lb./ac. of N; half as compost and half as A/S top dressed. (ii) (a) Black cotton soil. (b) Refer soil analysis, Akola. (iii) 11.8.1953. (iv) (a) and (b) N.A. (c) 8 to 10 lb./ac. (d) 18" × 12". (e) N.A. (v) Nil. (vi) *Saoner* (late). (vii) Unirrigated. (viii) 2 hoeings, 1 weeding and 1 thinning. (ix) 26.38". (x) 27.1.1954.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 4 levels of N :  $N_0=0$ ,  $N_1=15$ ,  $N_2=30$  and  $N_3=45$  lb./ac. of N

(2) 2 sources of N :  $S_1=A/S$  and  $S_2=C/N$ .

Manures drilled with seed.

## 3. DESIGN :

(i) 2 × 4 Fact. in R.B.D. (ii) (a) 8. (b) N.A. (iii) 5. (iv) (a) N.A. (b) 66' × 16½'. (v) One row on either side of each plot. (vi) Yes.

## 4. GENERAL :

(i) Normal. (ii) Nil. (iii) *Kadbi* and grain yield. (iv) (a) Not contd. (b) and (c) No. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 1461 lb./ac.  
 (ii) 188.6 lb./ac.  
 (iii) Main effect of N and interaction N×S are significant while main effect of S is not significant.  
 (iv) Av. yield of grain in lb./ac.

	Control =1288 lb./ac.			
	N <sub>1</sub>	N <sub>2</sub>	N <sub>3</sub>	Mean
S <sub>1</sub>	1416	1560	1688	1555
S <sub>2</sub>	1272	1584	1592	1483
Mean	1344	1572	1640	

S.E. of control mean = 59.61 lb./ac.  
 S.E. of N marginal mean = 59.61 lb./ac.  
 S.E. of S marginal mean = 48.67 lb./ac.  
 S.E. of control v/s. any other mean in the table = 103.26 lb./ac.  
 S.E. of body of table = 84.29 lb./ac.

Crop :-Jowar (*Kharif*).

Ref :-Mh. 49(48).

Site :-Govt. Seed and Demonstration Farm, Buldana. Type :-'M'.

✓ Object :-To compare the effect of T.C. on *Jowar* with other manures.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) and (c) N.A. ii) (a) Medium black. (b) Refer soil analysis, Buldana. (iii) 22.7.1949.  
 (iv) (a) 3 *bakharings*. (b) N.A. (c) 5 to 7 lb./ac. (d) 18"×12". (e) N.A. (v) Nil. (vi) *Saoner* (late)  
 (vii) Unirrigated. (viii) 2 weedings and 2 hoeings. (ix) 49.64". (x) 22.12.1949

## 2. TREATMENTS :

1. Control
  - ✓ 2. 20 lb./ac. of N as T.C.
  3. 40 lb./ac. of N as T.C.
  - ✓ 4. 20 lb./ac. of N as Cattle dung.
  5. 40 lb./ac. of N as Cattle dung.
  6. 10 lb./ac. of N as G.N.C.
  - ✓ 7. 20 lb./ac. of N as G.N.C.
  8. 10 lb./ac. of N as A/S.
  - ✓ 9. 20 lb./ac. of N as A/S.
- Manures top dressed on 28.7.1949.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 9. (b) N.A. (iii) 6. (iv) (a) 68'×18½'. (b) 66'×16½'. (v) 2' all round the plot.  
 (vi) Yes.

## 4. GENERAL :

(i) Normal. (ii) Nil. (iii) Grain yield. (iv) (a) 1947 (expt. in 1948 failed due to late sowing and adverse weather conditions. Modified in 1949). (b) No. (c) N.A. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 877 lb./ac.  
 (ii) 160.5 lb./ac.  
 (iii) Treatments do not differ significantly.

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

Treatment	Av. yield
1.	764
2.	1110
3.	861
4.	774
5.	840
6.	816
7.	994
8.	759
9.	976
S.E./mean	=65.54 lb./ac.

Crop :- Jowar (*Kharif*).

Ref :- Mh. 49(74).

Site :- Govt. Seed and Demonstration Farm, Buldana.

Type :- 'M'.

Object :- To find out the residual effect of T.C. and other manures applied to *Jowar* in 1947-48.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) and (c) Nil. (ii) (a) Medium black. (b) Refer soil analysis, Buldana (iii) 22.7.1949.  
 (iv) (a) 3 *bakharings*. (b) N.A. (c) 8 to 10 lb./ac. (d) 18" x 12". (e) N.A. (v) Nil. (vi) *Saoner*. (late)  
 (vii) Unirrigated. (viii) N.A. (ix) 49.64". (x) N.A.

## 2. TREATMENTS :

1. Control (no manure).
  2. 10 C.L./ac. of Farm compost.
  3. 20 C.L./ac. of Farm compost.
  4. 10 C.L./ac. of Cattle dung.
  5. 20 C.L./ac. of Cattle dung.
  6. 4 maunds of G.N.C. with seed at sowing.
  - ✓ 7. 20 lb./ac. of N as A/S with seed at sowing.
- Manures applied in 1947-48.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 6. (iv) (a) N.A. (b) 66' x 16½'. (v) 2½' all round the plot. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) Nil. (iii) Grain yield. (iv) (a) 1947—contd. (b) Yes. (c) N.A. (v) (a) and (b) N.A.  
 (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 891 lb./ac.  
 (ii) 128.7 lb./ac.  
 (iii) Treatments do not differ significantly.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	770
2.	910
3.	963
4.	887
5.	1000
6.	900
7.	810
S.E./mean	=52.24 lb./ac.

Crop :- Jowar (*Kharif*).

Ref :- Mh. 51(111).

Site :- Govt. Seed and Demonstration Farm, Buldana.

Type :- 'M'.

Object :—To find out the effect of T.C. in comparison with other manures on *Jowar*.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) and (c) N.A. (ii) (a) Medium black. (b) Refer soil analysis, Buldana. (iii) 16.7.1951.  
 (iv) (a) and (b) N.A. (c) 8 to 10 lb./ac. (d) 18" × 12". (e) N.A. (v) Nil. (vi) Saoner (late). (vii) Un-  
 irrigated. (viii) N.A. (ix) 33.22". (x) 18.12.1951.

## 2. TREATMENTS :

- ✓ 1. Control.
  - ✓ 2. 20 lb./ac. of N as T.C.
  - 3. 40 lb./ac. of N as T.C.
  - ✓ 4. 20 lb./ac. of N as F.Y.M.
  - 5. 40 lb./ac. of N as F.Y.M.
  - 6. 10 lb./ac. of N as G.N.C.
  - ✓ 7. 20 lb./ac. of N as G.N.C.
  - 8. 10 lb./ac. of N as A/S.
  - ✓ 9. 20 lb./ac. of N as A/S.
- Manures applied on 28.7.1951.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 9. (b) N.A. (iii) 6. (iv) (a) N.A. (b) 66' × 16.5'. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Nil. (iii) Grain yield. (iv) (a) 1947—Contd.. (b) No. (c) N.A. (v) (a) and (b) N.A.  
 (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 2079 lb./ac.
- (ii) 237.5 lb./ac.
- (iii) Treatments do not differ significantly.
- (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	2025
2.	2043
3.	2043
4.	2044
5.	1941
6.	2016
7.	2109
8.	2085
9.	2407
S.E./mean	=96.97 lb./ac.

Crop :- Jowar (*Kharif*).

Ref :- Mh. 51(110).

Site :- Govt. Seed and Demonstration Farm, Buldana.

Type :- 'M'.

Object :—To judge the manurial value of cotton-seed cake to *Jowar* crop in comparison with other manures.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Cotton. (c) N.A. (ii) (a) Medium black. (b) Refer soil analysis, Buldana. (iii) 16.7.1951.  
 (iv) (a) 3 *bakharings*. (b) Sowing by *tiffan*. (c) 5 to 6 lb./ac. (d) 18" × 9". (e) N.A. (v) Nil.  
 (vi) *Saoner* (late). (vii) Unirrigated. (viii) 1 weeding, 2 hoeing.<sup>st</sup> (ix) 33.22" (x) 18.12.1951.

## 2. TREATMENTS :

15 lb./ac. of N in the form of

1. Decorticated cotton-seed cake.
2. Undecorticated cotton-seed cake.
3. G.N.C.
4. A/S.
5. Control (no manure)

Manuring on 28.7.1951.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 5. (iv) (a) N.A. (b) 66'×16.5'. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) N.A. (iii) Grain yield. (iv) (a) 1951-contd. (b) No. (c) N.A. (v) (a) Washim. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 1886 lb./ac.
- (ii) 192.2 lb./ac.
- (iii) Treatments do not differ significantly.
- (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield.
1.	1972
2.	1813
3.	1915
4.	1942
5.	1790
S.E./mean	=85.92 lb./ac.

Crop:- Jowar (*Rabi*).

Ref :-Mh. 51(208).

Site :- Agri. Res. Stn., Chas.

Type :-'M'.

Object :-To study the effect of different doses of Zinc Sulphate on *Jowar*.

## 1. BASAL CONDITIONS:

(i) (a) N.A. (b) Gram. (c) Nil. (ii) (a) Medium black. (b) N.A. (iii) N.A. (iv) (a) 1 ploughing and 1 harrowing. (b) to (e) N.A. (v) Nil. (vi) Medium. (vii) Unirrigated. (viii) 3 Interculture. (ix) 6.10" from Sept. to Dec. (x) 9.2.1952.

## 2. TREATMENTS :

1. Control.
2. 10 lb./ac. of Zinc Sulphate.
3. 20 lb./ac. of Zinc Sulphate.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 3. (b) N.A. (iii) 8. (iv) (a) 15'×24'. (b) 13'×21'. (v) 1'×1.5'. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) Nil. (iii) Grain and fodder yield. (iv) (a) 1951—N.A. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 355 lb./ac.
- (ii) 96.39 lb./ac.
- (iii) Treatments do not differ significantly.
- (iv) Av. yield of grain in lb./ac.

Treatment.	Av. yield
1.	343
2.	404
3.	317
S.E./mean	=34.08 lb./ac.

Crop :- Jowar (*Rabi*).  
Site :- Agri. Res. Stn., Chas.

Ref :- Mh. 53(154).  
Type :- 'M'.

Object :- To find out suitable combination of N and P with and without F.Y.M. to *Rabi Jowar*.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) N.A. (c) 40 lb./ac. of Super. (ii) (a) Medium and deep black. (b) N.A. (iii) 22.9.1953.  
(iv) (a) 1 ploughing and 2 harrowings. (b) N.A. (c) 4 lb./ac. (d) 18" between rows. (e) N.A. (v) Nil.  
(vi) M-35-1. (vii) Unirrigated. (viii) 2 interculturing. (ix) 7.66". (x) 18.2.1954.

2. TREATMENTS :

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

(1) 4 levels of N:  $N_0=0$ ,  $N_1=10$ ,  $N_2=20$  and  $N_3=30$  lb./ac.

(2) 4 levels of  $P_2O_5$ :  $P_0=0$ ,  $P_1=10$ ,  $P_2=20$  and  $P_3=30$  lb./ac.

(3) 2 levels of F.Y.M.:  $F_0=0$  and  $F_1=5$  C.L./ac.

N applied as G.N.C. and  $P_2O_5$  as Super.

3. DESIGN :

(i)  $4 \times 4 \times 2$  Fact. in R.B.D. (ii) (a) 32. (b) N.A. (iii) 2. (iv) (a)  $54' \times 15'$ . (b)  $52' \times 12'$ . (v)  $2' \times 1.5'$ .  
(vi) Yes.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) 3 Counts, 3 heights and yield data. (iv) (a) 1953 to 1955. (b) No  
(c) N.A. (v) (a) Sholapur. (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 628 lb./ac.

(ii) 198.5 lb./ac.

(iii) Main effect of N is significant while other main effects and interactions are not significant.

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

	$N_0$	$N_1$	$N_2$	$N_3$	Mean	$F_0$	$F_1$
$P_0$	466	536	695	601	574	576	573
$P_1$	536	667	823	569	649	652	645
$P_2$	544	719	685	691	660	590	731
$P_3$	486	702	728	599	629	576	682
Mean	508	656	733	615	628	598	658
$F_0$	473	627	716	579			
$F_1$	544	685	750	652			

S.E. of marginal mean of N or P = 49.61 lb./ac.

S.E. of marginal mean of F = 35.08 lb./ac.

S.E. of body of  $N \times F$  or  $P \times F$  table = 70.18 lb./ac.

S.E. of body of  $N \times P$  table = 99.23 lb./ac.

Crop :- Jowar (*Kharif*).  
Site :- Agri. Res. Stn., Jalagaon.

Ref :- Mh. 50(38).  
Type :- 'M'.

Object :- To find the effect of applying  $P_2O_5$  to leguminous crop (Groundnut) and its after effects on the succeeding cereal crop *Jowar*.

1. BASAL CONDITIONS :

(i) (a) Groundnut-*Jowar*. (b) Groundnut. (c) As per treatments. (ii) (a) Deep black cotton type having depth of 10' to 13'. (b) Refer soil analysis, Jalagaon. (iii) 12.7.1950. (iv) (a) N.A. (b) Drilling. (c) 3 lb./ac. (d) 18". (e) N.A. (v) Nil. (vi) N.A. (vii) Unirrigated. (viii) Weedings on 15.7.1950, 27.7.1950 and 30.8.1950; hoeings on 18.7.1950, 30.8.1950 and 2.9.1950. (ix) 21.73". (x) 12.10.1950.

## 2. TREATMENTS :

1. No  $P_2O_5$  (control).
2. 50 lb./ac. of  $P_2O_5$  as Super.
3. 100 lb./ac. of  $P_2O_5$  as Super.
4. 150 lb./ac. of  $P_2O_5$  as Super.
5. Fallow (No Groundnut crop in the previous year).

These treatments applied to previous Groundnut crop. All manures applied before sowing in full and spread evenly over the field.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 5. (iv) (a) 42' x 30'. (b) 30' x 18'. (v) 6' ring round the net plot. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Attack of stem borer and red spot observed on leaves of *jowar*. (iii) Grain and chaff yield of *jowar* and *udld*. (iv) (a) 1949-50 ; 1954-55. (b) Yes. (c) N.A. (v) (a) and (b) Nil. (vi) Nil. (vii) *Jowar* was mixed with *udld*. Experiment vitiated in 1949 for *jowar* crop.

## 5. RESULTS :

*Jowar* crop

- (i) 2537 lb./ac.
- (ii) 360.6 lb./ac.
- (iii) Treatments do not differ significantly.
- (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	2639
2.	2557
3.	2704
4.	2750
5.	2535
S.E./mean	= 161.2 lb./ac.

*Udld* crop

- (i) 256 lb./ac.
- (ii) 44.3 lb./ac.
- (iii) Treatments do not differ significantly.
- (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	255
2.	261
3.	256
4.	276
5.	234
S.E./mean	= 19.8 lb./ac.

Crop :- *Jowar* (*Khariif*).

Site :- Agri. Res. Stn., Jalagaon.

Ref :- Mh. 51(41).

Type :- 'M'.

Object :- To find out the effects of applying  $P_2O_5$  to the leguminous crop (*Groundnut*) and its after effects on the succeeding cereal crop *Jowar*.

## 1. BASAL CONDITIONS :

(i) (a) *Groundnut*-*Jowar*. (b) *Groundnut*. (c) As per treatments. (ii) (a) Deep black cotton type having a depth of 10 to 13' (b) Refer soil analysis, Jalagaon. (iii) 5.7.1951. (iv) (a) N.A. (b) Drilling. (c) 3 lb./ac. (d) 18" between rows and irregular between plants. (e) N.A. (v) Nil. (vi) N.A. (vii) Un-irrigated. (viii) Weeding on 23.8.1951 ; hoeings on 30.7.1951, 13.8.1951 and 21.8.1951. (ix) 20.14" (x) 5.12.1951.

## 2. TREATMENTS :

1. No  $P_2O_5$  (control).
2. 50 lb./ac. of  $P_2O_5$  as Super.
3. 100 lb./ac. of  $P_2O_5$  as Super.
4. 150 lb./ac. of  $P_2O_5$  as Super.
5. No manure (fallow for *Groundnut*).

Treatments applied to *Groundnut* crop. All manures applied before sowing in full and spread evenly in the field.

## DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 5. (iv) (a) 42' x 30'. (b) 30' x 18'. (v) 6' ring round the net plot. (vi) Yes.

## 4. GENERAL:

(i) N.A. (ii) Attack of stem-borer observed on *Jowar*. Damage not serious. (iii) Grain and chaff yield. (iv) (a) 1949-50; 1954-55. (b) Yes. (c) N.A. (v) (a) and (b) Nil. (vi) Nil. (vii) *Udid* grown in *Jowar* rows and for which analysis was carried out separately and separate form filled.

## 5. RESULTS:

<i>Jowar</i> crop		<i>Udid</i> crop	
(i) 1676 lb./ac.		(i) 199 lb./ac.	
(ii) 344.4 lb./ac.		(ii) 36.08 lb./ac.	
(iii) Treatments do not differ significantly.		(iii) Treatments do not differ significantly.	
(iv) Av. yield of grain in lb./ac.		(iv) Av. yield of grain in lb./ac.	
Treatment	Av. yield	Treatment	Av. yield
1.	1548	1.	199
2.	1731	2.	172
3.	1558	3.	219
4.	1712	4.	221
5.	1830	5.	182
S.E./mean	= 154.0 lb./ac.	S.E./mean	= 16.13 lb./ac.

Crop :- *Jowar (Kharif)*.

Site :- Agri. Res. Stn., Jalagaon.

Ref :- Mh. 52(67).

Type :- 'M'.

Object :- To find out the effect of applying  $P_2O_5$  to leguminous crop (Groundnut) and its after effects on the succeeding cereal crop *Jowar*.

## 1. BASAL CONDITIONS:

(i) (a) Groundnut—*Jowar*. (b) Groundnut. (c) As per treatments. (ii) (a) Deep black cotton type having a depth of 10' to 13' (b) Refer soil analysis, Jalagaon. (iii) 27.6.1952. (iv) (a) N.A. (b) Drilling. (c) 3 lb./ac. (d) 18" between rows and irregular between plants. (e) N.A. (v) Nil. (vi) N.A. (vii) Unirrigated. (viii) Weeding on 14.8.1952; hoeings on 7.7.1952 and 10.8.1952. (ix) 17.61". (x) 26.11.1952.

## 2. TREATMENTS:

1. No  $P_2O_5$  (control)
2. 50 lb./ac. of  $P_2O_5$  as Super.
3. 100 lb./ac. of  $P_2O_5$  as Super.
4. 150 lb./ac. of  $P_2O_5$  as Super.
5. No manure (fallow for Groundnut of previous year).

Treatments applied to leguminous crop. All manures applied before sowing in full and spread evenly in the field.

## 3. DESIGN:

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 5. (iv) (a) 42'×30'. (b) 30'×18'. (v) 6' around the net plot. (vi) Yes.

## 4. GENERAL:

(i) Not satisfactory. (ii) Attack of loose-smut disease and stem-borer. (iii) Grain yield. (iv) (a) 1949 to 1954. (b) Yes. (c) N.A. (v) (a) and (b) Nil. (vi) Nil. (vii) *Udid* grown in between *Jowar* rows for which analysis was carried out separately.



## 5. RESULTS :

<i>Jowar</i> crop		<i>Udid</i> crop	
(i) 738 lb./ac.		(i) 233 lb./ac.	
(ii) 134.3 lb./ac.		(ii) 52.08 lb./ac.	
(iii) Treatments differ significantly.		(iii) Treatments do not differ significantly	
(iv) Av. yield of grain in lb./ac.		(iv) Av. yield of grain in lb./ac.	
Treatment	Av. yield	Treatment	Av. yield
1.	607	1.	228
2.	787	2.	205
3.	693	3.	240
4.	709	4.	275
5.	896	5.	215
S.E./mean	=60.1 lb./ac.	S.E./mean	= 23.28 lb./ac. †

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

Ref :- Mh. 53(126).

Site :- Agri. Res. Stn., Jalagaon.

Type :- 'M'.

Object :- To find out the effect of applying  $P_2O_5$  to leguminous crop (*Groundnut*) and its after effects on the succeeding cereal crop *Jowar*.

## 1. BASAL CONDITIONS :

(i) (a) *Groundnut*—*Jowar*. (b) *Groundnut*. (c) As per treatments. (ii) (a) Deep black cotton type having a depth of 10' to 13'. (b) Refer soil analysis, Jalagaon. (iii) 25.6.1953. (iv) (a) N.A. (b) Drilling (c) 3 lb./ac. (d) 18" between rows and irregular between plants. (v) Nil. (vi) *Aispuri*. (vii) Unirrigated. (viii) Hoings on 16.7.1953 to 12.8.1953 ; weedings on 16.7.1953 and 12.8.1953. (ix) 23.77". (x) 24.11.1953.

## 2. TREATMENTS :

1. No  $P_2O_5$  (control).
2. 50 lb./ac. of  $P_2O_5$  as Super.
3. 100 lb./ac. of  $P_2O_5$  as Super.
4. 150 lb./ac. of  $P_2O_5$  as Super.
5. No manure (fallow for *Groundnut* of previous year).

Treatments applied to leguminous crop. Manures applied before sowing in full and spread evenly in the field.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 5. (iv) (a) 42' × 30'. (b) 30' × 18'. (v) 6' around the net plot. (vi) Yes.

## 4. GENERAL :

(i) Growth and general condition of the crop was satisfactory. (ii) Nil. (iii) Grain and chaff yield. (iv) (a) 1949 to 1954. (b) Yes. (c) N.A. (v) (a) and (b) Nil. (vi) Nil. (vii) *Udid* grown in between *Jowar* rows for which analysis was carried out separately.

## 5. RESULTS

<i>Jowar</i> yield		<i>Udid</i> crop	
(i) 1394 lb./ac.		(i) 486 lb./ac.	
(ii) 128.1 lb./ac.		(ii) 89.28 lb./ac.	
(iii) The treatments differences are highly significant.		(iii) Treatment do not differ significantly.	
(iv) Av. yield of grain in lb./ac.		(iv) Av. yield of grain in lb./ac.	
Treatments	Av. yield	Treatment	Av. yield
1.	1254	1.	482
2.	1248	2.	483
3.	1226	3.	593
4.	1383	4.	523
5.	1861	5.	350
S.E./mean	=57.3 lb./ac.	S.E./mean	= 39.91 lb./ac.

Crop :- Jowar (*Kharif*).  
Site :- Agri. Res. Stn., Jalagaon.

Ref :- Mh. 49(27).  
Type :- 'M'.

Object :- To study the N and P requirements of *Jowar* (without F.Y.M.)

### 1. BASAL CONDITIONS :

(i) (a) Cotton-*Jowar*-Groundnut. (b) Cotton. (c) N.A. (ii) (a) Deep black cotton type having a depth of 10' to 13'. (b) Refer soil analysis, Jalagaon. (iii) 2.7.1949. (iv) (a) N.A. (b) Seed drilled. (c) 3 lb. *Jowar* and 6 lb. *udid* per acre. (d) Between rows is 18". (e) N.A. (v) Nil. (vi) N.A. (vii) Unirrigated. (viii) Thinning on 14.7.1949; 4 times weeding and 3 times hoeing. (ix) 44.17". (x) 7.12.1949. for *Jowar*; 19.10.1949 for *udid*.

### 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. of N.  
(2) 4 levels of  $P_2O_5$  :  $P_0=0$ ,  $P_1=20$ ,  $P_2=40$  and  $P_3=60$  lb./ac. of  $P_2O_5$ .  
N as G.N.C. and  $P_2O_5$  as Super. Manures applied before sowing.

### 3. DESIGN :

(i) 4x4 Fact. in R.B.D. (ii) (a) 16. (b) 108'x168'. (iii) 4. (iv) (a) 27'x42'. (b) 15'x30'. (v) 6' all round net plot. (vi) Yes.

### 4. GENERAL :

(i) Normal. (ii) Stem-borer attack is not considerable. (iii) Weight of *udid* grain. Weight of *Jowar* grain and *kaabi*. (iv) (a) 1949 to 1951. (b) No. (c) N.A. (v) (a) No. (b) N.A. (vi) Nil. (vii) Purpose was to study the yield of *Jowar* only and as such yield of *udid* is not given.

### 5. RESULTS :

- (i) 1213 lb./ac.  
(ii) 158.8 lb./ac.  
(iii) Main effects of N alone is highly significant.  
(iv) Av. yield of grain in lb./ac.

	$N_0$	$N_1$	$N_2$	$N_3$	Mean
$P_0$	858	1081	1214	1472	1156
$P_1$	1002	1125	1214	1475	1204
$P_2$	1007	1110	1392	1581	1273
$P_3$	906	1234	1255	1472	1217
Mean	943	1138	1269	1500	1213

S.E. of marginal mean of N or P = 39.7 lb./ac.  
- S.E. for body of table = 79.4 lb./ac.

Crop :- Jowar (*Kharif*).  
Site :- Agri. Res. Stn., Jalagaon.

Ref :- Mh. 50(37).  
Type :- 'M'.

Object :- To study the N and P requirements of *kharif Jowar* (without F.Y.M.).

### 1. BASAL CONDITIONS :

(i) (a) Cotton-*Jowar*-Groundnut. (b) Cotton. (c) N.A. (ii) (a) Deep black cotton type having a depth of 10' to 13'. (b) Refer soil analysis, Jalagaon, (iii) 8.7.1950. (iv) (a) N.A. (b) Seeds drilled. (c) 3 lb./ac. of *jowar* with 6 lb./ac. *udid*. (d) Rows 18" apart. (e) N.A. (v) Nil. (vi) N.A. (vii) Unirrigated. (viii) 3 times hoeing and 2 times weeding. (ix) 21.73". (x) 2.10.1950 for *udid*, 7.12.1950 for *jowar*.

## 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) 4 levels of  $P_2O_5$  :  $P_0=0$ ,  $P_1=20$ ,  $P_2=40$  and  $P_3=60$  lb./ac.

N as G.N.C. and  $P_2O_5$  as Super applied before sowing.

## 3. DESIGN :

(i) 4x4 Fact. in R.B.D. (ii) (a) 16. (b) 168'x108'. (iii) 4. (iv) (a) 42'x27'. (b) 30'x15'. (v) 6' all round. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) The *jowar* crop was attacked by borer and Millipedes. (iii) Weight of *udid* and *jowar* grain and *kadbi*. (iv) (a) 1948 to 1951. (b) No. (c) N.A. (v) (a) No (b) N.A. (vi) Nil (vii) Purpose was to study the yield of *jowar* only hence only *Jowar* yield is given.

## 5. RESULTS :

(i) 1634 lb./ac.

(ii) 450.1 lb./ac.

(iii) Main effect of N alone is significant.

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

	$N_0$	$N_1$	$N_2$	$N_3$	Mean
$P_0$	1293	1792	1363	1803	1563
$P_1$	1236	1484	1856	1806	1596
$P_2$	1392	1582	1528	2025	1632
$P_3$	1479	1546	1810	2139	1744
Mean	1350	1601	1639	1943	1634

S.E. of any marginal mean

=112.5 lb./ac.

S.E. of body of table

=225.1 lb./ac.

Crop :- *Jowar (Kharif)*.

Ref :- Mh. 51(40).

Site :- Agri. Res. Stn., Jalagaon.

Type :- 'M'.

Object :- To study the N and P requirement of *kharif Jowar* (without F.Y.M.).

## 1. BASAL CONDITIONS :

(i) (a) Cotton—*Jowar*—Groundnut. (b) Cotton. (c) N.A. (ii) (a) Deep black cotton type having a depth of 10' to 13'. (b) Refer soil analysis, Jalagaon. (iii) 11.7.1951. (iv) (a) N.A. (b) Drilled. (c) 3 lb./ac. for *jowar* and 6 lb./ac. for *udid*. (d) Rows 18" apart. (e) N.A. (v) Nil. (vi) N.A. (vii) Unirrigated. (viii) 3 times hoeing and 2 times weeding. (ix) 20.14". (x) 30.9.1951 for *udid* and 5.12.1951 for *jowar*.

## 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) 4 levels of  $P_2O_5$  :  $P_0=0$ ,  $P_1=20$ ,  $P_2=40$  and  $P_3=60$  lb./ac.

N as G.N.C. and  $P_2O_5$  as Super applied before sowing.

## 3. DESIGN :

(i) 4×4 Fact. in R.B.D. (ii) (a) 16. (b) 168'×108'. (iii) 4. (iv) (a) 42'×27' (b) 30'×15'. (v) 6' all round. (vi) Yes.

## 4. GENERAL :

(i) Satisfactory. (ii) Nil. (iii) Weight of *Jowar* and *udid* grain and *kadbi*. (iv) (a) 1949 to 1951. (b) No. (c) N.A. (v) (a) No. (b) N.A. (vi) The season was not favourable for pulse crop as there was a long break of rains at a time when pulse crop was in flowering stage. (vii) Purpose was to study the yield of *jowar* crop only. Hence the yield of *udid* not recorded.

## 5. RESULTS :

- (i) 841 lb./ac.  
 (ii) 151.0 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>	N <sub>3</sub>	Mean
P <sub>0</sub>	695	875	835	782	797
P <sub>1</sub>	896	853	967	789	876
P <sub>2</sub>	805	799	837	841	821
P <sub>3</sub>	920	844	862	846	868
Mean	829	843	875	815	841

S.E. of any marginal mean = 37.8 lb./ac.  
 S.E. of body of table = 75.5 lb./ac.

Crop :- *Jowar (Kharif)*.

Site :- Agri. Res. Stn., Jalagaon.

Ref :- Mh. 48(17).

Type :- 'M'.

Object :- To study the N and P requirements of *kharif Jowar* (with F.Y.M.)

## 1. BASAL CONDITIONS :

(i) (a) Cotton—*Jowar*—Groundnut. (b) Cotton. (c) Nil. (ii) (a) Deep black cotton type having a depth of 10' to 13'. (b) Refer soil analysis, Jalagaon. (iii) 25.6.1948. (iv) (a) N.A. (b) Drilled. (c) 3 lb./ac. *jowar* with 6 lb./ac. of *udid*. (d) Rows 18" apart. (e) N.A. (v) 5 C.L./ac. of F.Y.M. given on 8.8.1948 (vi) N.A. (vii) Unirrigated. (viii) 2 interculturings. (ix) 24.46". (x) 1.12.1948.

## 2. TREATMENTS :

All combinations of (1) and (2)

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

(2) 4 levels of P<sub>2</sub>O<sub>5</sub>: P<sub>0</sub>=0, P<sub>1</sub>=20, P<sub>2</sub>=40 and P<sub>3</sub>=60 lb./ac.

N as G.N.C. and P<sub>2</sub>O<sub>5</sub> as Super applied before sowing.

## 3. DESIGN :

(i) 4×4 Fact. in R.B.D. (ii) (a) 16. (b) 108'×168'. (iii) 4. (iv) (a) 27'×42'. (b) 15'×30'. (v) 6' all round. (vi) Yes.

## 4. GENERAL :

(i) Continuous rainfall during July and August caused weakness in plants. Rainfall in November caused lodging in *Jowar*. Some grain germinated on the earheads. Grain became black. Yield reduced to 40% due to November rains. (ii) The crop was attacked by caterpillars and stemborers. (iii) Weight of *udid* and *jowar* grain. (iv) (a) 1948-1951. (b) No. (c) N.A. (v) (a) No. (b) N.A. (vi) Continuous rainfall during July and August. (vii) Purpose was to study the yield of *jowar* only and as such yield of *udid* not given.

## 5. RESULTS :

- (i) 1392 lb./ac.  
(ii) 280.7 lb./ac.  
(iii) Main effect of N and interaction NP are significant. Effect of P 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
P <sub>0</sub>	1138	1383	1643	1359	1381
P <sub>1</sub>	1201	1398	1481	1169	1312
P <sub>2</sub>	1392	1200	1800	1368	1440
P <sub>3</sub>	1404	1249	1310	1788	1438
Mean	1284	1307	1558	1421	1392

S.E. of any marginal mean = 70.2 lb./ac.

S.E. of body of table = 140.4 lb./ac.

Crop :- *Jowar (Kharif)*.

Site :- Agri. Res. Stn., Jalagaon.

Ref :- Mh. 49(26).

Type :- 'M'.

Object :- To study the N and P requirement of *kharif Jowar* (with F.Y.M.).

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Gram. (c) N.A. (ii) (a) Deep black cotton type having a depth of 10' to 13' (b) Refer soil analysis, Jalagaon. (iii) 1.7.1949. (iv) (a) N.A. (b) Drilled. (c) 3 lb./ac. of *jowar* and 6 lb./ac. of *udid*. (d) 18" row spacing for *jowar*. (e) N.A. (v) F.Y.M. at 5 C.L./ac. (vi) N.A. (vii) Un-irrigated (viii) Thinning on 14.7.1949, 4 weedings and 3 hoeings. (ix) 44.17". (x) 5.10.1949 for *udid* and 5.12.1949 for *jowar*.

## 2. TREATMENTS :

All combinations of (1) and (2)

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

(2) 4 levels of P<sub>2</sub>O<sub>5</sub> : P<sub>0</sub>=0, P<sub>1</sub>=20, P<sub>2</sub>=40 and P<sub>3</sub>=60 lb./ac.

N as G.N.C. and P<sub>2</sub>O<sub>5</sub> as Super applied before sowing.

## 3. DESIGN :

(i) 4×4 Fact. in R.B.D. (ii) (a) 16. (b) 108'×168'. (iii) 4. (iv) (a) 27'×42'. (b) 15'×30'. (v) 6' all round. (vi) Yes.

## 4. GENERAL :

(i) Normal. (ii) Stem-borer attack. (iii) Weight of *udid* grain, *jowar* grain and *kadbi*. (iv) 1948 to 1951. (b) No. (c) N.A. (v) (a) No. (b) N.A. (vi) Nil. (vii) Purpose was to study the yields of *jowar* only and as such yield of *udid* not given.

## 5. RESULTS :

- (i) 1508 lb./ac.  
 (ii) 182.0 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
P <sub>0</sub>	1121	1348	1339	1942	1438
P <sub>1</sub>	1195	1497	1582	1965	1560
P <sub>2</sub>	1140	1492	1710	1887	1557
P <sub>3</sub>	1302	1309	1625	1671	1477
Mean	1190	1412	1564	1866	1508

S.E. of any marginal mean = 45.5 lb./ac.

S.E. of body of table = 91.0 lb./ac.

Crop :- *Jowar (Kharif)*.

Ref :- Mh. 50(36).

Site :- Agri. Res. Stn., Jalagaon.

Type :- 'M'.

Object :- To study the N and P requirement of *Kharif Jowar* (with F.Y.M.)

## 1. BASAL CONDITIONS :

(i) (a) Cotton-*Jowar*-Groundnut. (b) Cotton. (c) N.A. (ii) (a) Deep black cotton type having a depth of 10 to 13'. (b) Refer soil analysis, Jalagaon. (iii) 8.7.1950. (iv) (a) N.A. (b) Drilled. (c) 3 lb./ac. of *jowar* and 6 lb./ac. of *udid*. (d) Rows 18" apart. (e) N.A. (v) 5 C.L. of F.Y.M./ac. (vi) N.A. (vii) Unirrigated. (viii) 3 hoeings and 2 weedings. (ix) 21.74". (x) 1.10.1950 for *udid*, 7.12.1950 for *jowar*.

## 2. TREATMENTS :

All combinations of (1) and (2)

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

(2) 4 levels of P<sub>2</sub>O<sub>5</sub> : P<sub>0</sub>=0, P<sub>1</sub>=20, P<sub>2</sub>=40 and P<sub>3</sub>=60 lb./ac.

N as G.N.C. and P<sub>2</sub>O<sub>5</sub> as Super applied before sowing.

## 3. DESIGN :

(i) 4×4 Fact. in R.B.D. (ii) (a) 16. (b) 168'×108'. (iii) 4. (iv) (a) 42'×27'. (b) 30'×15'. (v) 6' all round. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Attack of borers and Millipeds on *jowar* crop. (iii) Weight of *udid* and *jowar* grain and *kadbi*. (iv) (a) 1948-51. (b) No. (c) N.A. (v) (a) No. (b) N.A. (vi) Nil. (vii) Purpose was to study the yields of *jowar* crop only and as such yield of *udid* not given.

## 5. RESULTS :

- (i) 2410 lb./ac.  
 (ii) 441.4 lb./ac.  
 (iii) Main effect of N alone 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
P <sub>0</sub>	2222	2553	2251	2742	2442
P <sub>1</sub>	2456	2169	2369	2671	2416
P <sub>2</sub>	2221	2465	2461	2837	2496
P <sub>3</sub>	2009	2061	2417	2662	2287
Mean	2227	2312	2375	2728	2410

S.E. of any marginal mean = 110.4 lb./ac.  
 S.E. of body of table = 220.7 lb./ac.

Crop :- Jowar (*Kharif*).

Ref :- Mh. 51(39).

Site :- Agri. Res. Stn., Jalagaon.

Type :- 'M'.

Object :- To study the N and P requirement of *kharif Jowar* (with F.Y.M.)

## 1. BASAL CONDITIONS :

(i) (a) Cotton—*Jowar*—Groundnut. (b) Cotton. (c) N.A. (ii) (a) Deep black cotton type having a depth of 10' to 13'. (b) Refer soil analysis, Jalagaon. (iii) 10.7.1951. (iv) (a) N.A. (b) Seeds drilled. (c) 3 lb./ac. *jowar* and 6 lb./ac. *udid*. (d) Rows 18" apart. (e) N.A. (v) 5 C.L./ac. of F.Y.M. (vi) N.A. (vii) Unirrigated. (viii) 3 times hoeing and 2 times weeding. (ix) 20.14". (x) 30.9.1951 for *udid*, 5.12.1951 for *jowar*.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 4 levels of N : N<sub>0</sub>=0, N<sub>1</sub>=20, N<sub>2</sub>=40 and N<sub>3</sub>=60 lb./ac.(2) 4 levels of P<sub>2</sub>O<sub>5</sub> : P<sub>0</sub>=0, P<sub>1</sub>=20, P<sub>2</sub>=40 and P<sub>3</sub>=60 lb./ac.N as G.N.C. and P<sub>2</sub>O<sub>5</sub> as super applied before sowing.

## 3. DESIGN :

(i) 4x4 Fact. in R.B.D. (ii) (a) 16. (b) 168' x 108'. (iii) 4. (iv) (a) 42' x 27'. (b) 30' x 15'. (v) 6' all round. (vi) Yes.

## 4. GENERAL :

(i) Satisfactory. (ii) Nil. (iii) Weight of *jowar* and *udid* grain and *hadbi*. (iv) (a) 1948 to 1951. (b) No. (c) No. (v) 'a' No. (b) N.A. (vi) The season was not favourable for pulse crop as there was a long break of rains at time when pulse crop was in flowering stage. (vii) Purpose was to study the yield of *jowar* crop only and as such yield of *udid* not given.

## 5. RESULTS :

(i) 920 lb./ac.

(ii) 135.5 lb./ac.

(iii) Main effect of N alone 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
P <sub>0</sub>	939	903	839	871	888
P <sub>1</sub>	850	1116	852	800	905
P <sub>2</sub>	850	1026	877	929	921
P <sub>3</sub>	918	994	950	994	964
Mean	889	1010	880	899	920

S.E. of any marginal mean = 33.9 lb./ac.  
 S.E. of body of table = 67.8 lb./ac.

Crop :- Jowar (*Kharif*).

Ref :- Mh. 52(68).

Site :- Agri. Res. Stn., Jalagaon.

Type :- 'M'.

Object :- To study the manurial (N, P and F.Y.M.) requirements of *kharif Jowar*.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Gram. (c) N.A. (ii) (a) Deep black cotton type having a depth of 10 to 13 feet. (b) Refer soil analysis, Jalagaon. (iii) 25.6.1952. (iv) (a) N.A. (b) Drilled. (c) 3 lb./ac. (d) Rows 18" apart. (e) Nil. (v) Nil. (vi) *Aispuri*. (vii) Unirrigated. (viii) Hoings 2 times, weeding 2 times. (ix) 17.61". (x) 27.11.1952.

## 2. TREATMENTS :

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

(1) 3 levels of N :  $N_1=40$ ,  $N_2=60$  and  $N_3=80$  lb./ac.(2) 2 levels of  $P_2O_5$  :  $P_1=20$  and  $P_2=40$  lb./ac.(3) 2 levels of F.Y.M. :  $F_1=5$  and  $F_2=10$  C.L./ac.N as A/S and G.N.C. in 1 : 1 and  $P_2O_5$  as Super applied before sowing.

## 3. DESIGN :

(i)  $3 \times 2 \times 2$  Fact. in R.B.D. (ii) (a) 12. (b)  $84' \times 108'$ . (iii) 4. (iv) (a)  $42' \times 18'$ . (b)  $36' \times 12'$ . (v) 3' all round. (vi) Yes.

## 4. GENERAL :

(i) Germination was satisfactory. The *Jowar* crop suffered as there was no rain at proper time. The *Udid* crop also suffered due to break of rain at the time of its flowering. (ii) Serious attack of stem-borer. Attack of long smut disease. (iii) Dates of germination, flowering and maturity. Weight of *Jowar* grain and *kabdi* and *udid*. (iv) (a) 1952 to 1955. (b) No. (c) N.A. (v) (a) No. (b) N.A. (vi) Break of rain. (vii) Purpose was to study the yields of *jowar* only and as such yield of *udid* was not given.

## 5. RESULTS :

(i) 956 lb./ac.

(ii) 164.4 lb./ac.

(iii) The interaction  $N \times F$  alone is significant.

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

	$N_1$	$N_2$	$N_3$	Mean	$F_1$	$F_2$
$P_1$	959	1059	872	963	967	959
$P_2$	961	943	940	948	932	964
Mean	960	1001	906	956		
	982	905	963	950		
$F_2$	939	1098	848	961		

S.E. of N marginal mean

=41.1 lb./ac.

S.E. of P or F marginal mean

=33.3 lb./ac.

S.E. of body of  $N \times P$  or  $N \times F$  table

=58.5 lb./ac.

S.E. of body of  $P \times F$  table

=47.4 lb./ac.

Crop :- Jowar (*Kharif*).

Ref :- Mh. 53(127).

Site :- Agri. Res. Stn., Jalagaon.

Type :- 'M'.

Object :- To study the manurial (N, P and F.Y.M.) requirement of *Kharif jowar*.

## 1. BASAL CONDITIONS :

(i) (a) Cotton—*Jowar*—Groundnut. (b) Cotton. (c)  $7\frac{1}{2}$  C.L./ac. of F.Y.M. (ii) (a) Deep black cotton type having a depth of 10 to 13 feet. (b) Refer soil analysis, Jalagaon. (iii) 27.6.1953. (iv) (a) N.A. (b) Drilled. (c) 3 lb./ac. (d) Rows 18" apart. (e) N.A. (v) No. (vi) *Aispurt*. (vii) Unirrigated. (viii) Hoings on 17.7.1953, and 23.8.1953 (ix) 23.77". (x) 14.11.1953.



## 2. TREATMENTS :

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

(1) 3 levels of N :  $N_1=40$ ,  $N_2=60$  and  $N_3=80$  lb./ac.

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

(3) 2 levels of F.Y.M. :  $F_1=5$  and  $F_2=10$  C.L./ac.

N as A/S and G.N.C. in 1 : 1 and  $P_2O_5$  as Super applied before sowing.

## 3. DESIGN :

(i)  $3 \times 2 \times 2$  Fact. in R.B.D. (ii) (a) 12. (b)  $84' \times 108'$ . (iii) 4. (iv) (a)  $42' \times 18'$ . (b)  $36' \times 12'$ . (v) 3' all round. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Nil. (iii) Dates of germination, flowering and maturity. Weight of *jowar* grain and *kadbi*. (iv) (a) 1952 to 1955. (b) No. (c) N.A. (v) (a) No. (b) N.A. (vi) Nil. (vii) Purpose was to study the yield of *jowar* only and hence the yield of *udid* not given.

## 5. RESULTS :

- (i) 1845 lb./ac.  
 (ii) 167.4 lb./ac.  
 (iii) Main effect of F alone is significant.  
 (iv) Av. yield of grain in lb./ac.

	$N_1$	$N_2$	$N_3$	Mean	$F_1$	$F_2$
$P_1$	1793	1810	1877	1827	1747	1910
$P_2$	1829	1824	1932	1862	1794	1930
Mean	1811	1817	1904	1845		
$F_1$	1699	1771	1838	1769		
$F_2$	1924	1864	1972	1920		

S.E. of N marginal mean = 41.9 lb./ac.  
 S.E. of F or P marginal mean = 34.3 lb./ac.  
 S.E. of body of  $N \times P$  or  $N \times F$  table = 59.5 lb./ac.  
 S.E. of body of  $P \times F$  table = 48.4 lb./ac.

Crop :- Jowar (*Kharif*).

Site :- Agri. Res. Stn., Jalagaon.

Ref. :- Mh. 52(315)

Type :- 'M'

Object :—To study the residual effect of manures without a basal dose of F.Y.M. applied to cotton crop on yield of *Jowar*.

## 1. BASAL CONDITIONS :

- (i) (a) N.A. (b) Cotton. (c) As per treatments. (ii) (a) Deep black cotton soil. (b) Refer soil analysis, Jalagaon. (iii) 30. 6. 1952. (iv) (a) Nil. (b) Drilling. (c) 3 lb./ac. (d) 18" between rows. (e) —. (v) Nil. (vi) N.A. (vii) Unirrigated. (viii) 2 weedings and 2 hoeings. (ix) 17.61". (x) 25.12.1952.

## 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) 2 sources of N :  $S_1=G.N.C.$  and  $S_2=A/S$ .

(3) 3 levels of  $P_2O_5$  :  $P_0=0$ ,  $P_1=30$  and  $P_2=60$  lb./ac.

$P_2O_5$  as Super. Manures applied to previous crop cotton.

## 3. DESIGN :

(i)  $3 \times 3 \times 2$  Fact. in R.B.D. (ii) (a) 18. (b) N.A. (iii) 4. (iv) (a)  $42' \times 18'$ . (b)  $36' \times 12'$ . (v) 3' all round. (vi) Yes.

## 4. GENERAL :

(i) Normal. (ii) Attack of millipeds, stemborer and long smut. (iii) Grain yield. (iv) (a) No. (b) Nil. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 566 lb./ac.  
 (ii) 86.46 lb./ac.  
 (iii) Main effect of N and selective vs others are significant while all other effects and interactions are not significant.  
 (iv) Av. yield of grain in lb./ac.  
 Selective treatments.  
 $P_0 = 572$  lb./ac.  
 $P_1 = 600$  lb./ac.  
 $P_2 = 636$  lb./ac.

	$P_0$	$P_1$	$P_2$	Mean
$N_1S_1$	566	585	582	578
$N_1S_2$	558	577	634	590
$N_2S_1$	487	462	512	487
$N_2S_2$	569	521	470	543
Mean	545	554	549	

S.E. of the maginal mean of NS = 24.96 lb./ac.  
 S.E. of the maginal mean of P = 21.61 lb./ac.  
 S.E. of the body of table = 43.23 lb./ac.  
 S.E. of selective treatments = 30.57 lb./ac.  
 S.E. of selective vs any other mean in the body of table = 52.95 lb./ac.

Crop :- Jowar (*Kharif*)

Ref. :- Mh. 52(103).

Site :- Agri. Res. Stn., Jalagaon.

Type :- 'M'

Object :- To study the residual effect of manures with basal dose of F.Y.M. applied to Cotton crop on yield of Jowar.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) Cotton. (c) As per treatments. (ii) (a) Deep black cotton type having a depth of 10 to 13 feet. (b) Refer soil analysis, Jalagaon. (iii) 30. 6. 1951. (iv) (a) N.A. (b) Drilling. (c) 3 lb./ac. (d) 18" between rows. (e) N.A. (v) Nil. (vi) *Aispuri*. (vii) Unirrigated. (viii) Weeding 16. 7. 1952 and 14. 8. 1952, hoeing on 10. 7. 1952 and 8. 8. 1952. (ix) 17.61". (x) 24. 11. 1952.

## 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) 2 sources of N  $S_1 = G.N.C.$  and  $S_2 = A/S.$   
 (3) 3 levels of  $P_2O_5$  :  $P_0 = 0$ ,  $P_1 = 30$  and  $P_2 = 60$  lb./ac.  
 $P_2O_5$  as Super. Manures applied to previous cotton crop.

## 3. DESIGN :

(i)  $3 \times 3 \times 2$  Fact. in R.B.D. (ii) (a) 18. (b) N.A. (iii) 4. (iv) (a)  $42' \times 18'$ . (b)  $36' \times 12'$ . (v) 3' all round. (vi) Yes.

## 4. GENERAL:

(i) Germination was not satisfactory. No rains at proper time. (ii) Attack of Millipedes, stemborer and long smut and seasonal abnormalities, hence less yield. (iii) Grain and fodder yield. (iv) (a) No. (b) No. (c) N.A. (v) (a) and (b) No. (vi) Nil. (vii) *Udid* is a minor crop and hence the yield is not given.

## 5. RESULTS:

- (i) 424 lb./ac.  
 (ii) 146.4 lb./ac.  
 (iii) Selective treatments S and N effects are significant.  
 (iv) Av. yield of grain in lb./ac.  
 Selective treatments  
 $P_0=470$  lb./ac.  
 $P_1=529$  lb./ac.  
 $P_2=295$  lb./ac.

	$P_0$	$P_1$	$P_2$	Mean
$N_1S_1$	456	399	416	424
$N_1S_2$	481	589	572	547
$N_2S_1$	273	342	386	334
$N_2S_2$	301	507	331	380
Mean	378	459	426	

S.E. of the marginal mean of NS =42.3 lb./ac.  
 S.E. of the marginal mean of P =36.7 lb./ac.  
 S.E. of the body of table =72.6 lb./ac.  
 S.E. of selective treatments =51.8 lb./ac.  
 S.E. of selective vs any other mean  
 in the body of table =89.6 lb./ac.

Crop :-Jowar (*Rabi*).

Site :-Agri. Res. Stn., Jeur.

Ref :-Mh. 51(101).

Type :-'M'.

Object :-To study the N and  $P_2O_5$  requirements of *Jowar* (with and without F.Y.M.)

## 1. BASAL CONDITIONS:

(i) (a) Nil. (b) Gram and *Jowar*. (c) Nil. (ii) (a) Medium deep. (b) N.A. (iii) 30.9.1951. (iv) (a) 4 harrowings. (b) Drilled. (c) 4 lb./ac. (d) 18" apart. (e) N.A. (v) Nil. (vi) M-35-1. (vii) Unirrigated. (viii) Nil. (ix) N.A. (x) 26.1.1952.

## 2. TREATMENTS:

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

(1) 4 levels of N:  $N_0=0$ ,  $N_1=10$ ,  $N_2=20$  and  $N_3=30$  lb./ac.

(2) 4 levels of  $P_2O_5$ :  $P_0=0$ ,  $P_1=10$ ,  $P_2=20$  and  $P_3=30$  lb./ac.

(3) 2 levels of F.Y.M.:  $F_0=0$  and  $F_1=5$  C.L./ac.

$P_2O_5$  as Super and N as G.N.C. applied on 5.9.1951 and F.Y.M. on 5.8.1951.

## 3. DESIGN:

(i)  $4 \times 4 \times 2$  Fact. in R.B.D. (ii) (a) 32. (b) N.A. (iii) 2. (iv) (a)  $46' \times 33'$ . (b)  $40' \times 27'$ . (v) 3' all round. (vi) Yes.

## 4. GENERAL:

(i) Good. (ii) Sugary secretion. (iii) Grain and fodder yield. (iv) (a) 1951-continued. (b) No. (c) Nil. (v) (a) Nil. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 593 lb./ac.  
(ii) 203.3 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>	N <sub>3</sub>	Mean	F <sub>0</sub>	F <sub>1</sub>
P <sub>0</sub>	594	671	749	648	666	707	625
P <sub>1</sub>	408	656	570	538	543	584	502
P <sub>2</sub>	713	538	545	558	588	623	553
P <sub>3</sub>	715	452	525	615	577	525	629
Mean	607	579	597	590	593		
F <sub>0</sub>	589	515	669	667	610		
F <sub>1</sub>	626	644	526	513	577		

S.E. of marginal mean of N or P = 50.8 lb./ac.  
S.E. of marginal mean of F = 35.7 lb./ac.  
S.E. of body of tables P×F or N×F = 71.4 lb./ac.  
S.E. of body of table P×N = 101.7 lb./ac.

Crop :- Jowar (*Rabi*).  
Site :- Agri. Res. Stn., Jeur.

Ref :- Mh. 52(377).  
Type :- 'M'.

Object :- To study the optimum N and P<sub>2</sub>O<sub>5</sub> requirements of *Jowar* (with and without F.Y.M.)

## 1. BASAL CONDITIONS :

(i) (a) *Jowar*—Gram. (b) Gram. (c) Nil. (ii) (a) Medium deep. (b) N.A. (iii) 5.10.1952. (iv) (a) 2 harrowings. (b) Drilling. (c) 4 lb./ac. (d) 18" between rows. (e) N.A. (v) Nil. (vi) M-35-1. (vii) Unirrigated. (viii) 2 interculturings. (ix) 3.44". (x) 27.1.1953.

## 2. TREATMENTS :

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

- (1) 4 levels of N : N<sub>0</sub>=0, N<sub>1</sub>=10, N<sub>2</sub>=20 and N<sub>3</sub>=30 lb./ac.  
(2) 4 levels of P<sub>2</sub>O<sub>5</sub> as Super : P<sub>0</sub>=0, P<sub>1</sub>=10, P<sub>2</sub>=20 and P<sub>3</sub>=30 lb./ac.  
(3) 2 levels of F.Y.M. : F<sub>0</sub>=0 and F<sub>1</sub>=5 C.L./ac.

## 3. DESIGN :

(i) 2×4×4 Fact. in R.B.D. (ii) (a) 32. (b) N.A. (iii) 3. (iv) (a) 32'×25'. (b) 27'×20'. (v) 2.5' around. (vi) Yes.

## 4. GENERAL :

(i) Very poor growth. (ii) Nil. (iii) Grain yield. (iv) (a) 1951—52 ; contd. (b) No. (c) Nil. (v) (a) Chas and Sholapur. (b) N.A. (vi) Nil. (vii) Nil.

## 5. RESULTS :

- (i) 85 lb./ac.  
(ii) 96.8 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	F <sub>0</sub>	F <sub>1</sub>
P <sub>0</sub>	34	36	211	55	84	53	115
P <sub>1</sub>	135	48	49	77	77	96	58
P <sub>2</sub>	72	62	2	91	88	106	69
P <sub>3</sub>	102	92	119	54	92	94	89
Mean	86	59	126	69	85		
F <sub>0</sub>	94	79	96	79	87		
F <sub>1</sub>	78	40	156	59	83		

S.E. of marginal mean of N or P =24.2 lb./ac.

S.E. of marginal mean of F =17.1 lb./ac.

S.E. of body of table N×P =48.4 lb./ac.

S.E. of the body of table N×F or P×F =34.2 lb./ac.

Crop :- Jowar (*Rabi*)

Site :- Agri. Res. Stn., Jeur.

Ref. :- Mh. 53(178).

Type :- 'M'.

Object :—To study the N & P<sub>2</sub>O requirements of *Jowar* (with and without F.Y.M.)

## 1. BASAL CONDITIONS :

(i) (a) No. (b) Gram. (c) Nil. (ii) (a) Medium deep. (b) N.A. (iii) 23. 9. 1953. (iv) (a) 2 harrowings and one ploughing. (b) Drilled. (c) 4 lb./ac. (d) 18". (e) N.A. (v) Nil. (vi) M-35-1. (vii) Unirrigated. (viii) 1 interculturing. (ix) 5.88". (x) 5. 2. 1954.

## 2. TREATMENTS :

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

(1) 4 levels of N : N<sub>0</sub>=0, N<sub>1</sub>=10, N<sub>2</sub>=20 and N<sub>3</sub>=30 lb./ac.(2) 4 levels of P<sub>2</sub>O<sub>5</sub> : P<sub>0</sub>=0, P<sub>1</sub>=10, P<sub>2</sub>=20 and P<sub>3</sub>=30 lb./ac.(3) 2 levels of F.Y.M. : F<sub>0</sub>=0 and F<sub>1</sub>=5 C.L./ac.P<sub>2</sub>O<sub>5</sub> as Super and N as G.N.C. applied on 23. 9. 1953 and F.Y.M. on 17.5.1953.

## 3. DESIGN :

(i) 4×4×2 Fact. in R.B.D. (ii) (a) 32. (b) N.A. (iii) 2. (iv) (a) 46'×33'. (b) 40'×27'. (v) 3' all round. (vi) Yes.

## 4. GENERAL :

(i) Normal. (ii) Nil. (iii) Grain and fodder yield. (iv) (a) 1951—continued. (b) No. (c) Nil. (v) (a) Nil. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 777 lb./ac.

(ii) 299.8 lb./ac.

(iii) Interaction N×F alone 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>	F <sub>1</sub>
P <sub>0</sub>	773	789	943	808	828	818	839
P <sub>1</sub>	668	697	716	768	712	795	629
P <sub>2</sub>	675	1031	773	827	827	853	798
P <sub>3</sub>	844	685	586	847	745	687	794
Mean	740	801	754	813	777		
F <sub>0</sub>	613	806	949	783	789		
F <sub>1</sub>	866	791	561	842	765		

S.E. of marginal mean of N or P = 74.9 lb./ac.  
 S.E. of the marginal mean of F = 53.1 lb./ac.  
 S.E. of body of table N×P = 149.9 lb./ac.  
 S.E. of body of tables N×F or F×P. = 106.0 lb./ac.

Crop :- Jowar (*Kharif*).

Ref. :- Mh. 53(298).

Site :- Agri. Res. Stn., Karad.

Type :- 'M'.

Object :—To study the effect of Calcium Cynamide in comparison with the other manures.

## 1. BASAL CONDITIONS :

(i) (a) Groundnut-*Jowar*. (b) Groundnut. (c) 5 C.L./ac. of F.Y.M. (ii) (a) Medium black. (b) N.A. (iii) 16. 7. 1953. (iv) (a) 1 ploughing and 2 harrowings. (b) to (e) N.A. (v) 5 C.L./ac. of F.Y.M. applied one month before sowing. (vi) *Shendli* 4-5. (vii) Unirrigated. (viii) N.A. (ix) 38". (x) 16. 7. 1953.

## 2. TREATMENTS :

- 60 lb./ac. of N as A/S.
- 60 lb./ac. of N as A/S+G.N.C. in 1 : 1 ratio.
- 60 lb./ac. of N as A/S+Calcium Cynamide
- 60 lb./ac. of N as Calcium Cynamide+G.N.C. in 1 : 1 ratio.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 2. (iv) (a) 43'×36'. (b) 34'×32'. (v) 4.5'×2'. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Slight attack of stemborer ; affected plants removed. (iii) Grain yield. (iv) (a) 1952 to N.A. (b) N.A. (c) N.A. (v) (a) N.A. (b) N.A. (vi) Nil. (vii) Nil.

## 5. RESULTS :

- 1304 lb./ac.
- 216.2 lb./ac.
- Treatments are not significantly different.
- Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	1367
2.	1360
3.	935
4.	1552
S.E./mean	=152.9 lb./ac.

Crop :- Jowar (*Rabi*).

Ref :- Mh. 52(81).

Site :- Agri. Res. Stn., Kopergaon.

Type :- 'M'.

Object :—To study the suitability of Dicalcium Phosphate in place of other phosphatic manures.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) Fallow. (c) No. (ii) (a) Medium black. (b) Refer soil analysis, Kopergaon. (iii) 29.9.1952. (iv) (a) 1 ploughing and 1 harrowing. (b) Drilling. (c) 6 lb./ac. (d) 18". (e) N.A. (v) 5 C.L./ac. of F.Y.M. + 60 lb./ac. of N as A/S applied on 28.9.1952. (vi) M.35-1. (vii) Irrigated. (viii) 1 weeding. (ix) Nil. (x) 1.3.1953 to 3.3.1953.

## 2. TREATMENTS :

1. 20 lb./ac. of  $P_2O_5$  as Dicalcium Phosphate.  
2. 20 lb./ac. of  $P_2O_5$  as Super.  
Manures broadcast on 29.9.1952.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 2. (b) N.A. (iii) 12. (iv) (a) 42'×21'. (b) 30'×9'. (v) 6' around. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) White *chikla* disease. (iii) Grain and fodder yield. (iv) (a) 1952-1953. (b) and (c) N.A. (v) (a) Nil. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 1612 lb./ac.  
(ii) 385.5 lb./ac.  
(iii) Treatments are not significantly different.  
(iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	1648
2.	1575
S.E./mean	= 111.5 lb./ac.

Crop :- Jowar (*Rabi*).

Ref :- Mh. 53(40).

Site :- Agri. Res. Stn., Kopergaon.

Type :- 'M'.

Object :—To study the suitability of Dicalcium phosphate in place of other phosphatic manures.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) (a) A type. (b) Refer soil analysis, Kopergaon. (iii) 22.9.1953. (iv) (a) to (e) N.A. (v) 5 C.L./ac. of F.Y.M. applied before sowing. (vi) M.35-1 (late). (vii) Irrigated. (viii) 1 interculturing and 2 weedings. (ix) Nil. (x) 11.3.1954.

## 2. TREATMENTS

1. 20 lb./ac. of  $P_2O_5$  as Dicalcium Phosphate.  
2. 20 lb./ac. of  $P_2O_5$  as Super.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 2. (b) N.A. (iii) 12. (iv) (a) 42'×21'. (b) 30'×9'. (v) 6' around. (vi) Yes.

## 4. GENERAL :

(i) Uniform and healthy. (ii) Nil. (iii) Germination, dates of flowering, height, tillers and fodder yield etc. (iv) (a) 1952 to 1955. (b) No. (c) N.A. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS

(i) 1432 lb./ac.  
(ii) 304.9 lb./ac.  
(iii) Treatments do not differ significantly.

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

Treatment	Av. yield
1.	1399
2.	1465
S.E./mean	= 89.1 lb./ac.

Crop :- Jowar (*Rabi*).

Ref :- Mh. 53(251).

Site :- Agri. Res. Stn., Kopergaon.

Type :- 'M'.

Object :- To study the effect of inorganic manures in combination with green manuring on *Rabi Jowar*.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) *Sann*. (c) As per treatments. (ii) (a) H type. (b) Refer soil analysis, Kopergaon. (iii) 18.9.1953. (iv) [(a) Harrowing. (b) to (e) N.A. (v) Nil. (vi) M-35-1 (late). (vii) Irrigated. (viii) N.A. (ix) 4.17". (x) 17.2.1954.

## 2. TREATMENTS :

1. *Sann* for G.M.
2. 50 lb./ac. of  $P_2O_5$  applied to *sann* and *sann* used as G.M.
3. 50 lb./ac. of  $P_2O_5$  applied to *Jowar* at burying of *sann* as G.M.
4. 30 lb./ac. of N as A/S applied to *Jowar* at burying of *sann* as G.M.
5. 60 lb./ac. of N as A/S applied to *Jowar* at burying of *sann* as G.M.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 2. (iv) (a) 42' x 40'. (b) 34' x 22'. (v) 4' all around. (vi) Yes.

## 4. GENERAL :

(i) The crop was healthy but due to attack of *chiklta* disease the crop suffered to a considerable extent. (ii) *Chiklta* disease. (iii) Germination data, flowering data, height, tillers etc. and grain yield. (iv) (a) 1952 to 1955. (b) No. (c) N.A. (v) (a) Not known. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 1011 lb./ac.  
 (ii) 287.6 lb./ac.  
 (iii) Treatments do not differ significantly.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	1290
2.	860
3.	914
4.	1112
5.	880
S.E./mean	= 203.4 lb./ac.

Crop :- Jowar (*Rabi*).

Ref :- Mh. 53(213).

Site :- Agri. Res. Stn., Mohol.

Type :- 'M'.

Object :- To study the residual effect of leguminous crop Groundnut grown with and without  $P_2O_5$  on *Jowar*.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Groundnut. (c) As per treatments. (ii) (a) Medium black. (b) Refer soil analysis, Mohol. (iii) 23.9.1953. (iv) (a) Ploughing once in 3 years and 4 harrowings. (b) Drilled. (c) 4 lb./ac. (d) and (e) N.A. (v) F.Y.M. at 5 C.L./ac. applied once in 3 years. (vi) M-35-1. (vii) Unirrigated. (viii) Interculturing on 21.11.1953 and 8.12.1953. (ix) 8.89". (x) 3.3.1954.



## 2. TREATMENTS :

1. Fallow in previous season.
2. No  $P_2O_5$  applied to previous crop Groundnut (control).
3. 50 lb./ac. of  $P_2O_5$  applied to previous crop Groundnut.
4. 100 lb./ac. of  $P_2O_5$  applied to previous crop Groundnut.
5. 150 lb./ac. of  $P_2O_5$  applied to previous crop Groundnut.

## 3. DESIGN :

- (i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 5. (iv) (a)  $42' \times 30'$ . (b)  $30' \times 18'$ . (v) 6' allround. (vi) Yes.

## 4. GENERAL :

- (i) Below normal. (ii) The crop was attacked by stemborer, root-rot, sugar disease ; aphids were also seen during grain formation. (iii) Weight of fodder and grain yield. (iv) (a) 1952—1955. (b) No. (c) N.A. (v) (a) No. (b) N.A. (vi) Nil. (vii) The soil in which the crop was grown is very heavy. Continuous and heavy rain in October had adverse effect on crop growth.

## 5. RESULTS :

- (i) 286 lb./ac.  
 (ii) 68.0 lb./ac.  
 (iii) Treatments do not differ significantly.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	236
2.	272
3.	268
4.	337
5.	316
S.E./mean	= 30.4 lb./ac.

Crop :-Jowar (*Rabi*).

Site :-Agri. Res. Stn., Mohol.

Ref :-Mh. 49(61).

Type :-'M'.

Object :-To see the residual effect of a leguminous crop *Chinamug* grown with and without  $P_2O_5$  on succeeding cereal *jowar* crop.

## 1. BASAL CONDITIONS :

- (i) (a) *Chinamug*—*Jowar*. (b) *Chinamug*. (c) As per treatments. (ii) (a) Medium black. (b) Refer soil analysis, Mohol. (iii) 18.9.1949. (iv) (a) N.A. (b) Drilled. (c) 4 lb./ac. (d) 18". (e) N.A. (v) Nil. (vi) M—35-1. (vii) Unirrigated. (viii) One interculturing. (ix) 1.14". (x) 16.2.1950.

## 2. TREATMENTS :

1. Fallow in previous crop season.
2. No  $P_2O_5$  applied to previous crop *Chinamug* (control).
3. 50 lb./ac. of  $P_2O_5$  applied to previous crop *Chinamug*.
4. 100 lb./ac. of  $P_2O_5$  applied to previous crop *Chinamug*.
5. 150 lb./ac. of  $P_2O_5$  applied to previous crop *Chinamug*.

## 3. DESIGN :

- (i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 5. (iv) (a)  $42' \times 27'$  (b)  $30' \times 15'$ . (v) 6' all round. (vi) Yes.

## 4. GENERAL :

- (i) and (ii) N.A. (iii) Grain yield. (iv) (a) 1949 to 1954. (b) No. (c) N.A. (v) (a) No. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 553 lb./ac.  
 (ii) 156.8 lb./ac.  
 (iii) Treatments do not differ significantly.

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

Treatment	Av. yield
1.	457
2.	591
3.	547
4.	509
5.	660
S.E./mean	=69.7 lb./ac.

Crop :- Jowar (*Rabi*).

Ref :- Mh. 53(214).

Site :- Agri. Res. Stn., Mohol.

Type :- 'M'.

Object :- To study the effect of *Chinamug* grown with and without  $P_2O_5$  on *Jowar* (*Rabi*).

## 1. BASAL CONDITIONS :

(i) (a) *Chinamug*—*Jowar*. (b) *Chinamug*. (c) As per treatments. (ii) (a) Medium black. (b) Refer soil analysis, Mohol. (iii) 18.10.1953. (iv) (a) Ploughing once in three years and harrowing 4 times. (b) Seeds drilled with 3 coultered drill. (c) 4 lb./ac. (d) 18" apart. (e) N.A. (v) F.Y.M. at 5 C.L./ac. is applied once in three years. (vi) M-35-1. (vii) Unirrigated. (viii) 3 bullock hoeings. (ix) 8.89". (x) 4.3.1954.

## 2. TREATMENTS :

- Fallow in previous crop season.
- No  $P_2O_5$  applied to previous crop *Chinamug* (control).
- 50 lb./ac. of  $P_2O_5$  applied to previous crop *Chinamug*.
- 100 lb./ac. of  $P_2O_5$  applied to previous crop *Chinamug*.
- 150 lb./ac. of  $P_2O_5$  applied to previous crop *Chinamug*.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 5. (iv) (a) 42'×27'. (b) 30'×15'. (v) 6' all round. (vi) Yes.

## 4. GENERAL :

(i) Fairly good. (ii) In early stage, the crop was slightly affected by sugary disease and in the advanced stage by aphid. (iii) Weight of fodder and grain. (iv) (a) 1949—1954. (b) No. (c) N.A. (v) (a) Nil. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 516 lb./ac.  
(ii) 114.8 lb./ac.  
(iii) Treatments do not differ significantly.  
(iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	486
2.	465
3.	540
4.	524
5.	566
S.E./mean	=51.3 lb./ac.

Crop :- Jowar (*Rabi*).

Ref :- Mh. 49(142).

Site :- Agri. Res. Stn., Mohol.

Type :- 'M'.

Object :- To study the effect of leguminous crop Gram raised with and without  $P_2O_5$  on succeeding cereal crop *Jowar*.

## 1. BASAL CONDITIONS :

(i) (a) Gram—*Jowar*. (b) Gram. (c) As per treatments. (ii) (a) Medium black. (b) Refer soil analysis, Mohol. (iii) N.A. (iv) (a) 4 harrowings. (b) Drilling. (c) 4 lb./ac. (d) 18" between rows. (e) N.A. (v) Nil. (vi) M-35-1. (vii) Unirrigated. (viii) 2 interculturings. (ix) 1.14". (x) N.A.

## 2. TREATMENTS :

1. Fallow in previous season.
2. No manure applied to previous crop Gram.
3. 50 lb./ac. of  $P_2O_5$  as Super applied to previous crop Gram.
4. 100 lb./ac. of  $P_2O_5$  as Super applied to previous crop Gram.
5. 150 lb./ac. of  $P_2O_5$  as Super applied to previous crop Gram.

## 3. DESIGN :

- (i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 5. (iv) (a) N.A. (b)  $\frac{1}{2}$  guntha. (v) N.A. (vi) Yes.

## 4. GENERAL :

- (i) N.A. (ii) Nil. (iii) Grain yield. (iv) (a) 1949 to 1954. (b) Yes. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 233 lb./ac.  
 (ii) 116.0 lb./ac.  
 (iii) Treatments do not differ significantly.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	124
2.	209
2.	235
4.	250
5.	197
S.E./mean	=51.8 lb./ac.

Crop :- Jowar (*Rabi*).

Site :- Agri. Res. Stn., Mohol.

Ref :- Mh. 50(7).

Type :- 'M'.

Object :—To study the effect of leguminous crop Gram grown with and without  $P_2O_5$  on the succeeding cereal crop *Jowar*.

## 1. BASAL CONDITIONS :

- (i) (a) Gram-*Jowar*. (b) Gram. (c) As per treatments. (ii) (a) Medium black. (b) Refer soil analysis, Mohol. (iii) 28 8.1950. (iv) (a) Ploughing once in 3 years. (b) Drilled. (c) 4 lb./ac. (d) 18" between rows. (e) N.A. (v) 5 C.L./ac. of F.Y.M. applied once in 3 years. (vi) M-35-1. (vii) Unirrigated. (viii) 4 interculturings. (ix) 9.91". (x) 22.2.1951.

## 2. TREATMENTS :

1. Fallow in previous season.
2. No manure applied to previous crop Gram.
3. 50 lb./ac. of  $P_2O_5$  as Super applied to previous crop Gram.
4. 100 lb./ac. of  $P_2O_5$  as Super applied to previous crop Gram.
5. 150 lb./ac. of  $P_2O_5$  as Super applied to previous crop Gram.

## 3. DESIGN :

- (i) R.B.D. (ii) (a) 5. (b) 150'×42'. (iii) 5. (iv) (a) 30'×42'. (b) 18'×30'. (v) 6' around. (vi) Yes.

## 4. GENERAL :

- (i) Sowing was delayed for want of proper mulch condition of soil. Germination satisfactory but growth of the crop was adversely affected by rains after sowing. (ii) Nil. (iii) Weight of grain. (iv) (a) 1949 to 1954. (b) No. (c) N.A. (v) (a) Nil. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 960 lb./ac.  
 (ii) 302.5 lb./ac.  
 (iii) Treatments do not differ significantly.

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

Treatment	Av. yield
1.	944
2.	973
3.	943
4.	963
5.	975
S.E./mean	= 135.5 lb./ac.

Crop :- Jowar (*Rabi*).

Ref :- Mh. 51(11).

Site :- Agri. Res. Stn., Mohol.

Type :- 'M'.

Object :- To study the effect of leguminous crop *Gram* grown with and without  $P_2O_5$  on succeeding cerea crop *Jowar*.

1. BASAL CONDITIONS :

(i) (a) *Gram*—*Jowar*. (b) *Gram*. (c) As per treatments. (ii) (a) Medium black. (b) Refer soil analysis, Mohol. (iii) 20.9.1951. (iv) (a) Ploughing once in 3 years and 4 harrowings. (b) Seeds drilled. (c) 4 lb./ac. (d) 18" spacing between rows. (e) N.A. (v) 5 C.L./ac. of F.Y.M. given once in 3 years. (vi) M—35—1. (vii) Unirrigated. (viii) 3 interculturings and weeding. (ix) 7.49". (x) 7.2.1952.

2. TREATMENTS :

- Fallow in previous season.
- No manure applied to previous crop *Gram*.
- 50 lb./ac. of  $P_2O_5$  as B.M. applied to previous crop *Gram*.
- 100 lb./ac. of  $P_2O_5$  as B.M. applied to previous crop *Gram*.
- 150 lb./ac. of  $P_2O_5$  as B.M. applied to previous crop *Gram*.

3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) 150' × 42'. (iii) 5. (iv) (a) 30' × 42'. (b) 18' × 30'. (v) 6' all round. (vi) Yes.

4. GENERAL :

(i) Very good. (ii) Sugary disease was noted. (iii) Weight of grain. (iv) (a) 1949 to 1954. (b) No. (c) N.A. (v) (a) Nil. (b) N.A. (vi) Nil. (vii) The atmosphere was not cloudy as is essential at the time of grain formation. There was no rain during the life of the crop. There was no moisture in the soil.

5. RESULTS :

- 956 lb./ac.
- 183.1 lb./ac.
- Treatments differ significantly.
- Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	1123
2.	736
3.	861
4.	974
5.	1085
S.E./mean	= 82.0 lb./ac.

Crop :- Jowar (*Rabi*).

Ref :- Mh. 53(212).

Site :- Agri. Res. Stn., Mohol.

Type :- 'M'.

Object :- To study the effect of *Gram* raised with and without  $P_2O_5$  on *Rabi Jowar*.

1. BASAL CONDITIONS :

(i) (a) *Jowar*—*Gram*—*Jowar*. (b) *Gram*. (c) As per treatments. (ii) (a) Medium black. (b) Refer soil analysis, Mohol. (iii) 19.9.1953. (iv) (a) Ploughing once in 3 years and 4 harrowings. (b) Drilling with a 3 coultered drill. (c) 4 lb./ac. (d) 18" apart. (e) N.A. (v) 5 C.L./ac. of F.Y.M. applied once in 3 years. (vi) M—35—1. (vii) Unirrigated. (viii) One bullock hoeing and 2 interculturings. (ix) 8.89". (x) 3.3.1954.

## 2. TREATMENTS :

1. Fallow in previous year.
2. No manure applied to previous crop Gram.
3. 50 lb./ac. of  $P_2O_5$  applied to previous crop Gram.
4. 100 lb./ac. of  $P_2O_5$  applied to previous crop Gram.
5. 150 lb./ac. of  $P_2O_5$  applied to previous crop Gram.

## 3. DESIGN :

- (i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 5. (iv) (a)  $42' \times 30'$ . (b)  $30' \times 48'$ . (v) 6' all round. (vi) Yes.

## 4. GENERAL :

- (i) Below normal. (ii) The crop was attacked by aphid at grain formation stage. Sugary disease was seen during early stage of the crop. (iii) Fodder and grain yield. (iv) (a) 1949 to 1954. (b) No. (c) N.A. (v) (a) No. (b) N.A. (vi) September and October rains were not favourable to the crop. (vii) Nil.

## 5. RESULTS :

- (i) 276 lb./ac.  
 (ii) 125 lb./ac.  
 (iii) Treatments do not differ significantly.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	332
2.	263
3.	250
4.	296
5.	241
S.E./mean	=55.9 lb./ac.

Crop :- Jowar (*Rabi*).

Site :- Agri. Res. Stn., Mohol.

Ref :- Mh. 48(35).

Type :- 'M'.

Object :—To study the deleterious effect of town compost on *Rabi Jowar*.

## 1. BASAL CONDITIONS :

- (i) (a) Nil. (b) *Jowar*. (c) As per treatments. (ii) (a) Medium black. (b) Refer soil analysis, Mohol. (iii) 3.10.1948. (iv) (a) N.A. (b) Drilling. (c) 4 lb./ac. (d) Rows 18" apart. (e) N.A. (v) Nil. (vi) M-35-1. (vii) Unirrigated. (viii) One weeding, hand hoeing and interculturing. (ix) 5.38". (x) 15.2.1949.

## 2. TREATMENTS :

All combinations of (1) and (2) + a control (no manure.)

(1) 2 levels of T.C.:  $C_1=2\frac{1}{2}$  and  $C_2=5$  C.L./ac. of T.C.

(2) 3 times of application of T.C. :  $T_1$ =Every year,  $T_2$ =Every alternate year starting from 1948 and  $T_3$ =Every alternate year starting from 1949.

There are only three independent treatments this year viz.  $M_1$ =control,  $M_2=2\frac{1}{2}$  C.L./ac. and  $M_3=5$  C.L./ac. of T.C.

## 3. DESIGN :

- (i) R.B.D. (ii) (a) 7. (3 for  $M_1$  and 2 each for  $M_2$  and  $M_3$ ). (b) N.A. (iii) 6. (iv) (a)  $42' \times 27'$ . (b)  $30' \times 15'$ . (v) 6' allround. (vi) Yes.

## 4. GENERAL :

- (i) Growth normal. (ii) Nil. (iii) Grain and fodder yield. (iv) (a) 1948—1952. (b) Yes. (c) N.A. (v) (a) No. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 250.0 lb./ac.  
 (ii) 68.3 lb./ac.  
 (iii) Treatments do not differ significantly.

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

Treatment	Av. yield
M <sub>1</sub>	235
M <sub>2</sub>	265
M <sub>3</sub>	258
S.E. for M <sub>1</sub>	16.11 lb./ac.
S.E. for M <sub>2</sub> and M <sub>3</sub>	19.72 lb./ac.

Crop :- Jowar (*Rabi*).

Ref :- Mh. 49(57)/48(35).

Site :- Agri. Res. Stn., Mohol.

Type :- 'M'.

Object :- To study the deleterious effect of town compost on *Rabi Jowar*.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Jowar*. (c) As per treatments. (ii) (a) Medium black. (b) Refer soil analysis, Mohol. (iii) 17.9.1949. (iv) (a) N.A. (b) Drilling. (c) 4 lb./ac. (d) Rows 18" apart. (e) N.A. (v) Nil. (vi) M-35-1. (vii) Unirrigated. (viii) One interculturing on 25.10.1949. (ix) 1.14". (x) 9.2.1950.

## 2. TREATMENTS :

All combinations of (1) and (2) + a control (no manure.)

(1) 2 levels of T.C. : C<sub>1</sub>=2½ and C<sub>2</sub>=5 C.L./ac.(2) 3 times of application of T.C. : T<sub>1</sub>=Every year, T<sub>2</sub>=Every alternate year starting from 1948 and T<sub>3</sub>=Every alternate year starting from 1949.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 6. (iv) (a) 42'×27'. (b) 30'×15'. (v) 6' around. (vi) Yes.

## 4. GENERAL :

(i) Germination poor. Grain formation and yield affected for want of cloudy weather. (ii) Sugary disease. (iii) Grain and fodder yield. (iv) (a) 1948 to 1952. (b) Yes. (c) N.A. (v) (a) No. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 199 lb./ac.  
(ii) 71.15 lb./ac.  
(iii) None of the effects is significant.  
(iv) Av. yield of grain in lb./ac.

Control=171 lb./ac.

	T <sub>1</sub>	T <sub>2</sub>	T <sub>3</sub>	Mean
C <sub>1</sub>	223	203	205	210
C <sub>2</sub>	184	189	219	197
Mean	203	196	212	204

S.E. of C marginal mean = 16.8 lb./ac.  
S.E. of T marginal mean = 20.5 lb./ac.  
S.E. of body of table = 29.1 lb./ac.

Crop :- Jowar (*Rabi*).

Ref :- Mh. 50(72)/49(57)/48(35).

Site :- Agri. Res. Stn., Mohol.

Type :- 'M'.

Object :- To study the deleterious effect of town compost on *Rabi Jowar*.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Jowar*. (c) As per treatments. (ii) (a) Medium black. (b) Refer soil analysis, Mohol. (iii) 12.10.1950. (iv) (a) N.A. (b) Drilling. (c) 4 lb./ac. (d) Rows 18" apart. (e) N.A. (v) Nil. (vi) M-35-1 (medium). (vii) Unirrigated. (viii) 4 interculturings. (ix) 9.91". (x) 14.3.1951.

## 2. TREATMENTS :

All combinations of (1) and (2) + a control (no manure).

(1) 2 levels of T.C. :  $C_1=2\frac{1}{2}$  and  $C_2=5$  C.L./ac.(2) 3 times of application of T.C. :  $T_1$ =Every year,  $T_2$ =Every alternate year starting from 1948 and  $T_3$ =Every alternate year starting from 1949.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 6. (iv) (a) 42'×27'. (b) 30'×15'. (v) 6' around. (vi) Yes.

## 4. GENERAL :

(i) Germination satisfactory. Crop had a stunted growth for want of rains after sowing. (ii) Nil. (iii) Grain and fodder yield. (iv) (a) 1948-1952. (b) Yes. (c) N.A. (v) (a) Nil. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 195 lb./ac.

(ii) 59.00 lb./ac.

(iii) None of the effects is significant.

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

Control=147 lb./ac.

	$T_1$	$T_2$	$T_3$	Mean
$C_1$	210	184	216	203
$C_2$	203	206	201	203
Mean	206	195	208	

S.E. of C marginal mean =13.9 lb./ac.

S.E. of T marginal mean =17.0 lb./ac.

S.E. of body of table =24.1 lb./ac.

Crop :- Jowar (*Rabi*).

Ref :- Mh. 51(83)/50(72)/49(57)/48(35).

Site :- Agri. Res. Stn., Mohol.

Type :- 'M'.

Object :- To study the deleterious effect of town compost on *Rabi Jowar*.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Jowar*. (c) As per treatments. (ii) (a) Medium black. (b) Refer soil analysis, Mohol. (iii) 5.10.1951. (iv) (a) N.A. (b) N.A. (c) 4 lb./ac. (d) Rows 18" apart. (e) N.A. (v) Nil. (vi) M-35-1 (medium). (vii) Unirrigated. (viii) 4 harrowings and 3 interculturings. (ix) 7.49". (x) 12.2.1952.

## TREATMENTS :

All combinations of (1) and (2) + a control (no manure).

(1) 2 levels of C.T. :  $C_1=2\frac{1}{2}$  and  $C_2=5$  C.L./ac.(2) 3 times of application of T.C. :  $T_1$ =Every year,  $T_2$ =Every alternate year starting from 1948 and  $T_3$ =Every alternate year starting from 1949.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 6. (iv) (a) 42'×27'. (b) 30'×15'. (v) 6' around. (vi) Yes.

## 4. GENERAL :

(i) Very bad. (ii) The sugary disease noted. (iii) Grain and fodder yield. (iv) (a) 1948 to 1952. (b) Yes. (c) N.A. (v) (a) Nil. (b) N.A. (vi) Experiment failed in 1952. (vii) Nil.

## 5. RESULTS :

- (i) 106 lb./ac.  
 (ii) 65.2 lb./ac.  
 (iii) None of the effects is significant.  
 (iv) Av. yield of grain in lb./ac.

	Control =97 lb./ac.			Mean
	T <sub>1</sub>	T <sub>2</sub>	T <sub>3</sub>	
C <sub>1</sub>	98	114	155	122
C <sub>2</sub>	74	127	79	93
Mean	86	120	117	104

S.E. of C marginal mean =15.4 lb./ac.  
 S.E. of T marginal mean =18.8 lb./ac.  
 S.E. of body of table =26.6 lb./ac.

Crop :- Jowar (*Rabi*).

Ref :- Mh. 52(348).

Site :- Agri. Res. Stn., Mohol.

Type :- 'M'.

Object :- To study the effect of burying the green leaves and tender tops of the *Sann* crop on *Jowar*.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Sann*. (c) Nil. (ii) (a) Medium black. (b) Refer soil analysis, Mohol. (iii) N.A. (iv) (a) 3 harrowings. (b) Drilling. (c) 4 lb./ac. (d) Rows 18" apart. (e) —. (v) Nil (vi) M-35-1. (vii) Unirrigated. (viii) 2 interculture. (ix) 5.03". (x) N.A.

## 2. TREATMENTS :

1. *Sann* grown for green manure ; the leaves and tender tops are cut and buried on the same site.
2. *Sann* grown for G.M. ; cut and left as such.
3. Bury the stripped leaves and tender shoots from Treat. 2 on a new site.
4. No manure (control).

## 3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 2. (iv) (a) 58'×18'. (b) 55'×18'. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) Unsatisfactory. (ii) Nil. (iii) Grain yield. (iv) (a) 1952-1953. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 132 lb./ac.  
 (ii) 86.59 lb./ac.  
 (iii) Treatments do not differ significantly.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	203
2.	156
3.	86
4.	83
S.E./mean	=61.2 lb./ac.



Crop :- Jowar (*Rabi*).  
Site :- Agri. Res. Stn., Mohol.

Ref :- Mh. 53(357).  
Type :- 'M'.

Object :- To study the effect of burying only green leaves and tender tops of *Sann* crop on *Jowar*.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Sann*. (c) Nil. (ii) (a) Medium black. (b) Refer soil analysis, Mohol. (iii) N.A. (iv) (a) 3 harrowings. (b) Drilling. (c) 4 lb./ac. (d) 18" apart. (e) —. (v) Nil. (vi) M-35-1. (vii) Unirrigated. (viii) 2 interculturings. (ix) 8.89". (x) N.A.

2. TREATMENTS :

1. *Sann* grown for G.M. ; the leaves and tender tops are cut and buried on same site.
2. *Sann* grown for G.M., cut and left as such.
3. Bury the stripped leaves and tender shoots from Treatment (2) on a new site.
4. No manure (control).

3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 2. (iv) (a) 58'×18'. (b) 55'×18'. (v) N.A. (vi) Yes.

4. GENERAL :

(i) N.A. (ii) Nil. (iii) Grain yield. (iv) (a) 1952-1953. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

- (i) 238 lb./ac.
- (ii) 23.0 lb./ac.
- (iii) Treatments do not differ significantly.
- (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	275
2.	220
3.	261
4.	198
S.E./mean	= 16.3 lb./ac.

Crop :- Jowar (*Rabi*).  
Site :- Agri. Res. Stn., Mohol.

Ref. :- Mh. 52(347).  
Type :- 'M'.

Object :- To study the effect of only burying the green leaves and tender tops of *Chinamug* crop on *Rabi Jowar*.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Chinamug*. (c) Nil. (ii) (a) Medium black. (b) Refer soil analysis, Mohol. (iii) N.A. (iv) (a) 4 harrowing. (b) Drilling. (c) 4 lb./ac. (d) Rows 18" apart. (e) —. (v) Nil. (vi) M-35-1. (vii) Unirrigated. (viii) 2 interculturings. (ix) 5.03". (x) N.A.

2. TREATMENTS :

1. *Chinamug* grown for G.M., ; the tender tops and leaves are cut and buried on the same site.
2. *Chinamug* grown for G.M., cut and left as such.
3. Bury the stripped leaves and tender shoots from Treat. 2 on some new site.
4. No manure (control).

3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 2. (iv) (a) 58'×18'. (b) 55'×18'. (v) N.A. (vi) Yes.

4. GENERAL :

(i) N.A. (ii) N.A. (iii) Grain yield. (iv) (a) 1952 to 1953. (b) No. (c) Nil. (v) (a) N.A. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 205 lb./ac.
- (ii) 27.02 lb./ac.
- (iii) Treatments do not differ significantly.
- (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	243
2.	147
3.	240
4.	190
S.E./mean	=19.1 lb./ac.

Crop :-Jowar (*Rabi*).

Ref. :-Mh. 53(356).

Site :-Agri. Res. Stn., Mohol.

Type :-'M'.

Object :-To study the effect of only burying the green leaves and tender tops of *Chinamug* crop on *Jowar*.

## 1. BASAL CONDITIONS :

- (i) (a) Nil. (b) *Chinamug*. (c) Nil. (ii) (a) Medium black. (b) Refer soil analysis, Mohol. (iii) N.A.
- (iv) (a) 4 harrowings. (b) Drilling. (c) 4 lb./ac. (d) Rows 18" apart. (e) —. (v) Nil. (vi) M-35-1.
- (vii) Unirrigated. (viii) 2 interculturings. (ix) 8.89". (x) N.A.

## 2. TREATMENTS :

- 1. *Chinamug* grown and buried on the same site.
- 2. *Chinamug* grown, cut and left as such.
- 3. Bury the stripped leaves and tender shoots from Treat. 2 on new site.
- 4. No manure (control).

## 3. DESIGN :

- (i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 2. (iv) (a) N.A. (b) 55' x 18'. (v) N.A. (vi) Yes.

## 4. GENERAL :

- (i) N.A. (ii) N.A. (iii) Grain yield. (iv) (a) 1952 to 1953. (b) No. (c) Nil. (v) (a) N.A. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 963 lb./ac.
- (ii) 184.99 lb./ac.
- (iii) Treatments do not differ significantly.
- (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	917
2.	1090
3.	902
4.	943
S.E./mean	=130.8 lb./ac.

Crop :-Jowar (*Kharif*).

Ref :-Mh. 51(124).

Site :-Govt. Exptl. Farm, Nagpur.

Type :-'M'.

Object :-To study the effect of N and P<sub>2</sub>O<sub>5</sub> on *Jowar* crop.

## 1. BASAL CONDITIONS :

- (i) (a) Cotton—*Jowar*. (b) Cotton. (c) N.A. (ii) (a) Black cotton soil. (b) Refer soil analysis, Nagpur. (iii) 14.7.1951. (iv) (a) N.A. (b) Drilled. (c) 10 lb./ac. (d) Lines 18" apart. (e) N.A. (v) Nil. (vi) *Saoner* (medium). (vii) Unirrigated. (viii) 2 hoeings and 3 weedings. (ix) 38.29". (x) 6.1.1952.

## 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) 5 levels of  $P_2O_5$  :  $P_0=0$ ,  $P_1=15$ ,  $P_2=30$ ,  $P_3=45$  and  $P_4=60$  lb./ac.

Source of N and  $P_2O_5$  is N.A. Manures drilled with seed.

## 3. DESIGN :

(i)  $3 \times 5$  Fact. in R.B.D. (ii) (a) 15. (b) N.A. (iii) 3. (iv) (a) N.A. (b)  $66' \times 16\frac{1}{2}'$ . (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Nil. (iii) Grain and straw yield. (iv) (a) 1951—N.A. (b) and (c) N.A. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 1107 lb./ac.

(ii) 254.8 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
$N_0$	1000	1080	1147	960	907	1018
$N_1$	1347	1107	1147	1027	1120	1149
$N_2$	1013	1187	1160	1213	1200	1155
Mean	1120	1124	1151	1067	1076	1107

S.E. of N marginal mean = 65.8 lb./ac.

S.E. of P marginal mean = 84.9 lb./ac.

S.E. of body of table = 147.1 lb./ac.

Crop :- Jowar (*Kharif*).

Site :- Govt. Exptl. Farm, Nagpur.

Ref :- Mh. 52(137).

Type :- 'M'.

Object :- To study the effect of N and  $P_2O_5$  on *Jowar* crop.

## 1. BASAL CONDITIONS :

(i) (a) Cotton—*Jowar*. (b) Cotton. (c) N.A. (ii) (a) Black cotton soil. (b) Refer soil analysis, Nagpur. (iii) 16.7.1952. (iv) (a) 5 *bakharings*. (b) *Argada* sown. (c) 10 lb./ac. (d) and (e) N.A. (v) Nil. (vi) *Saoner* (medium). (vii) Unirrigated. (viii) 4 hoeings and 1 weedings. (ix) 29.32". (x) 19.12.1952.

## 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) 5 levels of  $P_2O_5$  :  $P_0=0$ ,  $P_1=15$ ,  $P_2=30$ ,  $P_3=45$  and  $P_4=60$  lb./ac.

Source of N and  $P_2O_5$  is N.A. Manures drilled with seed.

## 3. DESIGN :

(i)  $3 \times 5$  Fact. in R.B.D. (ii) (a) 15. (b) N.A. (iii) 3. (iv) (a) N.A. (b)  $66' \times 16.5'$ . (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) Normal. (ii) Nil. (iii) Grain yield. (iv) (a) 1951—N.A. (b) No. (c) N.A. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS:

- (i) 1215 lb./ac.  
(ii) 215.0 lb./ac.  
(iii) Main effect of N alone 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>	907	973	1000	760	1440	1016
N <sub>1</sub>	1253	1307	1413	1253	1293	1304
N <sub>2</sub>	1227	1387	1373	1360	1280	1325
Mean	1129	1222	1262	1124	1338	1215 ✓

S.E. of N marginal mean = 55.5 lb./ac.  
S.E. of P marginal mean = 71.7 lb./ac.  
S.E. of body of table = 124.1 lb./ac.

Crop :- Jowar (*Kharif*).

Ref :- Mh. 53(226).

Site :- Govt. Exptl. Farm, Nagpur.

Type :- 'M'.

Object :- To study the effect of N and P<sub>2</sub>O<sub>5</sub> on *Jowar* crop.

## 1. BASAL CONDITIONS:

- (i) (a) Cotton—*Jowar*. (b) Cotton. (c) N.A. (ii) (a) Black cotton soil. (b) Refer soil analysis, Nagpur. (iii) 17.7.1953. (iv) (a) and (b) N.A. (c) 10 lb./ac. (d) 18"×12". (e) N.A. (v) Nil. (vi) Improved *Saoner* (late). (vii) Unirrigated. (viii) 3 hoeings and 2 weedings. (ix) 39.10". (x) 22.12.1953.

## 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) 5 levels of P<sub>2</sub>O<sub>5</sub> : P<sub>0</sub>=0, P<sub>1</sub>=15, P<sub>2</sub>=30, P<sub>3</sub>=45 and P<sub>4</sub>=60 lb./ac.N as A/S and P<sub>2</sub>O<sub>5</sub> as Super drilled along with the seed.

## 3. DESIGN:

- (i) 3×5 Fact. in R.B.D. (ii) (a) 15. (b) N.A. (iii) 3. (iv) (a) N.A. (b) 66'×16.5'. (v) N.A. (vi) Yes.

## 4. GENERAL:

- (i) Good. (ii) Nil. (iii) *Jowar* grain and cobs yield. (iv) (a) 1951—N.A. (b) No. (c) N.A. (v) (a) N.A. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS:

- (i) 1789 lb./ac.  
(ii) 249.6 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>	P <sub>3</sub>	P <sub>4</sub>	Mean
N <sub>0</sub>	1750	1790	2030	1557	1777	1781
N <sub>1</sub>	1933	1950	1683	1630	1523	1744
N <sub>2</sub>	2030	1904	1790	1923	1563	1842
Mean	1904	1882	1834	1703	1621	1789 ✓

S.E. of N marginal mean = 64.5 lb./ac.  
S.E. of P marginal mean = 83.2 lb./ac.  
S.E. of body of table = 144.1 lb/a

Crop :- Jowar (*Kharif*).

Ref :- Mh. 51(125).

✓ Site :- Govt. Exptl. Farm, Nagpur.

Type :- 'M'.

Object :-To study the effect of different doses of N and method of their application.

## 1. BASAL CONDITIONS :

(i) (a) Cotton—*Jowar*. (b) Cotton. (c) N.A. (ii) (a) Black cotton soil. (b) Refer soil analysis, Nagpur. (iii) 13th and 14th July 1951. (iv) (a) 2 harrowings. (b) *Argada* sown. (c) 10 lb./ac. (d) and (e) N.A. (v) Nil. (vi) *Saoner*—late. (vii) Unirrigated. (viii) 3 hoeings and 3 weedings. (ix) 38.29%. (x) 4.1.1952.

## 2. TREATMENTS :

Main-plot treatments :

5 levels of N as A/S :  $N_0=0$ ,  $N_1=5$ ,  $N_2=10$ ,  $N_3=15$  and  $N_4=20$  lb./ac. ✓

Sub-plot treatments :

2 methods of application of A/S :  $M_1$ =drilled and  $M_2$ =broadcast.

## 3. DESIGN :

(i) Split-plot. (ii) (a) 5 main-plots/block ; 2 sub-plots/main-plot. (b) N.A. (iii) 5. (iv) (a) N.A. (b)  $66' \times 16\frac{1}{2}'$ . (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) Normal. (ii) N.A. (iii) *Jowar* cobs and grain yield. (iv) (a) N.A. (b) No. (c) N.A. (v) (a) N.A. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 1933 lb./ac.  
 (ii) (a) 192.0 lb./ac.  
 (b) 186.0 lb./ac.  
 (iii) None of the effects is significant.  
 (iv) Av. yield of grain in lb./ac.

	$N_0$	$N_1$	$N_2$	$N_3$	$N_4$	Mean
$M_1$	—	1928	1960	1888	2008	1946
$M_2$	—	1936	1776	2024	2040	1944
Mean	1884	1932	1868	1956	2024	✓

S.E. of difference of two.

- |                                   |                 |
|-----------------------------------|-----------------|
| 1. N marginal means               | = 85.8 lb./ac.  |
| 2. M marginal means               | = 58.8 lb./ac.  |
| 3. M means at the same level of N | = 117.6 lb./ac. |
| 4. N means at the same level of M | = 119.5 lb./ac. |

Crop :-Jowar (*Kharif*).

Ref :-Mh. 52(139).

Site :-Govt. Exptl. Farm, Nagpur.

Type :- 'M'.

Object :-To study the effect of different doses of N and method of their application.

## 1. BASAL CONDITIONS :

(i) (a) Cotton. *Jowar* (b) Cotton. (c) N.A. (ii) (a) Black cotton. (b) Refer soil analysis, Nagpur. (iii) 15.7.1952. (iv) (a) 5 *bakharings*. (b) Sowing by *Argada*. (c) 10 lb./ac. (d) and (e) N.A. (v) Nil. (vi) *Saoner* (medium). (viii) Unirrigated. (vii) 4 hoeings and 1 weeding. (ix) 29.32%. (x) 18.12.1952.

## 2. TREATMENTS :

## Main-plot treatments :

5 levels of N as A/S :  $N_0=0$ ,  $N_1=5$ ,  $N_2=10$ ,  $N_3=15$  and  $N_4=20$  lb./ac.

## Sub-plot treatments :

2 methods of application of A/S :  $M_1$ =drilled and  $M_2$ =broadcast.

## 3. DESIGN :

(i) Split-plot. (ii) (a) 5 main-plots/block ; 2 sub-plots/main-plot. (b) N.A. (iii) 5. (iv) (a) N.A. (b)  $66' \times 16.5'$ . (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) Normal. (ii) Nil. (iii) Grain yield. (iv) (a) 1950—N.A. (b) No. (c) N.A. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 1352 lb./ac.

(ii) (a) 363.0 lb./ac.

(b) 146.4 lb./ac.

(iii) None of the effects is significant.

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

	$N_0$	$N_1$	$N_2$	$N_3$	$N_4$	Mean
$M_1$	—	1240	1360	1488	1568	1414
$M_2$	—	1312	1336	1408	1488	1386
Mean	1160	1276	1348	1448	1528 ✓	✓

## S.E. of difference of two

1. N marginal means = 161.2 lb./ac.
2. M marginal means = 46.3 lb./ac.
3. M means at the same level of N = 92.5 lb./ac.
4. N means at the same level of M = 175.0 lb./ac.

Crop :- Jowar (*Kharif*).

Ref :- Mh. 53(225).

Site :- Govt. Exptl. Farm, Nagpur.

Type :- 'M'.

Object :- To study the residual effect of various manures applied to previous cotton crop on *Jowar* yield.

## 1. BASAL CONDITIONS :

(i) (a) Cotton—*Jowar*. (b) Cotton. (c) As per treatments. (ii) (a) Black cotton soil. (b) Refer soil analysis, Nagpur. (iii) 15.7.1953. (iv) (a) and (b) N.A. (c) 10 lb./ac. (d)  $18'' \times 12''$ . (e) N.A. (v) Nil (vi) *Saoner* (medium). (vii) Unirrigated. (viii) 3 hoeings and 2 weedings. (ix) 39.10<sup>th</sup>. (x) 23.12.1953.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 2 row spacings for cotton crop :  $S_1=18''$  and  $S_2=24''$ .(2) 8 manurial doses :  $M_0$ =No manure,  $M_1=10$  C.L./ac. of F.Y.M.,  $M_2=20$  lb./ac. of N drilled,  $M_3=20$  lb./ac. of N top dressed,  $M_4$ =Sannhemp without  $P_2O_5$ ,  $M_5$ =Sannhemp with  $P_2O_5$ ,  $M_6$ =*Udid* without  $P_2O_5$  and  $M_7$ =*Udid* with  $P_2O_5$ .

N as A/S, manures applied to previous cotton crop and now residual effects studied.

## 3. DESIGN :

(i)  $8 \times 2$  Fact. in R.B.D. (ii) (a) 16. (b) N.A. (iii) 4. (iv) (a) N.A. (b)  $36.3' \times 12'$  (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) Very good. (ii) Nil. (iii) *Jowar* grain and cobs yield. (iv) (a) N.A. (b) Yes (c) N.A. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 3940 lb./ac.  
 (ii) 387.0 lb./ac.  
 (iii) None of the effects is significant.  
 (iv) Av. yield of grain 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
S <sub>1</sub>	3613	4200	4012	4075	4319	4013	4125	3766	4015
S <sub>2</sub>	3656	3878	3897	3937	3972	4131	3400	4044	3865
Mean	3634	4039	3954	4006	4145	4072	3763	3905	3940

S.E. of M marginal means = 136.8 lb./ac.

S.E. of S marginal means = 68.4 lb./ac.

S.E. of body of table = 193.5 lb./ac.

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

Ref :- Mh. 53(56).

Site :- Cotton Res. Stn., Nanded.

Type :- 'M'.

Object :- To study the effect of repeated manuring of soil with different kinds of fertilizers.

## 1. BASAL CONDITIONS :

(i) (a) *Cotton-Jowar*. (b) *Cotton*. (c) Nil. (ii) (a) Black cotton soil. (b) Refer soil analysis, Nanded. (iii) 30.6.1953. (iv) (a) Three *bakharings*. (b) Seed mixed with sulphur was drilled with a three coultered 12" wooden drill. (c) 8 lb./ac. (d) Rows 12" apart. (e) N.A. (v) Nil. (vi) PJ 4K. (vii) Unirrigated. (viii) 1 weeding and 1 hoeing. (ix) 45.13". (x) 9.1.1954.

## 2. TREATMENTS :

All combinations of (1) and (2)

(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 sources of N: S<sub>1</sub>=C/N, S<sub>2</sub>=A/S and S<sub>3</sub>=Ammono. chloride.

Manures drilled at sowing on 29.6.1953.

## 3. DESIGN :

(i) 3×3 Fact. in R.B.D. (ii) (a) 9. (b) N.A. (iii) 6. (iv) (a) 127'×12'. (b) 124'×8'. (v) 2 rows on either flank and 1½' at each extremity of every row. (vi) Yes.

## 4. GENERAL :

(i) Satisfactory. (ii) No. (iii) Yield of straw and final stand. (iv) (a) 1953 to N.A. (b) Yes. (c) N.A. (v) (a) No. (b) N.A. (vi) Nil. (vii) To study the cumulative effect of repeated manuring, soil samples studied before and after application of manures.

## 5. RESULTS :

- (i) 306 lb./ac.  
 (ii) 87.8 lb./ac.  
 (iii) Only 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
S <sub>1</sub>	—	298	370	334
S <sub>2</sub>	—	310	358	334
S <sub>3</sub>	—	317	367	342
Mean	245	308	365	

S.E. of N marginal mean =20.7 lb./ac.  
 S.E. of S marginal mean =25.4 lb./ac.  
 S.E. of body of table =35.9 lb./ac.

Crop :- Jowar (*Rabi*).

Ref :- Mh. 53(54).

Site:- Cotton Res. Stn., Nanded.

Type :- 'M'.

Object :—To study the residual effect of organic and inorganic manures applied to the previous Cotton crop.

## 1. BASAL CONDITIONS :

(i) (a) Cotton-Jowar. (b) Cotton. (c) As per treatments. (ii) (a) Black cotton soil. (b) Refer soil analysis, Nanded. (iii) 21.10.1953. (iv) (a) 3 *bakharings*. (b) Seed mixed with Sulphur was drilled with a 3 coultered 12" wooden drill. (c) 10 lb./ac. (d) Rows 12" apart. (e) N.A. (v) Nil. (vi) PJ 4R. (vii) Unirrigated. (viii) 1 hoeing only. (ix) 45.31". (x) 18.3.1954.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 3 levels of organic manures : M<sub>0</sub>=0, M<sub>1</sub>=4 ton/ac. of F.Y.M. and M<sub>2</sub>=4 ton/ac. of T.C.(2) 2 levels of N as A/S : N<sub>0</sub>=0 and N<sub>1</sub>=100 lb./ac.Residual effect of treatments applied to previous cotton crop studied on *Jowar*.

## 3. DESIGN :

(i) 3×2 Fact. in R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) 127'×15'. (b) 121×9'. (v) 3 rows on either flank and 3' at each extremity of every row. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Attack of stem borer. Affected plants removed on 17.12.1953. (iii) Germination and final stand, plant height and weight of earhead. (iv) (a) 1953 to 1955. (b) No. (c) N.A. (v) (a) No. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 599 lb./ac.

(ii) 65.0 lb./ac.

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

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

	M <sub>0</sub>	M <sub>1</sub>	M <sub>2</sub>	Mean
N <sub>0</sub>	509	611	613	578
N <sub>1</sub>	606	626	626	619
Mean	528	619	620	599

S.E. of marginal mean of M =23.0 lb./ac.  
 S.E. of marginal mean of N =18.2 lb./ac.  
 S.E. of body of table =32.5 lb./ac.



Crop :- Jowar (*Rabi*).

Ref :- Mh. 51(159).

Site :- Agri. Res. Stn., Padegaon.

Type :- 'M'.

Object :- To find out the optimum N and  $P_2O_5$  requirements of *Jowar*.

## 1. BASAL CONDITIONS

(i) (a) Nil. (b) N.A. (c) N.A. (ii) (a) B type. (b) Refer soil analysis, Padegaon. (iii) 6.10.1951. (iv) (a) N.A. (b) Drilling. (c) 8 lb./ac. (d) Rows 12" apart. (e) N.A. (v) Nil. (vi) M-35-1. (vii) Irrigated. (viii) One hoeing and 2 weedings. (ix) 14.68". (x) 6.3.1952.

## 2. TREATMENTS

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

- (1) 4 levels of N :  $N_0=0$ ,  $N_1=30$ ,  $N_2=60$  and  $N_3=90$  lb./ac.  
 (2) 4 levels of  $P_2O_5$  :  $P_0=0$ ,  $P_1=30$ ,  $P_2=60$  and  $P_3=90$  lb./ac.  
 (3) 2 doses of F.Y.M. :  $F_1=5$  and  $F_2=10$  C.L./ac.

## 3. DESIGN :

(i)  $4 \times 4 \times 2$  Fact. in R.B.D. (ii) (a) 32. (b) N.A. (iii) 4. (iv) (a)  $22' \times 20'$ . (b)  $17' \times 16'$ . (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) Normal. (ii) Nil. (iii) Grain and fodder yield. (iv) (a) 1950 to 1952. (b), (c) N.A. (v) (a), (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 2241 lb./ac.  
 (ii) 481.6 lb./ac.  
 (iii) All main effects and interactions are significant.  
 (iv) Av. yield of grain in lb./ac.

	$P_0$	$P_1$	$P_2$	$P_3$	Mean	$F_1$	$F_2$
$N_0$	1484	1647	1877	2003	1753	1834	1671
$N_1$	2081	2435	2389	2165	2267	2375	2159
$N_2$	2007	2205	2433	2544	2298	2450	2146
$N_3$	2184	2541	2663	3196	2646	2724	2566
Mean	1939	2207	2340	2477	2241		
$F_1$	2097	2327	2470	2491	2346		
$F_2$	1782	2087	2211	2463	2136		

S.E. of marginal mean of N or P = 85.1 lb./ac.  
 S.E. of marginal mean of F = 60.2 lb./ac.  
 S.E. of body of table  $N \times P$  = 170.3 lb./ac.  
 S.E. of body of table  $F \times N$  or  $F \times P$  = 120.4 lb./ac.

Crop :- Jowar (*Rabi*).

Ref :- Mh. 52(323).

Site :- Agri. Res. Stn., Padegaon.

Type :- 'M'.

Object :- To find out the optimum N and  $P_2O_5$  requirements of *Jowar*

## 1. BASAL CONDITIONS:

(i) N.A. (b) Sugarcane. (c) 300 lb./ac. of N as A/S+Cake (1 : 2). (ii) (a) B type. (b) Refer soil analysis, Padegaon. (iii) 26.9.1952. (iv) (a) N.A. (b) Drilling. (c) 8 lb./ac. (d) 12" between rows (e) —. (v) Nil. (vi) M-35-1. (vii) Irrigated. (viii) 1 interculturing and 2 weedings. (ix) 11.01". (x) 22.2.1953.

## 2. TREATMENTS :

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

(1) 4 levels of N :  $N_0=0$ ,  $N_1=30$ ,  $N_2=60$  and  $N_3=90$  lb./ac.

(2) 4 levels of  $P_2O_5$  :  $P_0=0$ ,  $P_1=30$ ,  $P_2=60$  and  $P_3=90$  lb./ac.

(3) 2 levels of compost :  $C_1=5$  and  $C_2=10$  C.L./ac.

$P_2O_5$  as Super. N applied in 3 doses viz.  $\frac{1}{3}$  at sowing as cake,  $\frac{1}{3}$  N as A/S and cake (1 : 1) and  $\frac{1}{6}$  N as A/S applied at flowering.

## 3. DESIGN :

(i)  $4 \times 4 \times 2$  Fact. in R.B.D. (ii) (a) 32. (b) N.A. (iii) 4. (iv) (a)  $24' \times 18'$ . (b)  $20' \times 14'$ . (v) 2' around. (vi) Yes.

## 4. GENERAL :

(i) Normal. (ii) Nil. (iii) Grain yield. (iv) (a) 1950—1951. (b) No. (c) Nil. (v) (a) N.A. (b) N.A. (vi) Yields are very high but no reason is attributed. (vii) Nil.

## 5. RESULTS :

- (i) 3127 lb./ac.  
 (ii) 984.4 lb./ac.  
 (iii) None of the main effects and their interactions is significant.  
 (iv) Av. yield of grain in lb./ac.

	$N_0$	$N_1$	$N_2$	$N_3$	Mean	$C_1$	$C_2$
$P_0$	2798	3340	3558	3435	3283	3210	3355
$P_1$	2794	2617	3603	3325	3085	3113	3056
$P_2$	2881	2792	3208	3199	3020	3208	2832
$P_3$	2902	3266	2962	3349	3120	3195	3044
Mean	2844	3004	3332	3327	3127		
$C_1$	3010	3180	3248	3288	3181		
$C_2$	2677	2827	3417	3366	3072		

S.E. of marginal mean of N or P	=174.0 lb./ac.
S.E. of marginal mean of C	=123.0 lb./ac.
S.E. of body of table N×P	=348.1 lb./ac.
S.E. of body of table C×N or C×P	=246.1 lb./ac.

Crop :- Jowar (*Kharif*).

Ref :- Mh. 53(20).

Site :- Govt. Main Farm, Parbhani.

Type :- 'M'.

Object :- To determine the effect of C/N on *Jowar* and its residual effect on the soil.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) *Tur.* (c) Compost at 10 C.L./ac. (ii) (a) Light black. (b) Refer soil analysis, Parbhani. (iii) 28.6.1953. (iv) Tractor ploughing on 2.2.1953. Harrowings on 15.5.1953, 18.6.1953 and 28.6.1953. (b) Sown by 3 coulter country seed drill. (c) N.A. (d)  $15'' \times 6''$ : (e) N.A. (v) Nil. (vi) PJ-4R. (vii) Nil. (viii) One hoeing and 2 weedings. (ix) 33.03" (During *Kharif* 1953—54 i.e. from April 1953 to September 1953). (x) 3.12.1953.

## 2. TREATMENTS :

- T<sub>1</sub>=20 lb./ac. of N as A/S+10 lb./ac. of P<sub>2</sub>O<sub>5</sub> as Super.  
 T<sub>2</sub>=20 lb./ac. of N as Am. Chloride+10 lb./ac. of P<sub>2</sub>O<sub>5</sub> as Super.  
 T<sub>3</sub>=20 lb./ac. of N as C/N+10 lb./ac. of P<sub>2</sub>O<sub>5</sub> as Super.  
 T<sub>4</sub>=40 lb./ac. of N as A/S+20 lb./ac. of P<sub>2</sub>O<sub>5</sub> as Super.  
 T<sub>5</sub>=40 lb./ac. of N as Am. Chloride+20 lb./ac. of P<sub>2</sub>O<sub>5</sub> as Super.  
 T<sub>6</sub>=40 lb./ac. of N as C/N+20 lb./ac. of P<sub>2</sub>O<sub>5</sub> as Super.  
 T<sub>7</sub>=No manure (3 plots/block).

## 3. DESIGN :

- (i) R.B.D. (ii) (a) 9. (b) N.A. (iii) 6. (iv) (a) 60'×8.50'. (b) 58'×6.25'. (v) N.A. (vi) Yes.

## 4. GENERAL :

- (i) Satisfactory. (ii) N.A. (iii) Grain and *kadbi* yield. (iv) (a) 1953—N.A. (b) and (c) N.A. (v) (a) and (b) Nil. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 734.3 lb./ac.  
 (ii) 237.9 lb./ac.  
 (iii) Treatment differences are not significant.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
T <sub>1</sub>	583.3
T <sub>2</sub>	856.1
T <sub>3</sub>	826.1
T <sub>4</sub>	786.1
T <sub>5</sub>	883.7
T <sub>6</sub>	853.6
T <sub>7</sub>	606.6
S.E. for T <sub>7</sub>	= 56.0 lb./ac.
S.E. for any other mean	= 97.1 lb./ac.
S.E. of difference of T <sub>7</sub> and any other mean	= 112.1 lb./ac.

Crop :- Jowar (*Kharif*).

Ref :- Mh. 52(210).

Site :- Agri. College Farm, Poona.

Type :- 'M'.

Object :- To study the effect of dicalcium phosphate as compared to Super on the yield of *Jowar*.

## 1. BASAL CONDITIONS :

- (i) (a) to (c) N.A. (ii) (a) Medium black. (b) Refer soil analysis, Poona. (iii) 18.6.1952. (iv) (a) Ploughing on 1.6.1952. (b) Drilling. (c) 10 lb./ac. (d) Rows 12" apart. (e) N.A. (v) Nil. (vi) *Godgaraye* (medium-late). (vii) Irrigated. (viii) 1 interculturing. (ix) 22.03". (x) 23.11.1952.

## 2. TREATMENTS :

1. 20 lb./ac. of P<sub>2</sub>O<sub>5</sub> as dicalcium phosphate.  
 2. 20 lb./ac. of P<sub>2</sub>O<sub>5</sub> as Super.

## 3. DESIGN :

- (i) R.B.D. (ii) (a) 2. (b) N.A. (iii) 12. (iv) (a) 42'×21'. (b) 30'×9'. (v) 6' allround. (vi) Yes.

## 4. GENERAL :

- (i) Due to vigorous vegetative growth of plants the height was 11' to 13'. The crop lodged during October by winds. (ii) Attack of stem borer noticed. (iii) Fodder yield. (iv) (a) 1952 to 1953. (b) No. (c) N.A. (v) (a) and (b) N.A. (vi) Nil. (vii) As there was no grain formation, fodder yield data analysed.

## 5. RESULTS :

- (i) 15409 lb./ac.  
 (ii) 1892. lb./ac.  
 (iii) Treatments do not differ significantly.

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

Treatment	Av. yield
1.	16087
2.	14730
S.E./mean	=546.3 lb./ac.

Crop :- Jowar (*Kharif*).

Ref :- Mh. 53(115).

Site :- Agri. College Farm, Poona.

Type :- 'M'.

Object :- To compare the yield data of *Jowar* treated with dicalcium phosphate and single Super.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) Double bean. (c) Nil. (ii) (a) Medium black. (b) Refer soil analysis, Poona. (iii) 26.6.1953 (iv) (a) Ploughing with 4 bullock plough to a depth of 7"-8" on 5.4.1953 and 2 harrowings (b) Drilled. (c) to (e) N.A. (v) 15 C.L./ac. of F.Y.M.+top dressing of 60 lb./ac. of N to the whole expt. on 26.6.1953. (vi) *Madgarya* (Mid-late). (vii) Rainfed. (viii) Interculturing by slit blade on 15.7.1953. (ix) 10.85". (x) 11.11.1953 to 16.11.1953.

2. TREATMENTS :

1. 20 lb./ac. of  $P_2O_5$  as dicalcium phosphate.
2. 20 lb./ac. of  $P_2O_5$  as Super.

3. DESIGN :

(i) R.B.D. (ii) (a) 2. (b) N.A. (iii) 12. (iv) (a) 42'x21'. (b) 30'x9'. (v) 6' all round. (vi) Yes.

4. GENERAL :

(i) 95% germination ; uniform growth. (ii) Army-worms. Dusting of Gammoxene. (iii) Grain and fodder yield. (iv) (a) 1952 to 1953. (b) and (c) No. (v) (a) Nil. (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 1270 lb./ac.

(ii) 306.5 lb./ac.

(iii) Treatments do not differ significantly.

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

Treatment	Av. yield
1.	1230
2.	1310
S.E./mean	=88.5 lb./ac.

Crop :- Jowar (*Rabi*).

Ref :- Mh. 52(327).

Site :- Agri. Res. Stn., Shahada.

Type :- 'M'.

Object :- To study the usefulness of *Chinamug* as a green manure on *Jowar*.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) *Chinamug* in *Kharif*. (c) Nil. (ii) (a) Medium black. (b) N.A. (iii) 19.9.1952. (iv) (a) 1 ploughing. (b) Drilling. (c) 20 lb./ac. (d) 10". (e) —. (v) Nil. (vi) N.A. (vii) Irrigated. (viii) 1 interculture. (ix) N.A. (x) 19.1.1953.

## 2. TREATMENTS :

1. Grow *Chinamug* in *Kharif* and bury in *situ*.
2. Grow *Chinamug* in *Kharif* and bury in another plot.
3. Observe the effect of *Chinamug* grown in treatment 2 (this was fallow in *Kharif*).

## 3. DESIGN :

- (i) R.B.D. (ii) (a) 3. (b) N.A. (iii) 2. (iv) (a) 100'×17.5'. (b) 88'×12.5', (v) 6'×2.5'. (vi) Yes.

## 4. GENERAL :

- (i) Gaps in crop growth due to defective soil moisture. (ii) Attack of leaf hoppers ; gammadene dusted. (iii) Grain yield. (iv) (a) 1952. (b) First year of experiment. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 780.3 lb./ac.  
 (ii) 132.5 lb./ac.  
 (iii) Treatments do not differ significantly.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	814
2.	676
3.	851
S.E./mean	=93.70 lb./ac.

Crop :- *Jowar (Rabi)*.  
 Site :- Agri. Res. Stn., Sholapur.

Ref :- Mh. 48(102).  
 Type :- 'M'.

Object :- To study the manurial requirements of *Jowar*.

## 1. BASAL CONDITIONS :

- (i) (a) *Jowar* after gram. (b) Gram. (c) Nil. (ii) (a) Medium deep. (b) Refer soil analysis, Sholapur. (iii) 16.10.1948. (iv) (a) 4 harrowings. (b) Drilling. (c) 4 lb./ac. (d) 18" between rows. (e) —. (v) Nil. (vi) M—35—1. (vii) Unirrigated. (viii) 2 interculturings. (ix) 39.18". (x) N.A.

## 2. TREATMENTS :

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

- (1) 4 levels of N as G.N.C. :  $N_0=0$ ,  $N_1=12.5$ ,  $N_2=25$  and  $N_3=37.5$  lb./ac.
- (2) 2 levels of  $P_2O_5$  as B.M. :  $P_0=0$  and  $P_1=25$  lb./ac.
- (3) 2 levels of F.Y.M. :  $F_0=0$  and  $F_1=2.5$  ton/ac.

## 3. DESIGN :

- (i) 4×2×2 Fact. in R.B.D. (ii) (a) 16. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 33'×24'. (v) N.A. (vi) Yes.

## 4. GENERAL :

- (i) N.A. (ii) Nil. (iii) Grain and fodder yield. (iv) (a) N.A.—1950-51. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 262 lb./ac.  
 (ii) 118.7 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	F <sub>0</sub>	F <sub>1</sub>
P <sub>0</sub>	277	259	315	249	275	248	302
P <sub>1</sub>	259	259	273	204	249	271	227
Mean	268	259	294	227	262		
F <sub>0</sub>	228	254	307	249	259		
F <sub>1</sub>	309	264	281	204	265		

S.E. of marginal mean of N	=29.70 lb./ac.
S.E. of marginal mean of P or F	=21.00 lb./ac.
S.E. of body of table N×P or N×F	=41.97 lb./ac.
S.E. of body of table P×F	=29.70 lb./ac.

Crop :- Jowar (*Rabi*).  
Site :- Agri. Res. Stn., Sholapur.

Ref :- Mh. 49(135).  
Type :- 'M'.

Object :- To study the manurial requirements of *Jowar*.

#### 1. BASAL CONDITIONS :

(i) (a) Gram-*Jowar* (b) Gram. (c) Nil. (ii) (a) Medium deep. (b) Refer soil analysis, Sholapur.  
(iii) N.A. (iv) (a) 4 harrowings. (b) Drilling. (c) 4 lb./ac. (d) 18" between rows. (e) —. (v) Nil.  
(vi) M-35-1. (vii) Unirrigated. (viii) 2 interculturings. (ix) 38.17". (x) N.A.

#### 2. TREATMENTS :

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

- (1) 4 levels of N as G.N.C. : N<sub>0</sub>=0, N<sub>1</sub>=12.5, N<sub>2</sub>=25 and N<sub>3</sub>=37.5 lb./ac.
- (2) 2 levels of P<sub>2</sub>O<sub>5</sub> as B.M. : P<sub>0</sub>=0, and P<sub>1</sub>=25 lb./ac.
- (3) 2 levels F Y.M. : F<sub>0</sub>=0 and F<sub>1</sub>=2.5 ton/ac.

#### 3. DESIGN :

(i) 4×2×2 Fact. in R.B.D. (ii) (a) 16. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 33'×33'. (v) N.A. (vi) Yes.

#### 4. GENERAL :

(i) N.A. (ii) Nil. (iii) Grain and fodder yield. (iv) (a) N.A.—1950-1951. (b) No. (c) Nil. (v) (a) N.A. (b) N.A. (vi) and (vii) Nil.

#### 5. RESULTS :

- (i) 672 lb./ac.
- (ii) 235.5 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	F <sub>0</sub>	F <sub>1</sub>
P <sub>0</sub>	712	631	647	725	679	666	692
P <sub>1</sub>	632	687	768	577	666	699	633
Mean	672	659	707	651	672		
F <sub>0</sub>	686	661	725	658	682		
F <sub>1</sub>	658	657	690	644	662		

S.E. of marginal mean of N = 58.9 lb./ac.

S.E. of marginal mean of P or F = 41.7 lb./ac.

S.E. of body of table N × P or N × F = 83.3 lb./ac.

S.E. of body of table P × F = 58.9 lb./ac.

Crop :- Jowar (*Rabi*).

Site :- Agri. Res. Stn., Sholapur.

Ref :- Mh. 50(155).

Type :- 'M'.

Object :- To study the manurial requirements of *Jowar*.

## 1. BASAL CONDITIONS :

- (i) (a) *Jowar* after gram. (b) Gram. (c) Nil. (ii) (a) Medium deep. (b) Refer soil analysis, Sholapur. (iii) N.A. (iv) (a) 4 harrowings. (b) Drilling. (c) 4 lb./ac. (d) 18" between rows. (e) —. (v) Nil. (vi) M-35-1. (vii) Unirrigated. (viii) 4 interculturings. (ix) 24.04". (x) N.A.

## 2. TREATMENTS :

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

- (1) 4 levels of N as G.N.C. : N<sub>0</sub>=0, N<sub>1</sub>=12.5, N<sub>2</sub>=25 and N<sub>3</sub>=37.5 lb./ac.  
 (2) 2 levels of P<sub>2</sub>O<sub>5</sub> as B.M. : P<sub>0</sub>=0 and P<sub>1</sub>=25 lb./ac.  
 (3) 2 levels F.Y.M. : F<sub>0</sub>=0 and F<sub>1</sub>=2.5 ton/ac.

## 3. DESIGN :

- (i) 4 × 2 × 2 Fact. in R.B.D. (ii) (a) 16. (b) N.A. (iii) 4. (iv) (a) 36' × 36'. (b) 33' × 33'. (v) 1.5' all round. (vi) Yes.

## 4. GENERAL :

- (i) N.A. (ii) Nil. (iii) Grain yield. (iv) (a) Nil. (b) N.A.—1950-1951. (c) Nil. (v) (a) N.A. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 867 lb./ac.  
 (ii) 218.60 lb./ac.  
 (iii) N, F effects and interaction F × P are 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>	F <sub>1</sub>
P <sub>0</sub>	573	832	913	952	817	669	966
P <sub>1</sub>	759	898	911	1100	917	901	933
Mean	666	865	912	1026	867		
F <sub>0</sub>	576	755	822	988	785		
F <sub>1</sub>	756	975	1002	1063	948		

S.E. of marginal mean of N	=54.6 lb./ac.
S.E. of marginal mean of P or F	=38.6 lb./ac.
S.E. of body of table N×P or N×F	=77.3 lb./ac.
S.E. of body of table P×F	=54.6 lb./ac.

Crop :- Jowar, (Rabi).

Ref :- Mh. 51(66).

Site :- Agri. Res. Stn., Sholapur.

Type :- 'M'.

Object :- To study the N and P requirements of Jowar.

## 1. BASAL CONDITIONS :

(i) (a) Gram—Jowar. (b) Gram. (c) Nil. (ii) (a) Deep black. (b) Refer soil analysis, Sholapur. (iii) 7.10.1951. (iv) (a) 2 harrowings. (b) Broadcast. (c) 4 lb./ac. (d) 18" between rows. (e) —. (v) Nil. (vi) M.35-1 (medium). (vii) Unirrigated. (viii) 2 interculturings. (ix) 6.36". (x) 8.2.1952.

## 2. TREATMENTS :

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

- (1) 4 levels of N : N<sub>0</sub>=0, N<sub>1</sub>=10, N<sub>2</sub>=20 and N<sub>3</sub>=30 lb./ac.  
 (2) 4 levels of P<sub>2</sub>O<sub>5</sub> : P<sub>0</sub>=0, P<sub>1</sub>=10, P<sub>2</sub>=20 and P<sub>3</sub>=30 lb./ac.  
 (3) 2 levels of F.Y.M. : F<sub>0</sub>=0 and F<sub>1</sub>=5 C.L./ac.

## 3. DESIGN :

(i) 4×4×2 Fact. in R.B.D. (ii) (a) 32. (b) N.A. (iii) 2. (iv) (a) 29'×24'. (b) 23'×18'. (v) 3' around. (vi) Yes.

## 4. GENERAL :

(i) Normal. (iii) Nil. (iii) Height and count per plot. (iv) (a) 1951 to 1955. (b) and (c) No. (v) (a) Chas and Jeur. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 636 lb./ac.  
 (ii) 166.8 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	F <sub>0</sub>	F <sub>1</sub>
P <sub>0</sub>	535	597	642	643	604	608	600
P <sub>1</sub>	688	742	653	636	680	779	580
P <sub>2</sub>	625	579	607	586	599	588	610
P <sub>3</sub>	664	694	665	615	660	687	632
Mean	628	653	642	620	636		
F <sub>0</sub>	691	679	665	627	666		
F <sub>1</sub>	565	627	619	613	606		

S.E. of marginal mean of N or P =41.7 lb./ac.

S.E. of marginal mean of P =29.5 lb./ac.

S.E. of body of table N×P =83.4 lb./ac.

S.E. of body of table F×N or F×P =58.9 lb./ac.

Crop :- Jowar (*Rabi*).

Site :- Agri. Res. Stn., Sholapur.

Ref :- Mh. 52(95).

Type :- 'M'.

Object :—To study the N and P requirements of *Jowar*.

## 1. BASAL CONDITIONS :

(i) (a) Gram—*Jowar*. (b) Gram. (c) Nil. (ii) (a) Deep black. (b) Refer soil analysis, Sholapur. (iii) 8.10.1952. (iv) (a) 4 harrowings. (b) N.A. (c) 4 lb./ac. (d) 18". (e) N.A. (v) Nil. (vi) M-35-1 (medium). (vii) Unirrigated. (viii) 2 interculturings. (ix) 2". (x) 10.2.1953.

## 2. TREATMENTS :

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

(1) 4 levels of N : N<sub>0</sub>=0, N<sub>1</sub>=10, N<sub>2</sub>=20 and N<sub>3</sub>=30 lb./ac.(2) 4 levels of P<sub>2</sub>O<sub>5</sub> : P<sub>0</sub>=0, P<sub>1</sub>=10, P<sub>2</sub>=20 and P<sub>3</sub>=30 lb./ac.(3) 2 levels of F.Y.M. : F<sub>0</sub>=0 and F<sub>1</sub>=5 C.L./ac.

## 3. DESIGN :

(i) 4×4×2 Fact. in R.B.D. (ii) (a) 32. (b) N.A. (iii) 2. (iv) (a) 32'×29'. (b) 27'×23'. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) Above normal. (ii) Nil. (iii) Height, count and grain yield. (iv) (a) 1951 to 1955. (b) No. (c) N.A. (v) (a) Chas and Jeur. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 1404 lb./ac.

(ii) 291.0 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>	N <sub>3</sub>	Mean	F <sub>0</sub>	F <sub>1</sub>
P <sub>0</sub>	1166	1315	1420	1284	1296	1286	1307
P <sub>1</sub>	1455	1308	1519	1170	1363	1366	1360
P <sub>2</sub>	1539	1514	1475	1446	1494	1546	1441
P <sub>3</sub>	1300	1482	1677	1383	1460	1309	1611
Mean	1365	1404	1523	1321	1404		
F <sub>0</sub>	1350	1309	1554	1294	1377		
F <sub>1</sub>	1380	1500	1491	1348	1430		

S.E. of marginal means of N or P. = 72.8 lb./ac.

S.E. of marginal mean of F = 51.4 lb./ac.

S.E. of body of table N×P = 145.5 lb./ac.

S.E. of body of table F×N or F×P = 102.9 lb./ac.

Crop :- Jowar (*Rabi*).

Ref :- Mh. 53(147).

Site :- Agri. Res. Stn., Sholapur,

Type :- 'M'.

Object :—To study the N and P requirements of *Jowar*.

## 1. BASAL CONDITIONS :

(i) Gram—*Jowar*. (b) Gram. (c) Nil. (ii) (a) Deep black. (b) Refer soil analysis, Sholapur. (iii) 15.10.1953. (iv) (a) 3 harrowings. (b) Broadcast. (c) 4 lb./ac. (d) 18" between rows. (e) N.A. (v) Nil. (vi) M—35—1 (medium). (vii) Unirrigated. (viii) 2 interculturings. (ix) 9.18". (x) 27.2.1954.

## 2. TREATMENTS :

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

(1) 4 levels of N : N<sub>0</sub>=0, N<sub>1</sub>=10, N<sub>2</sub>=20 and N<sub>3</sub>=30 lb./ac.(2) 4 levels of P<sub>2</sub>O<sub>5</sub> : P<sub>0</sub>=0, P<sub>1</sub>=10, P<sub>2</sub>=20 and P<sub>3</sub>=30 lb./ac.(3) 2 levels of F.Y.M. : F<sub>0</sub>=0 and F<sub>1</sub>=5 C.L./ac.

## 3. DESIGN :

(i) 4×4×2 Fact. in R B.D. (ii) (a) 32. (b) N.A. (iii) 2. (iv) (a) 29'×24'. (b) 23'×18'. (vi) 3' around. (vi) Yes.

## 4. GENERAL :

(i) Just below normal. (ii) Nil. (iii) Height, count and grain yield. (iv) (a) 1951 to 1955. (b) and (c) No. (v) (a) Chas and Jeur. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS:

(i) 705 lb./ac.

(ii) 171.8 lb./ac.

(iii) Only N and F effects are 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>	F <sub>1</sub>
P <sub>0</sub>	521	668	766	850	701	774	629
P <sub>1</sub>	547	619	753	656	644	614	674
P <sub>2</sub>	584	661	761	678	671	783	559
P <sub>3</sub>	521	820	987	896	806	929	683
Mean	543	692	817	770	705		
F <sub>0</sub>	591	811	843	854	775		
F <sub>1</sub>	496	573	791	686	636		

S.E. of marginal mean of N or P = 42.9 lb./ac.  
 S.E. of marginal mean of F = 30.4 lb./ac.  
 S.E. of body of table N×P = 85.9 lb./ac.  
 S.E. of body of table F×N or F×P = 60.8 lb./ac.

Crop :- Jowar (*Rabi*).

Site :- Agri. Res. Stn., Sholapur.

Ref :- Mh. 51(234).

Type :- 'M'.

Object :- To study the direct and residual effect of application of P<sub>2</sub>O<sub>5</sub> to Jowar.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Jowar*. (c) As per treatments. (ii) (a) Medium deep. (b) Refer soil analysis, Sholapur. (iii) 7.10.1951. (iv) (a) 4 harrowings. (b) Drilled. (c) 4 lb./ac. (d) 18" between rows. (e) N.A. (v) Nil. (vi) M-35-1. (vii) Unirrigated. (viii) 3 interculturings. (ix) 24.81" (x) 12.2.1952.

## 2. TREATMENTS :

All combinations of (1) and (2)+a control (no manure)

(1) 2 sources of P<sub>2</sub>O<sub>5</sub> : S<sub>1</sub>=B.M. and S<sub>2</sub>=Super.(2) 7 intervals of application of P<sub>2</sub>O<sub>5</sub> with its levels :-

- (a) 10 lb./ac. every year.
- (b) 20 lb./ac. every alternate year starting with 1951.
- (c) 20 lb./ac. every alternate year starting with 1952.
- (d) 40 lb./ac. every 4th year starting with 1951.
- (e) 40 lb./ac. every 4th year starting with 1952.
- (f) 40 lb./ac. every 4th year starting with 1953.
- (g) 40 lb./ac. every 4th year starting with 1954.

For this year, control plots are 9.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 15. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 33'×11'. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) Nil. (iii) Grain and fodder yield. (iv) (a) 1951-1954. (b) Yes. (c) Nil. (v) (a) N.A. (b) N.A. (vi) Nil. (vii) Nil.

## 5. RESULTS :

- (i) 682 lb./ac.
- (ii) 184.6 lb./ac.
- (iii) None of the effects is significant.

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

Control=656 lb./ac.

	S <sub>1</sub>	S <sub>2</sub>	Mean
a	705	725	715
b	915	680	797
d	596	709	652
Mean	739	705	

S.E. of marginal mean of S =53.3 lb./ac.

S.E. of marginal mean of time of application =65.3 lb./ac.

S.E. of body of table =92.3 lb./ac.

S.E. of control vs. any mean in the body of table =48.7 lb./ac.

Crop :- Jowar (*Rabi*).

Ref :- Mh. 52(370)/51(234).

Site :- Agri. Res. Stn., Sholapur.

Type :- 'M'.

Object :- To study the direct and residual effect of application of P<sub>2</sub>O<sub>5</sub> to Jowar.

## 1. BASAL CONDITIONS :

(i) (a) Jowar after Jowar. (b) Jowar. (c) As per treatments. (ii) (a) Medium deep. (b) Refer soil analysis, Sholapur. (iii) 10.10.1952. (iv) (a) 4 harrowing. (b) Drillings. (c) 4 lb./ac. (d) 18" between rows. (e) N.A. (v) Nil. (vi) M-35-1. (vii) Unirrigated. (viii) 4 interculturings. (ix) 20.76%. (x) 9.2.1953.

## 2. TREATMENTS :

All combinations of (1) and (2)+a control (no manure.)

(1) 2 sources of P<sub>2</sub>O<sub>5</sub> : S<sub>1</sub>=B.M. and S<sub>2</sub>=Super.(2) 7 intervals of application of P<sub>2</sub>O<sub>5</sub> with its levels :-

(a) 10 lb./ac. every year.

(b) 20 lb./ac. every alternate year starting with 1951.

(c) 20 lb./ac. every alternate year starting with 1952.

(d) 40 lb./ac. every 4th year starting with 1951.

(e) 40 lb./ac. every 4th year starting with 1952.

(f) 40 lb./ac. every 4th year starting with 1953.

(g) 40 lb./ac. every 4th year starting with 1954.

For this year control plots are 5.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 15. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 33'x11'. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) Nil. (iii) Grain yield. (iv) (a) 1951-1954. (b) Yes. (c) Nil. (v) (a) and (b) N.A. (vi) Nil. (vii) Nil.

## 5. RESULTS :

(i) 809 lb./ac.

(ii) 172.8 lb./ac.

(iii) None of the effects is significant.

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

Control = 758 lb./ac.

	S <sub>1</sub>	S <sub>2</sub>	Mean
a	765	834	799
b	804	746	775
c	829	977	903
d	793	817	805
e	906	874	890
Mean	819	850	

S.E. of marginal mean of S	=38.6 lb./ac.
S.E. of marginal mean of time of application	=61.1 lb./ac.
S.E. of body of table	=86.4 lb./ac.
S.E. of control vs any mean in the body of table	=47.3 lb./ac.

Crop :- Jowar (*Rabi*).

Ref :- Mh. 53(370)/52(370)/51(234).

Site :- Agri. Res. Stn., Sholapur.

Type :- 'M'.

Object :- To study the direct and residual effect of application of P<sub>2</sub>O<sub>5</sub> to *Jowar*.

## 1. BASAL CONDITIONS :

(i) (a) *Jowar-Jowar*. (b) *Jowar*. (c) As per treatments. (ii) (a) Medium deep. (b) Refer soil analysis, Sholapur. (iii) 12.10.1953. (iv) (a) 4 harrowings. (b) Drilled. (c) 4 lb./ac. (d) 18" between rows. (e) N.A. (v) Nil. (vi) M-35-1. (vii) Unirrigated. (viii) 3 interculturings. (ix) 35.96%. (x) 1.3.1954.

## 2. TREATMENTS :

All combinations of (1) and (2)+a control (no manure)

- (1) 2 sources of P<sub>2</sub>O<sub>5</sub> : S<sub>1</sub>=B.M. and S<sub>2</sub>=Super.  
 (2) 7 intervals of application of P<sub>2</sub>O<sub>5</sub> with its levels :  
 (a) 10 lb./ac. every year.  
 (b) 20 lb./ac. every alternate year starting with 1951.  
 (c) 20 lb./ac. every alternate year starting with 1952.  
 (d) 40 lb./ac. every 4th year starting with 1951.  
 (e) 40 lb./ac. every 4th year starting with 1952.  
 (f) 40 lb./ac. every 4th year starting with 1953.  
 (g) 40 lb./ac. every 4th year starting with 1954.

For this year control plots are 3.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 15. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 33'×11'. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) Nil. (iii) Grain yield. (iv) (a) 1951-1954. (b) Yes. (c) Nil. (v) (a) and (b) N.A. (vi) Nil. (vii) Nil.

## 5. RESULTS :

- (i) 473 lb./ac.  
 (ii) 103.8 lb./ac.  
 (iii) None of the effects is significant.

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

	Control = 479 lb./ac.		
	S <sub>1</sub>	S <sub>2</sub>	Mean
a	433	463	448
b	420	469	444
c	425	504	464
d	487	433	460
e	551	476	513
f	547	453	500
Mean	477	466	

S.E. of marginal mean of S	=21.2 lb./ac.
S.E. of marginal mean of time of application	=36.7 lb./ac.
S.E. of body of table	=51.9 lb./ac.
S.E. of control vs any mean in the body of table	=33.5 lb./ac.

Crop :- Jowar (*Rabi*).

Ref :- Mh. 48(107).

Site :- Agri. Res. Stn., Sholapur.

Type :- 'M'.

Object :—To study the time and method of application of G.N.C. to *Jowar*.

## 1. BASAL CONDITIONS :

(i) Gram-*Jowar*. (b) Gram. (c) Nil. (ii) (a) Medium deep. (b) Refer soil analysis, Sholapur. (iii) 9.10.1948. (iv) (a) 4 harrowings. (b) Drilled. (c) 4 lb./ac. (d) 18" between rows. (e) N.A. (v) Nil. (vi) M-35-1. (vii) Unirrigated. (viii) 4 interculturings. (ix) 39.18". (x) N.A.

## 2. TREATMENTS :

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

(1) 3 levels of N as G.N.C. :  $N_0=0$ ,  $N_1=12.5$  and  $N_2=25$  lb./ac.(2) 2 methods of application of N :  $R_1$ =Placement of G.N.C. in rows and  $R_2$ =Placement of G.N.C. between rows.(3) 3 times of application of N :  $T_1=30$  days before sowing,  $T_2=15$  days before sowing and  $T_3=$  At the time of sowing.

## 3. DESIGN :

(i)  $3 \times 2 \times 3$  Fact. in R.B.D. (ii) (a) 18. (b) N.A. (iii) 4. (iv) (a)  $35' \times 20'$ . (b)  $32' \times 17'$ . (v) 1.5' around. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) Nil. (ii) Grain and fodder yield. (iv) (a) 1948—1950. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 452 lb./ac.

(ii) 108.6 lb./ac

(iii) Control vs Others effect is highly significant. Other effects are not significant.

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

Control =356 lb./ac.

	T <sub>1</sub>	T <sub>2</sub>	T <sub>3</sub>	Mean	R <sub>1</sub>	R <sub>2</sub>
N <sub>1</sub>	487	510	507	501	510	492
N <sub>2</sub>	450	569	481	500	519	480
Mean	468	539	494	500		
R <sub>1</sub>	462	536	544	514		
R <sub>2</sub>	474	542	442	486		

S.E. of marginal mean of T =27.1 lb./ac.

S.E. of marginal means of N or R =22.2 lb./ac.

S.E. of body of table T×N or T×R =38.4 lb./ac.

S.E. of body of table N×R =31.3 lb./ac.

Crop :- Jowar (*Rabi*).

Ref :- Mh. 49(130).

Site :- Agri. Res. Stn., Sholapur.

Type :- 'M'.

Object :- To study the time and method of application of G.N.C. to *Jowar*.

## 1. BASAL CONDITIONS:

(i) (a) Gram—*Jowar*. (b) Gram. (c) Nil. (ii) (a) Medium deep. (b) Refer soil analysis, Sholapur. (iii) N.A. (iv) (a) 2 harrowings. (b) Drilled. (c) 4 lb./ac. (d) 18" between rows. (e) —. (v) Nil. (vi) M-35-1. (vii) Unirrigated. (viii) 2 interculturings. (ix) 38.17". (x) N.A.

## 2. TREATMENTS:

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

(1) 3 levels of N as G.N.C. : N<sub>0</sub>=0, N<sub>1</sub>=12.5 and N<sub>2</sub>=25 lb./ac.(2) 2 methods of application of N: R<sub>1</sub>=Placement of G.N.C. in rows and R<sub>2</sub>=Placement of G.N.C. between rows.(3) 3 times of application of N: T<sub>1</sub>=30 days before sowing, T<sub>2</sub>=15 days before sowing and T<sub>3</sub>=At the time of sowing.

## 3. DESIGN:

(i) 3×2×3 Fact. in R.B.D. (ii) (a) 18. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 32'×17'. (v) N.A. (vi) Yes.

## 4. GENERAL:

(i) Normal. (ii) Nil. (iii) Grain and fodder yield. (iv) (a) 1948—1950. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS:

(i) 714 lb./ac.

(ii) 231.6 lb./ac.

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

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

Control = 613 lb./ac.

	T <sub>1</sub>	T <sub>2</sub>	T <sub>3</sub>	Mean	R <sub>1</sub>	R <sub>2</sub>
N <sub>1</sub>	659	715	622	665	609	722
N <sub>2</sub>	749	1026	615	797	836	757
Mean	704	870	618	731		
R <sub>1</sub>	668	884	615	722		
R <sub>2</sub>	740	857	622	739		

S.E. of marginal mean of T = 57.9 lb./ac.

S.E. of marginal mean of N or R = 47.3 lb./ac.

S.E. of body of table T×N or T×R = 81.9 lb./ac.

S.E. of body of table N×R = 66.9 lb./ac.

Crop :- Jowar (*Rabi*).

Ref :- Mh. 50(164).

Site :- Agri. Res. Stn., Sholapur.

Type :- 'M'.

Object :- To study the time and method of application of G.N.C. to Jowar.

## 1. BASAL CONDITIONS :

(i) (a) Gram - Jowar. (b) Gram. (c) Nil. (ii) (a) Medium black (deep). (b) Refer soil analysis, Sholapur. (iii) N.A. (iv) (a) 4 harrowings. (b) Drilled. (c) 4 lb./ac. (d) 18" between rows. (e) N.A. (v) Nil. (vi) M-35-1. (vii) Unirrigated. (viii) 2 interculturings. (ix) 24.04". (x) N.A.

## 2. TREATMENTS :

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

(1) 3 levels of N as G.N.C. : N<sub>0</sub>=0, N<sub>1</sub>=12.5 and N<sub>2</sub>=25 lb./ac.(2) 2 methods of application of N : R<sub>1</sub>=Placement of G.N.C. in rows and R<sub>2</sub>=Placement of G.N.C. between rows.(3) 3 times of application : T<sub>1</sub>=30 days before sowing, T<sub>2</sub>=15 days before sowing and T<sub>3</sub>=At the time of sowing.

## 3. DESIGN :

(i) 3×2×3 Fact. in R.B.D. (ii) (a) 18. (b) N.A. (iii) 3. (iv) (a) 35'×20'. (b) 32'×17' (v) 1.5' around. (vi) Yes.

## 4. GENERAL :

(i) Normal growth. (ii) Nil. (iii) Grain and fodder yield. (iv) (a) 1948—1950. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 897 lb./ac.

(ii) 148.1 lb./ac.

(iii) Control vs others effect is highly significant. Other effects are not significant.



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

Control = 770 lb./ac.						
	T <sub>1</sub>	T <sub>2</sub>	T <sub>3</sub>	Mean	R <sub>1</sub>	R <sub>2</sub>
N <sub>1</sub>	996	1018	918	977	986	967
N <sub>2</sub>	943	977	907	943	995	889
Mean	969	998	913	960		
R <sub>1</sub>	954	1092	919	991		
R <sub>2</sub>	985	896	906	929		

S.E. of marginal mean of T = 37.0 lb./ac.  
 S.E. of marginal mean of N or R = 30.2 lb./ac.  
 S.E. of body of table T×N or T×R = 52.3 lb./ac.  
 S.E. of body of table N×R = 42.8 lb./ac.

Crop :- Jowar. (Rabi).  
 Site :- Agri. Res. Stn., Sholapur.

Ref :- Mh. 48(108).  
 Type :- 'M'.

Object :- To find out the optimum dose and frequency of applying F.Y.M. to Jowar.

#### 1. BASAL CONDITIONS :

(i) (a) Gram—Jowar. (b) Gram. (c) Nil. (ii) (a) Medium deep. (b) Refer soil analysis, Sholapur.  
 (iii) 14.10.1948. (iv) (a) 4 harrowings. (b) Drilled. (c) 4 lb./ac. (d) 18" between rows. (e) —. (v)  
 Nil. (vi) M-35-1. (vii) Unirrigated. (viii) 3 interculturings. (ix) 39.18%. (x) N.A.

#### 2. TREATMENTS :

1. Control (no manure ; 3 plots/block).
2. 3 ton/ac. of F.Y.M. once in 3 years starting with 1946.
3. 6 ton/ac. of F.Y.M. once in 3 years starting with 1946.
4. 4 ton/ac. of F.Y.M. once in 4 years starting with 1946.
5. 8 ton/ac. of F.Y.M. once in 4 years starting with 1946.
6. 6 ton/ac. of F.Y.M. once in 6 years starting with 1946.
7. 12 ton/ac. of F.Y.M. once in 6 years starting with 1946.

#### 5. DESIGN :

(i) R.B.D. (ii) (a) 9. (b) N.A. (iii) 4. (iv) (a) 66'×40'. (b) 63'×37'. (v) 1.5' ring around. (vi) Yes.

#### 4. GENERAL :

(i) Normal. (ii) Nil. (iii) Grain and straw yield. (iv) (a) 1946—1951. (b) No. (c) Nil. (v) (a) and (b)  
 N.A. (vi) and (vii) Nil.

#### 5. RESULTS :

(i) 333 lb./ac.  
 (ii) 99.04 lb./ac.  
 (iii) Treatments do not differ significantly. 'Control vs others' is also not significant.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	328
2.	320
3.	290
4.	333
5.	379
6.	350
7.	332
S.E./mean (other than control)	= 49.52 lb./ac.
S.E. of control vs. any other mean	= 57.18 lb./ac.

Crop :- Jowar (*Rabi*).  
Site :- Agri. Res. Stn., Sholapur.

Ref. :- Mh. 49(134).  
Type :- 'M'.

Object :- To find out the optimum dose and frequency of applying F.Y.M. to *Jowar*.

1. BASAL CONDITIONS :

(i) (a) Gram-*Jowar*. (b) Gram. (c) Nil. (ii) (a) Medium deep. (b) Refer soil analysis, Sholapur. (iii) N.A. (iv) (a) 4 harrowings. (b) Drilled. (c) 4 lb./ac. (d) 18" between rows. (e) —. (v) Nil. (vi) M-35-1 (vii) Unirrigated. (viii) 2 interculturings. (ix) 38.17". (x) N.A.

2. TREATMENTS :

1. Control (no manure ; in 3 plots/block).  
2. 3 ton/ac. of F.Y.M. once in 3 years starting with 1946.  
3. 6 ton/ac. of F.Y.M. once in 3 years starting with 1946.  
4. 4 ton/ac. of F.Y.M. once in 4 years starting with 1946.  
5. 8 ton/ac. of F.Y.M. once in 4 years starting with 1946.  
6. 6 ton/ac. of F.Y.M. once in 6 years starting with 1946.  
7. 12 ton/ac. of F.Y.M. once in 6 years starting with 1946.

3. DESIGN :

(i) R.B.D. (ii) (a) 9. (b) N.A. (iii) 4. (iv) (a) 66'×40'. (b) 63'×37'. (v) 1.5' ring around. (vi) Yes.

4. DESIGN :

(i) N.A. (ii) Nil. (iii) Grain and fodder yield. (iv) (a) 1946-1951. (b) No. (c) Nil. (v) (a) N.A. (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 372 lb./ac.  
(ii) 102.4 lb./ac.  
(iii) Treatments do not differ significantly. Control vs others is also not significant.  
(iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	336
2.	331
3.	347
4.	416
5.	401
6.	441
7.	406

S.E./mean (other than control) = 51.2 lb./ac.

S.E. of control vs any other mean = 59.1 lb./ac.

Crop :- Jowar (*Rabi*).  
Site :- Agri. Res., Stn., Sholapur.

Ref. :- Mh. 50(163).  
Type :- 'M'.

Object :- To find out the optimum dose and frequency of applying F.Y.M. to *Jowar*.

1. BASAL CONDITIONS :

(i) (a) Gram-*Jowar*. (b) Gram. (c) Nil. (ii) (a) Medium black (deep). (b) Refer soil analysis, Sholapur. (iii) N.A. (iv) (a) 4 harrowings. (b) Drilled. (c) 4 lb./ac. (d) 18" between rows. (e) N.A. (v) Nil. (vi) M-35-1. (vii) Unirrigated. (viii) 3 interculturings. (ix) 24.04". (x) N.A.

2. TREATMENTS :

1. Control (no manure ; in 3 plots/block).  
2. 3 ton/ac of F.Y.M. once in 3 years starting with 1946.  
3. 6 ton/ac. of F.Y.M. once in 3 years starting with 1946.  
4. 4 ton/ac. of F.Y.M. once in 3 years starting with 1946.  
5. 8 ton/ac. of F.Y.M. once in 3 years starting with 1946.  
6. 6 ton/ac. of F.Y.M. once in 3 years starting with 1946.  
7. 12 ton/ac. of F.Y.M. once in 3 years starting with 1946.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 9. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 63'x37'. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) Normal-growth. (ii) Nil. (iii) Grain and fodder yield. (iv) (a) 1946-1951. (b) No. (c) Nil. (v) (a) N.A. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 423 lb./ac.  
 (ii) 123.6 lb./ac.  
 (iii) Treatments do not differ significantly. Control vs others is not significant.  
 (iv) Av. yield of grain in lb./ac.

Treatments	Av. yield
1.	389
2.	350
3.	400
4.	424
5.	613
6.	395
7.	389
S.E./mean (other than control)	=61.8 lb./ac.
S.E. of control vs any other mean	=71.4 lb./ac.

Crop :- Jowar (*Rabi*).

Ref :- Mh. 51(233)

Site :- Agri. Res. Stn., Sholapur.

Type :- 'M'.

Object :- To find out the optimum dose and frequency of applying F.Y.M. to *Jowar*.

## 1. BASAL CONDITIONS :

(i) (a) Gram—*Jowar*. (b) Gram. (c) Nil. (ii) (a) Medium deep. (b) Refer soil analysis, Sholapur. (iii) 29.9.1951 and 25.10.1951. (iv) (a) 3 harrowings. (b) Drilled. (c) 4 lb./ac. (d) 18" between rows. (e) N.A. (v) Nil. (vi) M-35-1. (vii) Unirrigated. (viii) 3 interculturings. (ix) 24.81". (x) 13 and 18.2.1952.

## 2. TREATMENTS :

- Control (no manure ; in 3 plots/block).
- 3 ton/ac. of F.Y.M. once in 3 years starting with 1946.
- 6 ton/ac. of F.Y.M. once in 3 years starting with 1946.
- 4 ton/ac. of F.Y.M. once in 4 years starting with 1946.
- 8 ton/ac. of F.Y.M. once in 4 years starting with 1946.
- 6 ton/ac. of F.Y.M. once in 6 years starting with 1946.
- 12 ton/ac. of F.Y.M. once in 6 years starting with 1946.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 9. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 63'x37'. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) Growth was checked to a considerable extent due to excess of moisture in the soil. (ii) Nil. (iii) Grain and fodder yield. (iv) (a) 1946—1951. (b) and (c) No. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 267 lb./ac.  
 (ii) 67.43 lb./ac.  
 (iii) Treatments do not differ significantly. Control vs. others is not significant.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	236
2.	243
3.	273
4.	261
5.	300
6.	201
7.	276
S.E./mean (other than control)	= 33.71 lb./ac.
S.E. of control vs. any other mean	= 38.93 lb./ac.

**Crop :- Jowar (Rabi).**  
**Site :- Agri. Res. Stn., Sholapur.**

**Ref :- Mh. 51(220).**  
**Type :- 'M'.**

**Object :-**To study the effect of zinc sulphate on *Jowar*.

**1. BASAL CONDITIONS :**

(i) (a) No. (b) and (c) N.A. (ii) (a) Medium deep. (b) Refer soil analysis, Sholapur. (iii) 8.10.1951. (iv) (a) 4 harrowings. (b) Drilled. (c) 4 lb./ac. (d) 18" between rows. (e) —. (v) Nil. (vi) M-35-1. (vii) Unirrigated. (viii) 4 interculturings. (ix) 24.81". (x) 14.2.1952.

**2. TREATMENTS :**

1. Control.
2. 10 lb./ac. of Zn SO<sub>4</sub>.
3. 20 lb./ac. of Zn SO<sub>4</sub>.

**3. DESIGN :**

(i) R.B.D. (ii) (a) 3. (b) N.A. (iii) 8. (iv) (a) 32'×20'. (b) 26'×14'. (v) 3' ring around. (vi) Yes.

**4. GENERAL :**

(i) Normal. (ii) Nil. (iii) Grain and fodder yield. (iv) (a) 1951—1954. (b) and (c) No. (v) (a) and (b) N.A. (vi) and (vii) Nil.

**5. RESULTS :**

- (i) 687 lb./ac.
- (ii) 177.1 lb./ac.
- (iii) Treatments do not differ significantly.
- (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	705
2.	656
3.	701
S.E./mean	= 62.6 lb./ac.

**Crop :- Jowar (Rabi).**  
**Site :- Agri. Res. Stn., Sholapur.**

**Ref :- Mh. 52(367).**  
**Type :- 'M'.**

**Object :-**To study the effect of zinc sulphate on *Jowar*.

**1. BASAL CONDITIONS :**

(i) (a) Gram—*Jowar*. (b) N.A. (c) N.A. (ii) (a) Medium deep. (b) Refer soil analysis, Sholapur. (iii) 10.10.1953. (iv) (a) 4 harrowings. (b) Drilled. (c) 4 lb./ac. (d) 18" between rows. (e) N.A. (v) Nil. (vi) M—35—1. (vii) Unirrigated. (viii) 3 interculturings. (ix) 20.76". (x) 11.2.1953.

**2. TREATMENTS :**

1. Control.
  2. 10 lb./ac. of ZnSO<sub>4</sub>.
  3. 20 lb./ac. of ZnSO<sub>4</sub>.
- Manuring done on 10.10.1952.

**3. DESIGN :**

(i) R.B.D. (ii) (a) 3. (b) N.A. (iii) 8. (iv) (a) 32'×20'. (b) 26'×14'. (v) 3' ring around. (vi) Yes.

**4. GENERAL :**

(i) Normal. (ii) Nil. (iii) Grain yield. (iv) (a) 1951—1954. (b) No. (c) Nil. (v) (a) N.A. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 594 lb./ac.  
 (ii) 176.5 lb./ac.  
 (iii) Treatments do not differ significantly.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	559
2.	599
3.	623
S.E./mean	= 62.4 lb./ac.

Crop :- Jowar (*Rabi*).  
 Site :- Agri. Res. Stn., Sholapur.

Ref :- Mh. 53(372).  
 Type :- 'M'.

Object :- To study the effect of zinc sulphate on *Jowar*.

## 1. BASAL CONDITIONS :

- (i) (a) Gram—*Jowar*. (b) N.A. (c) N.A. (ii) (a) Medium deep. (b) Refer soil analysis, Sholapur. (iii) 16.10.1953. (iv) (a) 4 harrowings. (b) Drilled. (c) 4 lb./ac. (d) 18" between rows. (e) N.A. (v) Nil. (vi) M-35-1. (vii) Unirrigated. (viii) 3 interculturings. (ix) 35.96". (x) 4.3.1954.

## 2. TREATMENTS :

1. Control.  
 2. 10 lb./ac. of ZnSO<sub>4</sub>.  
 3. 20 lb./ac. of ZnSO<sub>4</sub>.  
 Manured on 16.10.1953.

## 3. DESIGN :

- (i) R.B.D. (ii) (a) 3. (b) N.A. (iii) 8. (iv) (a) 20'×32'. (b) 14'×26'. (v) 3' ring around. (vi) Yes.

## 4. GENERAL :

- (i) Normal. (ii) Nil. (iii) Grain yield. (iv) (a) 1951—1954. (b) No. (c) Nil. (v) (a) N.A. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 584 lb./ac.  
 (ii) 282.5 lb./ac.  
 (iii) Treatments do not differ significantly.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	670
2.	573
3.	508
S.E./mean	= 99.9 lb./ac.

Crop :- Jowar (*Rabi*).  
 Site :- Agri. Res. Stn., Sholapur.

Ref :- Mh. 52(369).  
 Type :- 'M'.

Object :- To study the effect of application of different minor elements on *Jowar*.

## 1. BASAL CONDITIONS :

- (i) (a) Gram—*Jowar*. (b) Gram. (c) Nil. (ii) (a) Medium deep. (b) Refer soil analysis, Sholapur. (iii) 9.10.1952. (iv) (a) 4 harrowings. (b) Drilled. (c) 4 lb./ac. (d) 18" between rows. (e) N.A. (v) Nil. (vi) M-35-1. (vii) Unirrigated. (viii) 3 interculturings. (ix) 20.76". (x) 9.2.1953.

## 2. TREATMENTS :

- |                                     |                                     |
|-------------------------------------|-------------------------------------|
| 1. Control.                         | 7. 1 lb./ac. of $MnSO_4$ .          |
| 2. 1 lb./ac. of Ammonium Molybdate. | 8. $2\frac{1}{2}$ ton/ac. of F.Y.M. |
| 3. 1 lb./ac. of $FeSO_4$ .          | 9. 1 lb./ac. of Sulphur.            |
| 4. 1 lb./ac. of $ZnSO_4$ .          | 10. 1 lb./ac. of Cobalt chloride.   |
| 5. 1 lb./ac. of $CuSO_4$ .          | 11. 1 lb./ac. of $MgSO_4$ .         |
| 6. 1 lb./ac. of Borax               |                                     |

## 3. DESIGN :

(i) R.B.D. (ii) (a) 11. (b) N.A. (iii) 2. (iv) (a) N.A. (b)  $11' \times 11'$ . (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) Normal. (ii) Nil. (iii) Grain and straw yield. (iv) (a) 1952-1955 (modified in 1953-54). (b) No. (c) Nil. (v) (a) N.A. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 720 lb./ac.  
(ii) 153.0 lb./ac.  
(iii) Treatments differ highly significantly.  
(iv) Av. yield of grain in lb./ac.

Treatment	Av. yield	Treatment	Av. yield
1.	585	7.	1406
2.	540	8.	646
3.	731	9.	810
4.	754	10.	585
5.	572	11.	718
6.	572		

S.E./mean = 108.2 lb./ac.

Crop :- Jowar (*Rabi*).

Ref :- Mh. 53(371).

Site :- Agri. Res. Stn., Sholapur.

Type :- 'M'.

Object :- To study the effect of the application of different minor elements on *Jowar*.

## 1. BASAL CONDITIONS :

(i) (a) Gram-*Jowar*. (b) Gram. (c) Nil. (ii) (a) Medium deep. (b) Refer soil analysis, Sholapur. (iii) 15.10.1953. (iv) (a) 4 harrowings. (b) Drilled. (c) 4 lb./ac. (d) 18" between rows. (e) N.A. (v) Nil. (vi) M-35-1. (vii) Unirrigated. (viii) 3 interculturings. (ix) 35.96%. (x) 6.3.1954.

## 2. TREATMENTS

- All manures present.
- Only Boron absent, all others present.
- Only Manganese absent, all others present.
- Only Magnesium absent, all others present.
- Only Copper absent, all others present.
- Only Zinc absent, all others present.
- Only Cobalt absent, all others present.
- Only Sodium absent, all others present.
- Only Sulphur absent, all others present.
- Only Iron absent, all others present.

[Boron as Borax at 6 lb./ac. ; Mn as  $MnSO_4$  at 9 lb./ac. ; Mg as  $MgSO_4$  at 2 lb./ac. ; Cu as  $CuSO_4$  at  $\frac{1}{2}$  lb./ac. ; Zn as  $ZnSO_4$  at 4 lb./ac. ; Co as  $CoCl_2$  at 2 lb./ac. ; Sodium as Sodium Molybdate at  $\frac{1}{2}$  lb./ac. ; Sulphur at 2 lb./ac. and Fe as  $FeSO_4$  at  $\frac{1}{2}$  lb./ac.]

## 3. DESIGN :

(i) R.B.D. (ii) (a) 10. (b) N.A. (iii) 2. (iv) (a) N.A. (b)  $20' \times 6'$ . (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) Crop growth checked due to excess of moisture in the soil. (ii) Nil. (iii) Grain and fodder yield. (iv) (a) 1952-1956 (modified in 1953.) (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS:

- (i) 303 lb./ac.  
 (ii) 59.89 lb./ac.  
 (iii) Treatments differ highly significantly.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	278
2.	231
3.	276
4.	299
5.	358
6.	356
7.	289
8.	283
9.	323
10.	334
S.E./mean	= 42.36 lb./ac.

✓ Crop :- Jowar (*Kharif*).

Ref :- Mh. 51(108).

Site :- Govt. Seed and Demonstration Farm, Washim. Type :- 'M'.

Object :- To see the effect of cotton-seed-cake in comparison with other manures on *Jowar* yield.

## 1. BASAL CONDITIONS:

(i) (a) Nil. (b) Cotton. (c) Nil. (ii) (a) Medium black. (b) N.A. (iii) 14.7.1951. (iv) (a) 4 *bakharings* (b) N.A. (c) 6 lb./ac. (d) and (e) N.A. (v) Nil. (vi) *Saoner* (late). (vii) Unirrigated. (viii) 4 hoeing and 1 thinning. (ix) 29.74". (x) 10.1.1952.

## 2. TREATMENTS:

- Control (no manure).
  - G.N.C. at 15 lb./ac. of N.
  - Cotton-seed-cake (decorticated) at 15 lb./ac. of N.
  - Cotton-seed-cake (undecorticated) at 15 lb./ac. of N.
  - A/S at 15 lb./ac. of N.
- Manures applied on 13.7.1951.

## 3. DESIGN:

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 5. (iv) (a) N.A. (b) 66' x 16½'. (v) N.A. (vi) Yes.

## 4. GENERAL:

(i) Satisfactory. (ii) Attack of top-shoot borers. (iii) Germination counts and grain yield. (iv) (a) 1951-1952. (b) and (c) No. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS:

- (i) 1618 lb./ac.  
 (ii) 125.8 lb./ac.  
 (iii) Treatment differences are highly significant.  
 (iv) Av. yield of grain in lb./ac.

Treatments	Av. yield
1.	1407
2.	1651
3.	1606
4.	1643
5.	1785
S.E./mean	= 56.3 lb./ac.

Crop :- Jowar (*Kharif*).

Ref :- Mh. 52(130).

Site :- Govt. Seed and Demonstration Farm, Washim.

Type :- 'M'.

Object :- To study the effect of cotton-seed-cake in comparison with other manures on *Jowar* yield.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Cotton. (c) As per treatments. (ii) (a) Medium black. (b) N.A. (iii) 17.7.1952. (iv) (a) 3 *bakharings*. (b) By *tiffan*. (c), (d) and (e) N.A. (v) Nil. (vi) *Saoner*. (vii) Unirrigated. (viii) 3 hoeings, 1 weeding and 1 thinning. (ix) 17.95%. (x) N.A.

## 2. TREATMENTS :

1. Control (no manure).
2. G.N.C. at 15 lb./ac. of N.
3. Cotton-seed-cake (decorticated) at 15 lb./ac. of N.
4. Cotton-seed-cake (undecorticated) at 15 lb./ac. of N.
5. A/S at 15 lb./ac. of N.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 5. (iv) (a) N.A. (b) 66' x 16½'. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) Not satisfactory. (ii) Mild attack of top-shoot borers which was controlled by removing affected shoots. (iii) Germination counts, height and grain yield. (iv) (a) 1951 to 1952. (b) and (c) No. (v) (a) and (b) Nil. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 979 lb./ac.  
 (ii) 222.2 lb./ac.  
 (iii) Treatments do not differ significantly.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	1062
2.	1042
3.	948
4.	979
5.	867
S.E./mean	=99.4 lb./ac.

Crop :- Jowar (*Kharif*).

Ref :- Mh. 49(125).

Site :- Govt. Seed and Demonstration Farm, Washim. Type :- 'M'.

Object :- To study the residual effect of T. C. and other manures on *Jowar*.

## 1. BASAL CONDITIONS :

(i) (a) *Jowar*—*Groundnut*—*Cotton*. (b) *Cotton*. (c) As per treatments. (ii) (a) Medium black. (b) N.A. (iii) 14.7.1949. (iv) (a) 1 *bakharig*. (b) N.A. (c) 6 lb./ac. (d) 18" x 12". (e) N.A. (v) Nil. (vi) *Saoner*. (vii) Unirrigated. (viii) 3 hoeings and 3 weedings. (ix) 63.59%. (x) 18.12.1949.

## 2. TREATMENTS :

1. Control.
2. T.C. at 10 C.L./ac.
3. T.C. at 20 C.L./ac.
4. F.Y.M. at 10 C.L./ac.
5. F.Y.M. at 20 C.L./ac.
6. G.N.C. at 4 md./ac.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 6. (iv) (a) N.A. (b) 1/40th of an acre. (v) N.A. (vi) Yes.



## 4. GENERAL :

(i) N.A. (ii) Nil. (iii) Grain yield. (iv) (a) 1946—1950. (b) Yes. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 427 lb./ac.  
 (ii) 107.2 lb./ac.  
 (iii) Treatments do not differ significantly.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	427
2.	468
3.	370
4.	480
5.	395
6.	421
S.E./mean	=43.8 lb./ac.

Crop :- Jowar (*Kharif*).

Ref :- Mh. 51(107).

Site :- Govt. Seed and Demonstration Farm, Washim.

Type :- 'M'.

Object :- To study the residual effect of manures applied in 1948—1949.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) Wheat. (c) Nil. (ii) (a) Medium black. (b) N.A. (iii) 16.7.1951. (iv) (a) 3 *bakharings*. (b) N.A. (c) 6 lb./ac. (d) 14 lines per plot. (e) N.A. (v) Nil. (vi) *Saoner* (late). (vii) Unirrigated. (viii) 4 hoeings and 2 weedings. (ix) 29.75". (x) 19,20.12.1951.

## 2. TREATMENTS :

1. Control. (no manure).  
 2. 20 lb./ac. of N as T.C.  
 3. 40 lb./ac. of N as T.C.  
 4. 20 lb./ac. of N as F.Y.M.  
 5. 40 lb./ac. of N as F.Y.M.  
 6. 10 lb./ac. of N as G.N.C.  
 7. 20 lb./ac. of N as G.N.C.  
 8. 10 lb./ac. of N as A/S.  
 9. 20 lb./ac. of N as A/S.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 9. (b) N.A. (iii) 6. (iv) (a) N.A. (b) 66' x 16½'. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) Satisfactory. (ii) Attack of top-shoot borers. (iii) Germination count, height and grain yield. (iv) (a) 1948—1953 (residual effect from 1949). (b) Yes. (c) N.A. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 1261 lb./ac.  
 (ii) 139.4 lb./ac.  
 (iii) Treatments do not differ significantly.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	1237
2.	1362
3.	1387
4.	1254
5.	1200
6.	1175
7.	1277
8.	1260
9.	1195
S.E./mean	=56.9 lb./ac.

Crop :- Jowar (*Kharif*).

Ref. :- Mh. 53(169)/51(107)

Site :- Govt. Seed and Demonstration. Farm, Washim. Type :- 'M'.

Object :- To study the residual effect of manures applied in 1948-1949.

## 1. BASAL CONDITIONS :

- (i) (a) N.A. (b) Groundnut. (c) Nil. (ii) (a) Medium black. (b) N.A. (iii) 10. 7. 1953.  
 (iv) (a) N.A. (b) By *tiffan*. (c) 8-10 lb./ac. (d) 18"×9". (e) N.A. (v) Nil. (vi) *Saoner*.  
 (late). (vii) Unirrigated. (viii) 4 hoeings and 1 thinning. (ix) 38.55". (x) 25.12.1953.

## 2. TREATMENTS :

1. Control (no manure).
2. 20 lb./ac. of N as T.C.
3. 40 lb./ac. of N as T. C.
4. 20 lb./ac. of N as F.Y.M.
5. 40 lb./ac. of N as F.Y.M.
6. 10 lb./ac. of N as G.N.C.
7. 20 lb./ac. of N as G.N.C.
8. 10 lb./ac of N as A/S.
9. 20 lb./ac. of N as A/S.

## 3. DESIGN :

- (i) R.B.D. (ii) (a) 9. (b) N.A. (iii) 6. (iv) (a) N.A. (b) 66'×16½'. (v) N.A. (vi) Yes.

## 4. GENERAL :

- (i) Due to heavy rains the crop suffered ; the crop was seen to be sickly pale yellow in colour. (ii) Attack of top-shoot borers ; no control measures taken. (iii) Grain yield. (iv) (a) 1948-1953 (residual effect from 1949). (b) Yes. (c) N.A. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 1367 lb./ac.  
 (ii) 137.8 lb./ac.  
 (iii) Treatments do not differ significantly.  
 (iv) Av. yield of grain in lb./ac.

Treatments	Av. yield
1.	1333
2.	1418
3.	1429
4.	1402
5.	1339
6.	1424
7.	1318
8.	1360
9.	1280
S.E./mean	=56.3 lb./ac.

Crop :- Jowar (*Kharif*).

Ref. :- Mh. 53(168)

Site :- Govt. seed and Demons. Farm, Washim.

Type 'M'.

Object :- To study the effect of different doses of N applied in different forms on *Jowar*.

## 1. BASAL CONDITIONS :

- (i) (a) Nil. (b) Cotton. (c) N.A. (ii) (a) Medium black. (b) N.A. (iii) 11.7.1953.  
 (iv) (a) 4 *bakharings*. (b) By *tiffan*. (c) 8-10 lb./ac. (d) 14 rows/plot. (e) N.A. (v) Nil. (vi) *Saoner*.  
 (late). (vii) Unirrigated. (viii) 2 weedings and 4 hoeings. (ix) 38.55". (x) 25.12.1953.

## 2. TREATMENTS :

1. No manure (2 plots/block).
2. 15 lb./ac. of N as A/S.
3. 30 lb./ac. of N as A/S.
4. 45 lb./ac. of N as A/S.
5. 15 lb./ac. of N as C/N.
6. 30 lb./ac. of N as C/N.
7. 45 lb./ac. of N as C/N.
8. 10 lb./ac. of N as Fertilizer mixture. (80 lb. of G.N.C.+27 lb. of A/S.)  
Manures applied at sowing.

## 3. DESIGN :

- (i) R.B.D. (ii) (a) 9. (b) N.A. (iii) 5. (iv) (a) N.A. (b) 66'×16½'. (v) N.A. (vi) Yes.

## 4. GENERAL :

- (i) Good. (ii) Attack of top-shoot borers. No control measures taken. (iii) Grain yield. (iv) (a) 1953—contd. (b) and (c) N.A. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 1700 lb./ac.  
 (ii) 137.6 lb./ac.  
 (iii) Treatment differences are highly significant.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	1548
2.	1587
3.	1747
4.	1870
5.	1619
6.	1837
7.	1965
8.	1581
S.E./mean (Treat 1)	=43.5 lb./ac.
S.E./mean (Treats. 2, 3,...8)	=61.5 lb./ac.

Crop :- Jowar (*Kharif*).

Site :- Govt. Exptl. Farm, Yeotmal.

Ref :- Mh. 49(92).

Type :- 'M'.

Object :- To study the effect of different manures on *Jowar*.

## 1. BASAL CONDITIONS :

- (i) (a) *Jowar*—Groundnut—Cotton. (b) Cotton. (c) N.A. (ii) (a) Black medium loam. (b) Refer soil analysis, Yeotmal. (iii) 13.7.1949. (iv) (a) 3 *bakharings*. (b) Dibbling. (c) 4 to 6 lb./ac. (d) and (e) N.A. (v) 4½ ton/ac. of T.C. (vi) *Saoner* (medium). (vii) Unirrigated. (viii) 3 hoeings and 2 weedings. (ix) 46.91". (x) Nov. 1949.

## 2. TREATMENTS :

- ✓ 1. Control (no manure).
- ✓ 2. T.C. at 20 lb./ac. of N.
3. T.C. at 40 lb./ac. of N.
- ✓ 4. Cow-dung manure at 20 lb./ac. of N.
5. Cow-dung manure at 40 lb./ac. of N.
6. G.N.C. at 10 lb./ac. of N.
- ✓ 7. G.N.C. at 20 lb./ac. of N.
8. A/S at 10 lb./ac. of N.
- ✓ 9. A/S at 20 lb./ac. of N.

## 3. DESIGN :

- (i) R.B.D. (ii) (a) 9. (b) N.A. (iii) 6. (iv) (a) N.A. (b) 1/40th of an acre. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) Satisfactory. (ii) Nil. (iii) Grain yield. (iv) (a) 1949—continued. (b) No. (b) N.A. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 1001 lb./ac.  
 (ii) 218.1 lb./ac.  
 (iii) Treatments differ significantly.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
✓ 1.	1034
✓ 2.	954
3.	960
✓ 4.	780
5.	840
6.	1074
✓ 7.	1141
8.	1007
✓ 9.	1221
S.E./mean	= 89.04 lb./ac.

Crop :- Jowar (*Kharif*).

Site :- Govt. Exptl. Farm, Yeotmal.

Ref :- Mh. 50(111).

Type :- 'M'.

Object :- To study the effect of different manures on *Jowar*.

## 1. BASAL CONDITIONS :

(i) (a) *Jowar*—Groundnut—Cotton. (b) Cotton. (c) N.A. (ii) (a) Medium black loam. (b) Refer soil analysis, Yeotmal. (iii) 2nd week of July 1950. (iv) (a) 4 *bakharings*. (b) N.A. (c) 4 to 6 lb./ac. (d) and (e) N.A. (v) 4 ton/ac. of T.C. (vi) *Saoner* (medium). (vii) Unirrigated. (viii) N.A. (ix) 27.96%. (x) Last week of Dec. 1950.

## 2. TREATMENTS :

- ✓ 1. Control (no manure).
2. T.C. at 20 lb./ac. of N.
3. T.C. at 40 lb./ac. of N.
4. Cow-dung manure at 20 lb./ac. of N.
5. Cow-dung manure at 40 lb./ac. of N.
6. G.N.C. at 10 lb./ac. of N.
7. G.N.C. at 20 lb./ac. of N.
8. A/S at 10 lb./ac. of N.
9. A/S at 20 lb./ac. of N.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 9. (b) N.A. (iii) 6. (iv) (a) N.A. (b) 66' × 16½'. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) Unsatisfactory owing to draught. (ii) N.A. (iii) Grain yield. (iv) (a) 1949—continued. (b) No. (c) N.A. (v) (a) and (b) N.A. (vi) Crop was adversely affected by draught. (vii) Nil.

## 5. RESULTS :

- (i) 479 lb./ac.  
 (ii) 353.9 lb./ac.  
 (iii) Treatments do not differ significantly.

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

Treatment	Av. yield
✓ 1.	647
✓ 2.	430
3.	337
• 4.	250
5.	430
6.	800
• 7.	527
8.	367
• 9.	524
S.E./mean	= 144.5 lb./ac.

Crop :- Jowar (*Kharif*).

Ref :- Mh. 51(149).

Site :- Govt. Exptl. Farm, Yeotmal.

Type :- 'M'.

Object :—To study the effect of different manures on *Jowar*.

## 1. BASAL CONDITIONS:

(i) (a) *Jowar*—Groundnut—Cotton. (b) Cotton. (c) N.A. (ii) (a) Black medium loam. (b) Refer soil analysis, Yeotmal. (iii) 3rd week of July 1951. (iv) (a) 3 *bakharings*. (b) Dibbling. (c) 5 lb./ac. (d) and (e) N.A. (v) N.A. (vi) *Saoner* (medium). (vii) Unirrigated. (viii) 3 hoeings and 2 weedings. (ix) 39.57". (x) Last week of Dec. 1951.

## 2. TREATMENTS :

- Control (no manure). ✓
- T.C. at 20 lb./ac. of N. ✓
- T.C. at 40 lb./ac. of N.
- Cattle-dung at 20 lb./ac. of N.
- Cattle-dung at 40 lb./ac. of N.
- G.N.C. at 10 lb./ac. of N.
- G.N.C. at 20 lb./ac. of N.
- A/S at 10 lb./ac. of N.
- A/S at 20 lb./ac. of N.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 9. (b) N.A. (iii) 6. (iv) (a) N.A. (b) 1/40th of an acre. (v) One line on two sides and 4 plants of each line on the other two sides. (vi) Yes.

## 4. GENERAL :

(i) Satisfactory. (ii) N.A. (iii) Grain yield. (iv) (a) 1949—contd. (b) No. (c) N.A. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- 738 lb./ac.
- 162.7 lb./ac.
- Treatments differ significantly.
- Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	764
2.	674
3.	707
4.	620
5.	600
6.	795
7.	844
8.	744
9.	904
S.E./mean	= 66.4 lb./ac.

Crop :- Jowar (*Kharif*).  
Site :- Govt. Exptl. Farm, Yeotmal.

Ref :- Mh. 51(148).  
Type :- 'M'.

Object :- To study the effect of different sources of N on *Jowar*.

1. BASAL CONDITIONS :

(i) (a) *Jowar*-Groundnut-Cotton. (b) Cotton. (c) N.A. (ii) (a) Medium black loam. (b) Refer soil analysis, Yeotmal. (iii) 3rd week of July 1951. (iv) (a) 3 *bakharings*. (b) Hand dibbling. (c) 4 lb./ac. (d) and (e) N.A. (v) N.A. (vi) *Saoner* (medium). (vii) Unirrigated. (viii) 3 hoeings and 2 weedings. (ix) 39.57". (x) Last week of Dec. 1951.

2. TREATMENTS :

1. G.N.C.
  2. Decorticated cotton-seed-cake.
  3. Undecorticated cotton-seed-cake.
  4. A/S.
- Quantity, time and method of application of N are N.A.

3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 5. (iv) (a) N.A. (b) 1/40th of an acre. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) N.A. (iii) Grain yield. (iv) (a) 1951—contd. (b) No. (c) N.A. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

- (i) 400 lb./ac.
- (ii) 142.4 lb./ac.
- (iii) Treatments do not differ significantly.
- (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	416
2.	384
3.	368
4.	432
S.E./mean	=63.7 lb./ac.

Crop :- Jowar (*Kharif*).  
Site :- Govt. Exptl. Farm, Yeotmal.

Ref :- Mh. 53(273).  
Type :- 'M'.

Object :- To study the effect of Sodium Nitrate on *Jowar* crop.

1. BASAL CONDITIONS :

(i) (a) *Jowar*—Groundnut—Cotton. (b) Cotton. (c) N.A. (ii) (a) Black medium soil. (b) Refer soil analysis, Yeotmal. (iii) 15.7.1953. (iv) (a) 3 *bakharings* on 10, 18 and 25.6.1953. (b) Hand dibbling. (c) N.A. (d) N.A. (e) N.A. (v) Nil. (vi) *Saoner* (medium). (vii) Unirrigated. (viii) 3 hoeings and 2 weedings. (ix) 37.63". (x) 31.12.1953.

2. TREATMENTS :

1. Control (two plots/block).
2. A/S at 15 lb./ac. of N.
3. A/S at 30 lb./ac. of N.
4. A/S at 45 lb./ac. of N.
5. Sodium Nitrate at 15 lb./ac. of N.
6. Sodium Nitrate at 30 lb./ac. of N.
7. Sodium Nitrate at 45 lb./ac. of N.
8. G.N.C. at 1 md./ac. + A/S at  $\frac{1}{2}$  md./ac.

## 3. DESIGN

(i) R.B.D. (ii) (a) 9. (b) N.A. (iii) 5. (iv) (a) N.A. (b) 1/40th of an acre. (v) One line on each side and 4 plants on the other two sides. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Nil. (iii) Grain yield. (iv) (a) 1953—N.A. (b) No. (c) N.A. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 959.0 lb./ac.  
 (ii) 209.2 lb./ac.  
 (iii) Treatment differences are significant.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	852
2.	736
3.	1152
4.	1080
5.	1104
6.	968
7.	1096
8.	792
S.E./mean (Treat 1)	=93.5 lb./ac.
S.E./mean (Treats 2, 3,.....8)	=66.1 lb./ac.

✓ Crop :-Jowar. Ref :-Complex Expts. (T.C.M.), 1953.  
 ✓ Centre :-Akola (Maharashtra). 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 to clay loam. (b) Neutral in reaction. (iii) 3rd week of July, 1953.  
 (iv) (a) N.A. (b) Drilled. (c) 7 lb./ac. (d) Between plants 9° to 12° and between rows 16.5°. (e) N.A.  
 (v) N.A. (vi) N.J. 164 (improved). (vii) Unirrigated. (viii) N.A. (ix) 25°—30°. (x) N.A.

## 2. TREATMENTS :

All combinations of (1) and (2) + a control (no manure).

(1) 2 times of application of N :  $D_1$  = At sowing and  $D_2$  = At first irrigation.

(2) 2 sources of N (at 20 lb./ac.) :  $S_1$  = A/S and  $S_2$  = Urea.

Manures broadcast 3—4 days before sowing and thoroughly mixed with soil by one *bakharing*.

## 5. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 5. (iv) (a) N.A. (b) 34.57' × 21'. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) Normal. (ii) Incidence of *striga* in patches was fairly common. (iii) Grain yield. (iv) (a) 1953—1956.  
 (b) No. (c) N.A. (v) No. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 1745 lb./ac.  
 (ii) 297.3 lb./ac.  
 (iii) Time of application of N is significant. Others are not significant.  
 (iv) Av. yield of grain in lb./ac.

	Control = 1654 lb./ac.		Mean
	$D_1$	$D_2$	
$S_1$	1973	1522	1748 ✓
$S_2$	1847	1728	1788 ✓
Mean	1910	1625	1768

S.E. of marginal mean = 94.1 lb./ac.  
 S.E. of body of table = 132.9 lb./ac.

Crop :- Jowar.

Ref :- Co mplex Expts. (T.C.M.), 1953.

Centre :- Akola (Maharashtra).

Type :- 'M'.

Object :-IV To study the effect of types, levels and methods of application of phosphatic manures.

## 1. BASAL CONDITIONS :

- (i) (a) to (c) N.A. (ii) (a) Loam to clay loam. (b) Neutral in reaction. (iii) 3rd week of July, 1953.  
 (iv) (a) N.A. (b) Drilled. (c) 7 lb./ac. (d) Between plants 9"—12" and between rows 16.5". (e) N.A.  
 (v) N.A. (vi) N.J. 164 (improved). (vii) Unirrigated. (viii) N.A. (ix) 20" to 30". (x) N.A.

## 2. TREATMENTS :

All combinations of (1), (2) and (3)+2 control plots/block.

(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 lb./ac. and  $P_2$ =30 lb./ac.(3) 2 methods of application :  $M_1$ =Broadcast before final cultivation and  $M_2$ =applied 2½" below seed. Manures applied 3—4 days before sowing.

## 3. DESIGN :

- (i) R.B.D. (ii) (a) 14. (b) N.A. (iii) 3. (iv) (a) N.A. (b) 27'×27'. (v) N.A. (vi) Yes.

## 4. GENERAL :

- (i) Normal. (ii) Incidence of *striga* in patches was fairly common throughout the experiment. (iii) Grain yield. (iv) (a) 1953—56. (b) No. (c) N.A. (v) No. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 2549 lb./ac.  
 (ii) 254.5 lb./ac.  
 (iii) Main effects, interactions and control vs others are not significant.  
 (iv) Av. yield of grain in lb./ac.

Control =2459 lb./ac.

	$S_1$	$S_2$	$S_3$	Mean	$P_1$	$P_2$
$M_1$	2621	2575	2482	2559	2524	2594
$M_2$	2542	2534	2631	2569	2514	2624
Mean	2582	2555	2556	2564	2519	2609
$P_1$	2579	2468	2511			
$P_2$	2584	2641	2602			

S.E. of marginal mean of S	= 73.4 lb./ac.
S.E. of marginal mean of P or M	= 59.9 lb./ac.
S.E. of body of S×M or S×P table	=103.9 lb./ac.
S.E. of body of M×P table	= 84.8 lb./ac.
S.E. of control mean	=103.9 lb./ac.

Crop :- Jowar.

Ref :- Complex Expts. (T. C. M.), 1953.

Site :- Akola (Maharashtra).

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) N.A. (b) N.A. (c) N.A. (ii) (a) Loam to clay loam. (b) Neutral in reaction. (iii) 3rd week of July, 1953. (iv) (a) N.A. (b) Drilled. (c) 7 lb./ac. (d) between plants 9"—12" and between rows 16.5". (e) N.A. (v) N.A. (vi) N. J. 164 (improved). (vii) Unirrigated. (viii) N.A. (ix) 20" to 30". (x) N.A.



## 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  $P_2O_5$ :  $P_0=0$ ,  $P_1=20$  and  $P_2=40$  lb./ac.

Manures applied 3-4 days before sowing by broadcast.

## 3. DESIGN:

(i) R.B.D. (ii) (a) 15. (b) N.A. (iii) 3. (iv) (a) N.A. (b)  $27' \times 27'$ . (v) N.A. (vi) Yes.

## 4. GENERAL:

(i) Normal. (ii) Incidence of *striga* in patches. (iii) Yield data. (iv) (a) 1953-1956. (b) No. (c) N.A. (v) No. (vi) Nil. (vii) Nil.

## 5. RESULTS:

(i) 2685 lb./ac.

(ii) 241.7 lb./ac.

(iii) Main effects 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
$P_0$	2359	2633	2823	2654	2730	2726	2728
$P_1$	2608	2682	2719	2682	2669	2732	2700
$P_2$	2509	2821	2672	2719	2643	2850	2747
Mean	2525	2712	2738	2685	2681	2769	
$S_1$	—	2728	2633	2681			
$S_2$	—	2696	2842	2769			

For  $N \times P$  table

S.E. of marginal mean of  $N_0$  column = 80.6 lb./ac.

S.E. of marginal mean of  $N_1$  or  $N_2$  column = 56.9 lb./ac.

S.E. of marginal mean of rows = 62.4 lb./ac.

For  $S \times P$  table

S.E. of body of table = 98.7 lb./ac.

S.E. of marginal mean of columns = 56.9 lb./ac.

S.E. of marginal mean of rows = 69.8 lb./ac.

For  $S \times N$  table

S.E. of body of table = 80.6 lb./ac.

S.E. of any marginal mean = 56.9 lb./ac.

Crop :- Jowar (*Kharif*).

Ref. :- Expts. on cultivators' fields Mh. 52(337)

Site :- Karbir (Kolhapur).

Type :- 'M'

Object :- To find the effect of manures on the yield of *Jowar* under cultivators' field conditions.

## 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 (e) N.A. (vi) N.A. (vii) N.A. (viii) N.A. (ix) N.A. (x) 18. 12. 1952 and 30. 12. 1952.

## 2. TREATMENTS:

1. Control.

2. Manure mixture at 14.25 lb./guntha.

3. Manure mixture at 14.25 lb./guntha + Bonemeal at 22.5 lb./guntha.

## 3. DESIGN :

(i) and (ii) 2 fields were selected at random in each of two villages selected at random from *Jowar* growing villages. (iii) (a) N.A. (b) 18' × 60'. (iv) N.A.

## 4. GENERAL :

(i) N.A. (ii) N.A. (iii) Grain yield. (iv) (a) N.A. (b) N.A. (c) N.A. (v) N.A. (vi) Nil. (vii) Nil.

## 5. RESULTS :

- (i) 892 lb./ac.  
 (ii) 490 lb./ac.  
 (iii) Treatments differ highly significantly.  
 (iv) Av. yield of grain in lb./ac.

Treatments	Av. yield
1.	760
2.	888
3.	1030
S.E./mean	= 28.30 lb./ac.

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

Ref :- Expts. on cultivators' fields Mh. 52(338).

Site :- Godhingly (Kolhapur).

Type :- 'M'.

Object :—To find the effect of manure mixtures on the yield of *Jowar*.

## 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 (e) N.A. (vi) N.A. (vii) N.A. (viii) N.A. (ix) N.A. (x) N.A.

## 2. TREATMENTS :

- Control.
- Manure mixture at 14.25 lb./*guntha*.
- Manure mixture at 14.25 lb./*guntha* + Bonemeal at 22.5 lb./*guntha*.

## 3. DESIGN :

(i) and (ii) 2 fields were selected at random from each of two villages selected at random from *Jowar* growing villages. (iii) (a) N.A. (b) 18' × 60'. (iv) N.A.

## 4. GENERAL :

(i) N.A. (ii) N.A. (iii) Grain yield. (iv) (a) N.A. (b) and (c) N.A. (v) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 1120 lb./ac.  
 (ii) 74.40 lb./ac.  
 (iii) Treatments differ highly significantly.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	996
2.	1102
3.	1262
S.E./mean	= 37.20 lb./ac.

Crop :- Jowar (*Kharif*).

Ref :- Expts. on cultivators' fields Mh. 52(339).

Site :- Hatkanglde (Kolhapur).

Type :- 'M'.

Object :—To find the effect of manure mixture on the yield of *Jowar* under cultivators' field conditions.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) and (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) 22 and 28.12.1952.

## 2. TREATMENTS :

1. Control.
2. Manure mixture at 14.25 lb./*guntha*.
3. Manure mixture at 14.25 lb./*guntha*+Bonemeal at 22.5 lb./*guntha*.

## 3. DESIGN :

(i) and (ii) 2 fields were selected at random from each of two villages. selected at random from *Jowar* growing villages. (iii) (a) N.A. (b) 18'×60'. (iv) N.A.

## 4. GENERAL :

(i) N.A. (ii) N.A. (iii) Grain yield. (iv) (a) to (c) N.A. (v) N.A. (vi) and (vii) N.A.

## 5. RESULTS :

- (i) 1620 lb./ac.
- (ii) 355.2 lb./ac.
- (iii) Treatments do not differ significantly.
- (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	1280
2.	1740
3.	1840
S.E./mean	= 177.6 lb./ac.

Crop :- Jowar (*Kharif*).

Ref :- Expts. on cultivators' fields Mh. 52(340).

Site :- Shilor Dist. (Kolhapur).

Type :- 'M'.

Object :—To find the effect of manure mixture on the yield of *Jowar* under cultivators' field conditions.

## 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 (e) N.A. (vi) N.A. (vii) N.A. (viii) N.A. (ix) N.A. (x) 5 and 23.12.1952.

## 2. TREATMENTS :

1. Control.
2. Manure mixture at 14.25 lb./*guntha*.
3. Manure mixture at 14.25 lb./*guntha*+Bonemeal at 22.5 lb./*guntha*.

## 3. DESIGN :

(i) and (ii) 2 fields were selected at random in each of the 2 villages selected at random from *Jowar* growing villages. Results from one field were, however, not available. (iii) (a) N.A. (b) 18'×60'. (iv) N.A.

## 4. GENERAL :

(i) N.A. (ii) N.A. (iii) Grain yield. (iv) (a) N.A. (b) N.A. (c) N.A. (v) N.A. (vi) Nil. (vii) Nil.

## 5. RESULTS :

- (i) 1541 lb./ac.
- (ii) 312 lb./ac.
- (iii) Treatments do not differ significantly.

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

Treatment	Av. yield
1.	1330
2.	1774
3.	1519
S.E./mean	=180.1 lb./ac.

Crop :- Jowar (*Kharif*). Ref :- Expts. on cultivators' fields Mh. 52(341).

Site :- Kagal (Distt. Kolhapur).

Type :- 'M'.

Object :- To find the effect of manure mixture on the yield of *Jowar* under cultivators' field conditions.

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 (e) N.A. (vi) N.A. (vii) N.A. (viii) N.A. (ix) N.A. (x) 20.12.1952.

2. TREATMENTS :

1. Control.
2. Manure mixture at 14.25 lb./*guntha*.
3. Manure mixture at 14.25 lb./ *guntha* + Bonemeal at 22.5 lb./*guutha*.

3. DESIGN :

(i) and (ii) 2 fields were randomly selected in the village selected at random from the *jowar* growing villages.  
(iii) (a) N.A. (b) 18' x 60'. (iv) N.A.

4. GENERAL :

(i) N.A. (ii) N.A. (iii) Grain yield. (iv) (a) N.A. (b) N.A. (c) N.A. (v) N.A. (vi) Nil. (vii) Nil.

5. RESULTS :

- (i) 1502 lb./ac.
- (ii) 136 lb./ac.
- (iii) Treatments do not differ significantly.
- (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	1512
2.	1673
3.	1320
S.E./mean	=96.18 lb./ac.

Crop :- Jowar (*Kharif*).

Ref :- Expts. on cultivators' fields Mh. 52(264).

Site :- Tasgaon (South Satara).

Type :- 'M'.

Object :- To find the effect of manure mixture on the yield of *Jowar* under cultivators' field conditions.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) *Jowar*. (c) Nil. (ii) Black. (iii) 5 C.L./ac. of F.Y.M. (iv) Mandapuri. (v) (a) to (c) N.A. (d) 18" x 4" and 15" x 15". (e) N.A. (vi) N.A. (vii) Unirrigated. (viii) N.A. (ix) N.A. (x) 25.11.1952 ; 5 to 26.12.1952 and 11.1.1953.

2. TREATMENTS :

1. Control.
2. 64 lb./ac. of N as A/S + G.N.C. in 1 : 1 ratio.

## 3. DESIGN :

(i) and (ii) 2 villages were selected at random and 2 fields within the selected villages were also selected at random. (iii) (a) 42' × 30'. (b) 18' × 60'. (iv) N.A.

## 4. GENERAL :

(i) N.A. (ii) N.A. (iii) Grain yield. (iv) (a) to (c) N.A. (v) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 3153 lb./ac.

(ii) 168.4 lb./ac.

(iii) Treatments differ highly significantly.

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

Treatment	Av. yield
1.	2881
2.	3122
3.	3462
S.E./mean.	= 84.18 lb./ac.

Crop :- Jowar (*Khariif*).

Ref :- Expts. on cultivators' fields Mh. 52(266).

Site :- Miraj (South Satara).

Type :- 'M'.

Object :- To study the effect of manures on the yield of *Jowar* under cultivators' fields conditions.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) Gram—Tobacco ; *Jowar*—Turmeric. (c) Nil. (ii) Deep black. (iii) 5 C.L./ac. of F.Y.M. (iv) *Marna depuri* (late) ; *Digraji* and *Tabmbad bhondi* (mid late). (v) (a) One clod crushing and two harrowings ; one ploughing and three harrowings. (b) and (c) N.A. (d) 18" × 6" ; 12" × 6" and 12" × 3". (e) N.A. (vi) N.A. (vii) Unirrigated. (viii) N.A. (ix) N.A. (x) 23.11.1952 ; 5 and 28.12.1952.

## 2. TREATMENTS :

1. Control.

2. 64 lb./ac. of N as A/S + G.N.C. in 1 : 1 ratio.

3. 64 lb./ac. of N + 32 lb./ac. of P<sub>2</sub>O<sub>5</sub> as Super.

## 3. DESIGN :

(i) and (ii) 2 villages were selected at random and 2 fields within the selected villages were also selected at random. (iii) (a) 72' × 30'. (b) 18' × 60'. (iv) N.A.

## 4. GENERAL :

(i) N.A. (ii) N.A. (iii) Grain yield. (iv) (a) One year only. (b) and (c) N.A. (v) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 1544 lb./ac.

(ii) 440.0 lb./ac.

(iii) Treatments do not differ significantly.

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

Treatment	Av. yield
1.	1352
2.	1524
3.	1747
S.E./mean	= 220.0 lb./ac.

✓ Crop :- Jowar.

Ref. :- Complex Expts. (T.C.M.), 1953.

Site :- Akola (Maharashtra).

Type :- 'MV'

Object :- To study the effect of N and P on the yield of different varieties of *Jowar*.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) N.A. (c) N.A. (ii) (a) Loam to clay loam. (b) Neutral in reaction. (iii) 3rd week of July, 1953. (iv) (a) N.A. (b) Drilled. (c) 7 lb./ac. (d) Between plants 9" x 12" and between rows 16.5". (e) N.A. (vi) As per treatments. (vii) Unirrigated. (viii) N.A. (ix) 20° to 30°. (x) N.A.

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

(3) 3 varieties :  $V_1$ ,  $V_2$  and  $V_3$ ; details N.A.

Manures applied 3-4 days before sowing by broadcast.

3. DESIGN :

(i)  $3^3$  factorial in R.B.D. (confounded). (ii) (a) 3 blocks/replication ; 9 plots/block. (b) N.A. (iii) 1. (iv) (a) N.A. (b) 27' x 27'. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Incidence of *striga* in patches was fairly common. (iii) Yield data. (iv) (a) 1953-1956. (b) No. (c) N.A. (v) No. (vi) Nil. (vii) Nil.

5. RESULTS :

(i) 3043 lb./ac.

(ii) 124.5 lb./ac.

(iii) Main effects of N, P and V and interactions NP, VP are highly significant. Interaction VN is also significant.

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

	$N_0$	$N_1$	$N_2$	Mean	$V_1$	$V_2$	$V_3$
$P_0$	2066	2737	3048	2617	2463	2824	2564
$P_1$	2956	3501	3176	3211	2930	3062	3641
$P_2$	3305	3297	3302	3301	2935	3676	3292
Mean	2776	3178	3175	3043	2776	3187	3166
$V_1$	2388	3073	2868				
$V_2$	3032	3391	3140				
$V_3$	2909	3071	3517				

S.E. of any marginal mean = 41.5 lb./ac.

S.E. of body of table = 71.8 lb./ac.

Crop :- Jowar (*Rabi*).

Ref. :- Mh. 51(72).

Site : Agri.Res., Stn., Chas.

Type :- 'C'.

Object :- To study the effect of tillage operations (harrowing-cum-interculturing) on the growth and yield of *Jowar*.

1. BASAL CONDITIONS :

(i) (a) Gram-*Jowar*. (b) Gram. (c) Nil. (ii) (a) Deep black and medium. (b) N.A. (iii) 29. 9. 1951. (iv) (a) 1 ploughing. (b) N.A. (c) 4 lb./ac. (d) 18" between rows. (e) N.A. (v) Nil. (vi) M-35-1., medium. (vii) Unirrigated. (viii) N.A. (ix) 8.63°. (29. 9. 1951 to 15. 2. 1952). (x) 15. 2. 1952.

**2. TREATMENTS :**

All combinations of (1) and (2)

- (1) Number of interculturings :—  $I_1=1, I_2=2, I_3=3$  and  $I_4=4$ .  
 (2) Number of harrowings :—  $H_1=2, H_2=3$  and  $H_3=4$ .

**3. DESIGN :**

(i)  $3 \times 4$  Fact. in R.B.D. (ii) (a) 12. (b) N.A. (iii) 4. (iv) (a)  $33' \times 33'$ . (b)  $30' \times 30'$ . (v) 1.5' ring round the net plot. (vi) Yes.

**4. GENERAL :**

(i) Normal. (ii) Nil. (iii) Count, height and grain yield. (iv) (a) 1951-1952 to 1955-1956. (b) No. (c) N.A. (v) (a) Sholapur and Jeur. (b) N.A. (vi) and (vii) Nil.

**5. RESULTS :**

- (i) 336 lb./ac.  
 (ii) 115.8 lb./ac.  
 (i.i) Main effect of H alone is significant.  
 (iv) Av. yield of grain in lb./ac.

	H <sub>1</sub>	H <sub>2</sub>	H <sub>3</sub>	Mean
I <sub>1</sub>	334	336	462	377
I <sub>2</sub>	178	329	472	326
I <sub>3</sub>	378	328	392	366
I <sub>4</sub>	238	280	313	277
Mean	282	318	410	336

S.E. of marginal mean of I = 33.42 lb./ac.

S.E. of marginal mean of H = 28.94 lb./ac.

S.E. of body of table = 57.88 lb./ac.

Crop :- Jowar (*Rabi*).

Ref :- Mh. 52(101).

Site :- Agri. Res. Stn., Chas.

Type :- 'C'.

Object :- To study the effect of tillage operations (harrowing-cum-interculturing) on the growth and yield of *Jowar*.

**1. BASAL CONDITIONS :**

(i) (a) Gram—*Jowar*. (b) Gram. (c) Nil. (ii) (a) Deep black and medium. (b) N.A. (iii) 3.10.1952. (iv) (a) 1 ploughing. (b) N.A. (c) 4 lb./ac. (d) 18" between rows. (e) N.A. (v) Nil. (vi) M-35-1 (medium). (vii) Unirrigated. (viii) N.A. (ix) 2.24" (3.10.1952 to 1.2.1953). (x) 1.2.1953.

**2. TREATMENTS :**

All combinations of (1) and (2)

- (1) Number of interculturings :—  $I_1=1, I_2=2, I_3=3$  and  $I_4=4$ .  
 (2) Number of harrowings :—  $H_1=2, H_2=3$  and  $H_3=4$ .

**3. DESIGN :**

(i)  $4 \times 3$  Fact. in R.B.D. (ii) (a) 12. (b) N.A. (iii) 4. (iv) (a)  $33' \times 33'$ . (b)  $30' \times 30'$ . (v) 1.5' ring round the net plot. (vi) Yes.

✓ Crop :- Jowar.

Ref. :- Complex Expts. (T.C.M.), 1953.

Site :- Akola (Maharashtra).

Type :- 'MV'

Object :- To study the effect of N and P on the yield of different varieties of Jowar.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) N.A. (c) N.A. (ii) (a) Loam to clay loam. (b) Neutral in reaction. (iii) 3rd week of July, 1953. (iv) (a) N.A. (b) Drilled. (c) 7 lb./ac. (d) Between plants 9" x 12" and between rows 16.5". (e) N.A. (vi) As per treatments. (vii) Unirrigated. (viii) N.A. (ix) 20" to 30". (x) N.A.

## 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) 3 levels of  $P_2O_5$  :  $P_0=0$ ,  $P_1=20$  and  $P_2=40$  lb./ac.(3) 3 varieties :  $V_1$ ,  $V_2$  and  $V_3$ ; details N.A.

Manures applied 3-4 days before sowing by broadcast.

## 3. DESIGN :

(i)  $3^3$  factorial in R.B.D. (confounded). (ii) (a) 3 blocks/replication ; 9 plots/block. (b) N.A. (iii) 1. (iv) (a) N.A. (b) 27' x 27'. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) Normal. (ii) Incidence of *striga* in patches was fairly common. (iii) Yield data. (iv) (a) 1953-1956. (b) No. (c) N.A. (v) No. (vi) Nil. (vii) Nil.

## 5. RESULTS :

(i) 3043 lb./ac.  
(ii) 124.5 lb./ac.  
(iii) Main effects of N, P and V and interactions NP, VP are highly significant. Interaction VN is also significant.  
(iv) Av. yield of grain in lb./ac.

	$N_0$	$N_1$	$N_2$	Mean	$V_1$	$V_2$	$V_3$
$P_0$	2066	2737	3048	2617	2463	2824	2564
$P_1$	2956	3501	3176	3211	2930	3062	3641
$P_2$	3305	3297	3302	3301	2935	3676	3292
Mean	2776	3178	3175	3043	2776	3187	3166
$V_1$	2388	3073	2868				
$V_2$	3032	3391	3140				
$V_3$	2909	3071	3517				

S.E. of any marginal mean = 41.5 lb./ac.

S.E. of body of table = 71.8 lb./ac.

Crop :- Jowar (Rabi).

Ref. :- Mh. 51(72).

Site :- Agri.Res., Stn., Chas.

Type :- 'C'.

Object :- To study the effect of tillage operations (harrowing-cum-interculturing) on the growth and yield of Jowar.

## 1. BASAL CONDITIONS :

(i) (a) Gram-Jowar. (b) Gram. (c) Nil. (ii) (a) Deep black and medium. (b) N.A. (iii) 29. 9. 1951. (iv) (a) 1 ploughing. (b) N.A. (c) 4 lb./ac. (d) 18" between rows. (e) N.A. (v) Nil. (vi) M-35-1., medium. (vii) Unirrigated. (viii) N.A. (ix) 8.63". (29. 9. 1951 to 15. 2. 1952). (x) 15. 2. 1952.



## 2. TREATMENTS :

All combinations of (1) and (2)

- (1) Number of interculturings :—  $I_1=1, I_2=2, I_3=3$  and  $I_4=4$ .  
 (2) Number of harrowings :—  $H_1=2, H_2=3$  and  $H_3=4$ .

## 3. DESIGN :

(i)  $3 \times 4$  Fact. in R.B.D. (ii) (a) 12. (b) N.A. (iii) 4. (iv) (a)  $33' \times 33'$ . (b)  $30' \times 30'$ . (v) 1.5' ring round the net plot. (vi) Yes.

## 4. GENERAL :

(i) Normal. (ii) Nil. (iii) Count, height and grain yield. (iv) (a) 1951-1952 to 1955-1956. (b) No. (c) N.A. (v) (a) Sholapur and Jeur. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 336 lb./ac.  
 (ii) 115.8 lb./ac.  
 (i.i) Main effect of H alone is significant.  
 (iv) Av. yield of grain in lb./ac.

	H <sub>1</sub>	H <sub>2</sub>	H <sub>3</sub>	Mean
I <sub>1</sub>	334	336	462	377
I <sub>2</sub>	178	329	472	326
I <sub>3</sub>	378	328	392	366
I <sub>4</sub>	238	280	313	277
Mean	282	318	410	336

S.E. of marginal mean of I = 33.42 lb./ac.

S.E. of marginal mean of H = 28.94 lb./ac.

S.E. of body of table = 57.88 lb./ac.

Crop :- Jowar (*Rabi*).

Ref :- Mh. 52(101).

Site :- Agri. Res. Stn., Chas.

Type :- 'C'.

Object :- To study the effect of tillage operations (harrowing-cum-interculturing) on the growth and yield of *Jowar*.

## 1. BASAL CONDITIONS :

(i) (a) Gram—*Jowar*. (b) Gram. (c) Nil. (ii) (a) Deep black and medium. (b) N.A. (iii) 3.10.1952. (iv) (a) 1 ploughing. (b) N.A. (c) 4 lb./ac. (d) 18" between rows. (e) N.A. (v) Nil. (vi) M-35-1 (medium). (vii) Unirrigated. (viii) N.A. (ix) 2.24" (3.10.1952 to 1.2.1953). (x) 1.2.1953.

## 2. TREATMENTS :

All combinations of (1) and (2)

- (1) Number of interculturings :—  $I_1=1, I_2=2, I_3=3$  and  $I_4=4$ .  
 (2) Number of harrowings :—  $H_1=2, H_2=3$  and  $H_3=4$ .

## 3. DESIGN :

(i)  $4 \times 3$  Fact. in R.B.D. (ii) (a) 12. (b) N.A. (iii) 4. (iv) (a)  $33' \times 33'$ . (b)  $30' \times 30'$ . (v) 1.5' ring round the net plot. (vi) Yes.

## 4. GENERAL :

(i) Normal. (ii) Nil. (iii) Height, count and grain yield. (iv) (a) 1951—52 to 1955—56. (b) No, (c) N.A. (v) (a) Sholapur and Jeur. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 504 lb./ac.  
 (ii) 119.5 lb./ac.  
 (iii) None of the effects is significant.  
 (iv) Av. yield of grain in lb./ac.

	H <sub>1</sub>	H <sub>2</sub>	H <sub>3</sub>	Mean
I <sub>1</sub>	581	463	443	496
I <sub>2</sub>	477	450	554	494
I <sub>3</sub>	456	526	684	555
I <sub>4</sub>	446	501	417	471
Mean	490	497	524	504

S.E. of marginal mean of I = 34.48 lb./ac.

S.E. of marginal mean of H = 29.88 lb./ac.

S.E. of body of table = 59.77 lb./ac.

Crop :- Jowar (*Rabi*).

Ref :- Mh. 53(153).

Site :- Agri. Res. Stn., Chas.

Type :- 'C'.

Object :- To study the effect of tillage operations (harrowing-cum-interculturing) on the growth and yield of Jowar.

## 1. BASAL CONDITIONS :

(i) (a) Gram-Jowar. (b) Gram. (c) Nil. (ii) (a) Deep black and medium. (b) N.A. (iii) 21.9.1953. (iv) (a) 1 ploughing. (b) N.A. (c) 4 lb./ac. (d) 18" between rows. (e) N.A. (v) Nil. (vi) M-35-1. (vii) Unirrigated. (viii) Nil. (ix) 7.66". (21.9.1953 to 11.2.1954). (x) 11.2.1954.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) Number of interculturings : I<sub>1</sub>=1, I<sub>2</sub>=2, I<sub>3</sub>=3 and I<sub>4</sub>=4.

(2) Number of harrowings : H<sub>1</sub>=2, H<sub>2</sub>=3 and H<sub>3</sub>=4.

## 3. DESIGN :

(i) 4×3 Fact. in R.B.D. (ii) (a) 12. (b) N.A. (iii) 4. (iv) (a) 33'×33'. (b) 30'×30'. (v) 1.5' ring round the net plot. (vi) Yes.

## 4. GENERAL :

(i) Normal. (ii) Nil. (iii) height, count and grain yield. (iv) (a) 1951—52 to 1955—56. (b) No. (c) N.A. (v) (a) Sholapur and Jeur. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 615 lb./ac.  
 (ii) 150.0 lb./ac.  
 (iii) None of the effects is significant.

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

	H <sub>1</sub>	H <sub>2</sub>	H <sub>3</sub>	Mean
I <sub>1</sub>	594	585	568	582
I <sub>2</sub>	636	603	650	630
I <sub>3</sub>	659	587	715	654
I <sub>4</sub>	600	603	570	591
Mean	622	595	626	615

S.E. of marginal mean of I = 43.3 lb./ac.  
 S.E. of marginal mean of H = 37.5 lb./ac.  
 S.E. of body of table = 75.0 lb./ac.

Crop :- Jowar (*Kharif*).

Ref :- Mh. 48(16).

Site :- Agri. Res. Stn., Jalagaon.

Type :- 'C'.

Object :- To find out the optimum spacing and economic seed rate for *Jowar*.

## 1. BASAL CONDITIONS :

(i) (a) Cotton—*Jowar*-Groundnut. (b) Cotton. (c) Nil. (ii) (a) Deep black cotton type having a depth of 10' to 13'. (b) Refer soil analysis, Jalagaon. (iii) 26.8.1948. (iv) (a) 2 ploughings. (b) Seeds drilled. (c) and (d) As per treatments. (e) N.A. (v) Nil. (vi) N.A. (vii) Unirrigated. (viii) Weeding and inter-culturing on 19.9.1948. (ix) 34.46". (x) 2.12.1948.

## 2. TREATMENTS :

Main-plot treatments :

3 spacings : C<sub>1</sub>=12", C<sub>2</sub>=15" and C<sub>3</sub>=18".

Sub-plot treatments :

3 seed rates : S<sub>1</sub>=4, S<sub>2</sub>=6 and S<sub>3</sub>=8 lb./ac.

## 3. DESIGN :

(i) Split-plot. (ii) (a) 3 main-plots/block ; 3 sub-plots/main-plot. (b) 150' × 120'. (iii) 6. (iv) (a) For main-plots ; 150' × 38', 150' × 40' and 150' × 42' for 12", 15" and 18" spacings respectively. For sub-plots ; 50' × 38', 50' × 40' and 50' × 42' for 12", 15" and 18" spacings respectively. (b) 40' × 30'. (v) 4 rows on either side and 5' of row at each end of net plot. (vi) Yes.

## 4. GENERAL :

(i) Normal. (ii) Stem-borer attack at the young stage, caterpillars on leaves. (iii) Grain and *kadbi* yield. (iv) (a) 1948-49 to 1954-55. (b) No. (c) N.A. (v) (a) N.A. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 729 lb./ac.

(ii) (a) 72.9 lb./ac.

(b) 107.0 lb./ac.

(iii) Spacing alone is highly significant.

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

	C <sub>1</sub>	C <sub>2</sub>	C <sub>3</sub>	Mean
S <sub>1</sub>	652	655	776	694
S <sub>2</sub>	672	722	783	726
S <sub>3</sub>	723	745	832	767
Mean	682	707	797	729

S.E. of difference of two

1. C marginal means =24.2 lb./ac.
2. S marginal means =35.8 lb./ac.
3. S means at the same level of C =61.7 lb./ac.
4. C means at the same level of S =55.9 lb./ac.

Crop :- Jowar (*Kharif*).

Ref :- Mh.49(148).

Site :- Agri. Res. Stn., Jalagaon.

Type :- 'C'.

Object :-To study the spacing-cum-seed rate effect on *Jowar* under *Khandesh* conditions.

## 1. BASAL CONDITIONS:

(i) (a) Nil. (b) N.A. (c) N.A. (ii) (a) Deep black cotton soil. (b) Refer soil analysis, Jalagaon. (iii) 3.7.1949. (iv) (a) N.A. (b) Drilling. (c) and (d) As per treatments. (e) N.A. (v) Nil. (vi) *Aispuri* (late). (vii) Unirrigated. (viii) 3 weedings and 3 hoeings. (ix) 31.18". (x) 11.12.1949.

## 2. TREATMENTS:

Main-plot treatments:

3 spacings between rows : C<sub>1</sub>=12", C<sub>2</sub>=15" and C<sub>3</sub>=18".

Sub-plot treatments:

3 seed rates : S<sub>1</sub>=4, S<sub>2</sub>=6 and S<sub>3</sub>=8 lb./ac.

## 3. DESIGN:

(i) Split-plot. (ii) (a) 3 main-plots/replication, 3 sub-plots/main-plot. (b) 150'×120'. (iii) 6. (iv) (a) 40'×50', 42'×50' and 38'×50' for C<sub>1</sub>, C<sub>2</sub> and C<sub>3</sub> respectively. (b) 40'×30'. (v) 4 rows on either side. (vi) Yes.

## 4. GENERAL:

(i) Growth was satisfactory. (ii) Nil. (iii) Grain yield. (iv) (a) 1948—1954 (b) No. (c) Nil. (v) (a) N.A. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS:

- (i) 823 lb./ac.
- (ii) (a) 106.2 lb./ac.
- (b) 98.4 lb./ac.
- (iii) None of the effects is significant.
- (iv) Av. yield of grain in lb./ac.

	C <sub>1</sub>	C <sub>2</sub>	C <sub>3</sub>	Mean
S <sub>1</sub>	775	766	814	785
S <sub>2</sub>	820	805	831	819
S <sub>3</sub>	816	837	940	864
Mean	804	803	862	823

S.E. of difference of two

1. C marginal means =35.4 lb./ac.
2. S marginal means =32.8 lb./ac.
3. S means at the same level of C =56.8 lb./ac.
4. C means at the same level of S =58.3 lb./ac.

Crop :- Jowar (*Kharif*).

Ref :- Mh. 50(35).

Site :- Agri. Res. Stn., Jalagaon.

Type :- 'C'.

Object :- To find out optimum spacing and economic seed rate for *Jowar*.

## 1. BASAL CONDITIONS :

(i) (a) Cotton—*Jowar*—Groundnut. (b) Cotton. (c) Nil. (ii) (a) Deep black cotton type having a depth of 10 to 13 feet. (b) Refer soil analysis, Jalagaon. (iii) 11.7.1950. (iv) a) N.A. (b) Seeds drilled. (c) and (d) As per treatments. (e) N.A. (v) Nil. (vi) N.A. (vii) Unirrigated. (viii) Weeding on 24.8.1950. hoeing on 1.8.1950 and 8.8.1950. (ix) 21.73". (x) 10.12.1950.

## 2. TREATMENTS :

Main-Plot treatments :

3 spacings :  $C_1=12''$ ,  $C_2=15''$  and  $C_3=18''$ .

Sub-plot treatments :

3 seed rates :  $S_1=4$ ,  $S_2=6$  and  $S_3=8$  lb./ac.

## 3. DESIGN :

(i) Split-plot. (ii) (a) 3 main-plots/block ; 3 sub-plots/main-plot. (b)  $150' \times 120'$ . (iii) 6. (iv) (a) For sub-plots  $50' \times 38'$  ;  $50' \times 40'$  ;  $50' \times 42'$  for  $C_1$ ,  $C_2$  and  $C_3$  spacing respectively. (b)  $40' \times 30'$ . (v) 4 rows on either side and 5' of row at both ends. (vi) Yes.

## 4. GENERAL :

(i) The plots sown with 4 lb. seed rate and 15" spacing produced very small earheads and also thin type of *kadbi*. Plots with 4 lb. seed rate and 12" spacing have produced bigger earheads. (ii) Attack of stem borer to a small extent was observed at the early stage of the crop. (iii) Weight of jowar grain and *kadbi*. (iv) (a) 1948-49 to 1954-55. (b) No. (c) N.A. (v) (a) N.A. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 929 lb./ac.

(ii) (a) 150.3 lb./ac.

(b) 91.5 lb./ac.

(iii) Interaction  $C \times S$  is highly significant and main effect of S is significant.

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

	$C_1$	$C_2$	$C_3$	Mean
$S_1$	882	854	910	892
$S_2$	877	907	973	919
$S_3$	1000	1022	906	976
Mean	920	928	940	929

S.E. of difference of two

1. C marginal means = 49.8 lb./ac.
2. S marginal means = 30.3 lb./ac.
3. S means at the same level of C = 52.6 lb./ac.
4. C means at the same level of S = 66.1 lb./ac.

Crop :- Jowar (*Kharif*).

Ref :- Mh. 51(38).

Site :- Agri. Res. Stn., Jalagaon.

Type :- 'C'.

Object :- To find out optimum spacing and economic seed rate for *Jowar*.

## 1. BASAL CONDITIONS :

(i) (a) Cotton—*Jowar*—Groundnut. (b) Cotton. (c) N.A. (ii) (a) Deep black cotton type having a depth of 10 to 13 feet. (b) Refer soil analysis, Jalagaon. (iii) 10.7.1951. (iv) (a) N.A. (b) Drilling. (c) and (d) As per treatments. (e) N.A. (v) Nil. (vi) N.A. (vii) Unirrigated. (viii) Weeding on 15.8.1951 and 23.8.1951 ; hoeing 13.8.1951, 17.8.1951 and 23.8.1951. (ix) 20.14". (x) 4.12.1951.

## 2. TREATMENTS :

## Main-plot treatments :

3 spacings :  $C_1=18''$ ,  $C_2=24''$  and  $C_3=30''$ .

## Sub-plot treatments :

3 seed rates :  $S_1=4$ ,  $S_2=6$  and  $S_3=8$  lb./ac.

## 3. DESIGN :

(i) Split-plot. (a) 3 main-plots/block ; 3 sub-plots/main-plot. (b)  $150' \times 114'$ . (iii) 6. (iv) (a) Gross plot size of main-plot :  $150' \times 36'$  for  $18''$  spacing,  $150' \times 38'$  for  $24''$  spacing and  $150' \times 40'$  for  $30''$  spacing. Sub-plot  $50'/36'$  for  $18''$  spacing,  $50' \times 38'$  for  $24''$  spacing and  $50' \times 40'$  for  $30''$  spacing. (b)  $40' \times 30'$ . (v) Two rows on either side and  $5'$  of row at both ends. (vi) Yes.

## 4. GENERAL :

(i) Satisfactory. (ii) Nil. (iii) Grain and *kadbi* yield. (iv) (a) 1948-49 to 1954-55. (b) No. (c) N.A. (v) (a) N.A. (b) N.A. (vi) Nil. (vii) The spacing *i.e.* main-plot treatment is different from those of last two years.

## 5. RESULTS :

- (i) 1370 lb./ac.  
 (ii) (a) 419.6 lb./ac.  
 (b) 156.8 lb./ac.  
 (iii) Seed rate alone is significant.  
 (iv) Av. yield of grain in lb./ac.

	$C_1$	$C_2$	$C_3$	Mean
$S_1$	1414	1445	1507	1459
$S_2$	1339	1350	1257	1315
$S_3$	1257	1334	1418	1336
Mean	1337	1380	1394	1370

## S.E. of difference of two

1. C marginal means = 140.1 lb./ac.  
 2. S marginal means = 52.3 lb./ac.  
 3. S mean at the same level of C = 90.4 lb./ac.  
 4. C means at the same level of S = 158.3 lb./ac.

Crop :- Jowar (*Kharif*).  
 Site :- Agri. Res. Stn., Jalagaon.

Ref :- Mh. 52(66).  
 Type :- 'C'.

Object :- To find out optimum spacing and economic seed rate for *Jowar*.

## 1. BASAL CONDITIONS :

(i) (a) Cotton—*Jowar*—Groundnut. (b) Cotton. (c)  $7\frac{1}{2}$  C.L./ac. of F.Y.M., + 100 lb./ac. of A/S. (ii) (a) Deep black cotton type having a depth of 10 to 13 feet. (b) Refer soil analysis, Jalagaon. (iii) 29.6.1952. (iv) (a) N.A. (b) Seeds drilled. (c) and (d) As per treatments. (e) N.A. (v) Nil. (vi) *Aispuri*. (vii) Unirrigated. (viii) N.A. (ix) 17.61". (x) 24.11.1952.

## 2. TREATMENTS :

## Main-plot treatments :

3 spacings :  $C_1=18''$ ,  $C_2=24''$  and  $C_3=30''$ .

## Sub-plot treatments :

3 seed rates :  $S_1=4$ ,  $S_2=6$  and  $S_3=8$  lb./ac.

## 3. DESIGN :

(i) Split plot. (ii) (a) 3 main-plots/block, 3 sub-plots/main-plot. (b) 150' × 114'. (iii) 6. (iv) (a) 50' × 36' for 18' spacing, 50' × 33' for 24' spacing and 50' × 40' for 30' spacing. (b) 40' × 30'. (v) 3' rows on either side and 5' of row at both ends. (vi) Yes.

## 4. GENERAL :

(i) Not satisfactory. (ii) Attack of stemborers was observed in the early stage. Attack of long smut disease was also observed in all the plots. (iii) Grain and *kadbi* yield. (iv) (a) 1948-49 to 1954-55. (b) No. (c) N.A. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 696 lb./ac.  
 (ii) (a) 195.3 lb./ac.  
 (b) 156.5 lb./ac.  
 (iii) None of the effects is significant.  
 (iv) Av. yield of grain in lb./ac.

	C <sub>1</sub>	C <sub>2</sub>	C <sub>3</sub>	Mean
S <sub>1</sub>	681	804	728	737
S <sub>2</sub>	723	650	651	675
S <sub>3</sub>	670	718	640	676
Mean	691	724	673	696

## S.E. of difference of two

1. C marginal means = 65.2 lb./ac.
2. S marginal means = 51.9 lb./ac.
3. S means at the same level of C = 90.4 lb./ac.
4. C means at the same level of S = 98.4 lb./ac.

Crop :- Jowar (*Kharif*).

Ref :- Mh. 53(125).

Site :- Agri. Res. Stn., Jalagaon.

Type :- 'C'.

Object :- To find out optimum spacing and economic seed rate for *Jowar*.

## 1. BASAL CONDITIONS :

(i) (a) Cotton—*Jowar*—Groundnut. (b) Cotton. (c) 7½ C.L./ac. of F.Y.M.+100 lb./ac. of A/S. (ii) (a) Deep black cotton type having a depth of 10 to 13 feet. (b) Refer soil analysis, Jalagaon. (iii) 28.6 1953. (iv) (a) N.A. (b) Seeds drilled. (c) and (d) As per treatments. (e) N.A. (v) Nil. (vi) *Aispuri*. (vii) Un-irrigated. (viii) Hoeing on 18.7.1953, weeding on 25.7.1953 and 10.9.1953. (ix) 23.77". (x) 24.11.1953.

## 2. TREATMENTS :

## Main-plot treatments :

3 spacings : C<sub>1</sub>=18", C<sub>2</sub>=24" and C<sub>3</sub>=30".

## Sub-plot treatments :

3 seed rates : S<sub>1</sub>=4, S<sub>2</sub>=6 and S<sub>3</sub>=8 lb./ac.

## 3. DESIGN :

(i) Split-plot. (ii) (a) 3 main-plots/block ; 3 sub-plots/main-plot. (b) 150' × 114'. (iii) 6. (iv) (a) Gross plot size of main-plot ; 50' × 36' for 18" spacing ; 50' × 38' for 24" spacing and 50' × 40' for 30" spacing. For sub-plot : 50' × 36', 50' × 38' and 50' × 40' for 18", 24" and 30" spacings respectively. (b) 40' × 30'. (v) 2 rows on either side and 5' of row at both ends. (vi) Yes.

## 4. GENERAL :

(i) General condition of the crop was good. (ii) Nil. (iii) Grain and *kadbi* yield. (iv) (a) 1948-1949 to 1954-1955. (b) No. (c) N.A. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS:

- (i) 1595 lb./ac.  
 (ii) (a) 161.2 lb./ac.  
 (b) 183.7 lb./ac.  
 (iii) Main effect of C alone is significant.  
 (iv) Av. yield of grain in lb./ac.

	C <sub>1</sub>	C <sub>2</sub>	C <sub>3</sub>	Mean
S <sub>1</sub>	1479	1759	1634	1624
S <sub>2</sub>	1700	1669	1451	1607
S <sub>3</sub>	1592	1619	1447	1553
Mean	1590	1682	1511	1595

## S.E. of difference of two

1. C marginal means = 53.9 lb./ac.  
 2. S marginal means = 61.2 lb./ac.  
 3. S means at the same level of C = 106.0 lb./ac.  
 4. C means at the same level of S = 101.8 lb./ac.

Crop :- Jowar (*Rabi*).

Ref :- Mh. 53(53).

Site :- Agri. Res. Stn., Jeur.

Type :- 'C'.

Object :- To find out the suitable combination of harrowings and interculturings.

## 1. BASAL CONDITIONS:

(i) (a) Nil. (b) Gram. (c) Nil. (ii) (a) Medium deep. (b) N.A. (iii) 24.9.1953. (iv) (a) N.A. (b) Seeds drilled. (c) 4 lb./ac. (d) 18" apart. (e) N.A. (v) Nil. (vi) M-35-1. (vii) Unirrigated. (viii) As per treatments. (ix) 5.88". (x) 3.2.1954.

## 2. TREATMENTS :

All combinations of (1) and (2)

- (1) Number of interculturings : I<sub>1</sub>=1, I<sub>2</sub>=2, I<sub>3</sub>=3 and I<sub>4</sub>=4.  
 (2) Number of harrowings : H<sub>1</sub>=2, H<sub>2</sub>=3 and H<sub>3</sub>=4.

## 3. DESIGN :

(i) 3×4 Fact. in R.B.D. (ii) (a) 12. (b) N.A. (iii) 4. (iv) (a) 46'×33'. (b) 40'×27'. (v) 3' all round the net plot. (vi) Yes.

## 4. GENERAL :

(i) Normal. (ii) Nil. (iii) Grain and fodder yield. (iv) (a) 1951—continued. (b) No. (c) N.A. (v) (a) Nil. (b) N.A. (vi) Experiment failed in 1951. (vii) Nil.

## 5. RESULTS :

- (i) 560 lb./ac.  
 (ii) 243.6 lb./ac.  
 (iii) None of the effects is significant.



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

	H <sub>1</sub>	H <sub>2</sub>	H <sub>3</sub>	Mean
I <sub>1</sub>	487	575	836	633
I <sub>2</sub>	623	379	441	481
I <sub>3</sub>	535	742	527	601
I <sub>4</sub>	628	534	415	526
Mean	568	558	555	560

S.E. of marginal mean of I = 70.20 lb./ac.  
 S.E. of marginal mean of H = 60.98 lb./ac.  
 S.E. of body of table = 121.8 lb./ac.

Crop :- Jowar.

Ref :- Mh. 48(34).

Site :- Agri. Res. Stn., Mohol.

Type :- 'C'.

Object :- To find out suitable spacing and seed rate for *Jowar* crop.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Wheat. (c) Nil. (ii) (a) Medium black. (b) Refer soil analysis, Mohol. (iii) N.A. (iv) (a) N.A. (b) Drilling with coultured drills. (c) As per treatments. (d) As per treatments. (e) N.A. (v) Nil. (vi) M-35-1. (late). (vii) Unirrigated. (viii) N.A. (ix) 5.38". (x) N.A.

## 2. TREATMENTS :

Main-plot treatments :

3 row spacings : C<sub>1</sub>=12", C<sub>2</sub>=15" and C<sub>3</sub>=18".

Sub-plot treatments :

3 seed rates : S<sub>1</sub>=3, S<sub>2</sub>=4 and S<sub>3</sub>=5 lb./ac.

## 3. DESIGN :

(i) Split-plot. (ii) (a) 3 main-plots/block ; 3 sub-plots/main-plot. (b) N.A. (iii) 6. (iv) (a) N.A. (b) 30' x 15'. (v) 2 rows on either side and 3' of rows on either end of the sub-plot. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) N.A. (iii) Grain yield. (iv) (a) 1948-1949 to 1952-1953. (b) No. (c) N.A. (v) (a) N.A. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS:

(i) 862 lb./ac.  
 (ii) (a) 136.0 lb./ac.  
 (b) 150.0 lb./ac.  
 (iii) No.e of the effects is significant.  
 (iv) Av. yield of grain in lb./ac.

	C <sub>1</sub>	C <sub>2</sub>	C <sub>3</sub>	Mean
S <sub>1</sub>	832	936	968	909
S <sub>2</sub>	839	919	871	876
S <sub>3</sub>	887	758	758	801
Mean	850	871	866	862

S E. of difference of two

1. C marginal means = 45.3 lb./ac.
2. S marginal means = 50.2 lb./ac.
3. S means at the same level of C = 86.9 lb./ac.
4. C means at the same level of S = 83.8 lb./ac.

Crop :- Jowar.  
Site :- Agri. Res. Stn. Mohol.

Ref :- Mh. 49 (56).  
Type :- 'C'.

Object :- To find out suitable spacing and seed rate for *Jowar* crop.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Gram. (c) Nil. (ii) (a) Medium black. (b) Refer soil analysis, Mohol. (iii) 4.10.1949. (iv) (a) N.A. (b) Drilling with coultured drill. (c) and (d) As per treatments. (e) N.A. (v) Nil. (vi) M-35-1 (late). (vii) Unirrigated. (viii) 6 interculturings. (ix) 1.14". (x) 23.2.1950.

2. TREATMENTS :

Main-plot treatments :

3 row spacings :  $C_1=12''$ ,  $C_2=15''$  and  $C_3=18''$ .

Sub-plot treatments :

3 seed rates :  $S_1=3$ ,  $S_2=4$  and  $S_3=5$  lb./ac.

3. DESIGN :

(i) Split-plot. (ii) (a) 3 main-plots/block; 3 sub plots-main plot. (b) N.A. (iii) 6. (iv) (a) N.A. (b) 30' x 15'. (v) Two rows on either side and 3' of rows on either end of the net plot. (vi) Yes.

4. GENERAL :

(i) Normal growth. (ii) Sugary disease was observed. (iii) Grain yield. (iv) (a) 1948-49 to 1952-53. (b) N.A. (c) N.A. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 462 lb/ac.

(ii) (a) 143.8 lb./ac.

(b) 78.9 lb./ac.

(iii) Main effect of S alone is significant.

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

	$C_1$	$C_2$	$C_3$	Mean
$S_1$	560	540	387	496
$S_2$	527	439	429	465
$S_3$	450	457	365	424
Mean	512	479	394	462

S.E. of difference of two

1. C marginal means = 47.9 lb./ac.
2. S marginal means = 26.3 lb./ac.
3. S means at the same level of C = 45.7 lb./ac.
4. C means at the same level of S = 60.7 lb./ac.

Crop :- Jowar (*Rabi*).  
Site :- Agri. Res. Stn., Mohol.

Ref :- Mh. 50 (10).  
Type :- 'C'.

Object :- To find out suitable spacing and economic seed rate for *Jowar* crop.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Wheat. (c) No. (ii) (a) Medium black. (b) Refer soil analysis, Mohol. (iii) 27-28.10.1950. (iv) (a) 4 harrowings and ploughing once in 3 years. (b) Seeds drilled. (c) and (d) As per treatments. (e) N.A. (v) N.A. (vi) M-35-1. (vii) Unirrigated. (viii) Interculturings 4 times. (ix) 9.91". (x) 14.3.1951.

## 2. TREATMENTS :

## Main-plot treatments :

3 spacings :  $C_1=12''$ ,  $C_2=15''$  and  $C_3=18''$ .

## Sub-plot treatments :

3 seed rates :  $S_1=3$ ,  $S_2=4$  and  $S_3=5$  lb./ac.

## 3. DESIGN :

(i) Split-plot. (ii) (a) 3 main-plots/block ; 3 sub-plots/main-plot. (b) N.A. (iii) 6. (iv) (a)  $36' \times 19'$ ,  $36' \times 20'$  and  $36' \times 21'$  for  $12''$ ,  $15''$  and  $18''$  spacings respectively. (b)  $30' \times 15'$ . (v) 2 rows on each side and 3 feet of row at both the ends. (vi) Yes.

## 4. GENERAL :

(i) Stunted growth. (ii) Nil. (iii) Grain yield. (iv) (a) 1948-49 to 1951-52. (b) No. (c) N.A. (v) (a) and (b) N.A. (vi) Nil. (vii) For want of mulch condition in the soil, the sowing was delayed. There was no rain after sowing which affected badly the growth of the crop, though the germination was satisfactory.

## 5. RESULTS :

(i) 202 lb./ac.

(ii) (a) 90.99 lb./ac.

(b) 58.08 lb./ac.

(iii) None of the effects is significant.

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

	$C_1$	$C_2$	$C_3$	Mean
$S_1$	231	230	223	228
$S_2$	186	202	188	192
$S_3$	173	218	166	186
Mean	197	217	192	202

## S.E. of difference of two

- |                                   |                |
|-----------------------------------|----------------|
| 1. C marginal means               | =30.33 lb./ac. |
| 2. S marginal means               | =19.36 lb./ac. |
| 3. S means at the same level of C | =32.91 lb./ac. |
| 4. C means at the same level of S | =40.73 lb./ac. |

Crop :- Jowar (*Rabi*).

Ref :- Mh. 51(12).

Site :- Agri. Res. Stn , Mohol.

Type :- 'C'.

Object :- To find the optimum spacing and economic seed rate for *Jowar* crop.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Gram. (c) Nil. (ii) (a) Medium black. (b) Refer soil analysis, Mohol. (iii) 12.10.1951. (iv) (a) 4 harrowings. (b) Seeds drilled. (c) and (d) As per treatments. (e) N.A. (v) N.A. (vi) M-35-1. (vii) Unirrigated. (viii) 3 interculturings. (ix) 7.49". (x) 12.2.1952.

## 2. TREATMENTS :

## Main-plot treatments :

3 row spacings :  $C_1=12''$ ,  $C_2=15''$  and  $C_3=18''$ .

## Sub-plot treatments :

3 seed rates :  $S_1=3$ ,  $S_2=4$  and  $S_3=5$  lb./ac.

## 3. DESIGN :

(i) Split-plot. (ii) (a) 3 main-plots/block ; 3 sub-plots/main-plot. (iii) 6. (iv) (a)  $36' \times 19'$ ,  $36' \times 20'$  and  $36' \times 21'$  for  $12''$ ,  $15''$  and  $18''$  spacings respectively. (b)  $30' \times 15'$ . (v) 2 rows on each side and 3' at both ends of net plot. (vi) Yes.

## 4. GENERAL :

(i) Normal and healthy. (ii) Sugary disease was noted. (iii) Grain yield. (iv) (a) 1948-49 to 1951-52. (b) No. (c) N.A. (v) (a) and (b) N.A. (vi) Nil. (vii) It was not cloudy as was desired during the stage of grain formation, no rains were received during crop period. There was no moisture in the soil.

## 5. RESULTS :

- (i) 966 lb./ac.  
 (ii) (a) 130.7 lb./ac.  
 (b) 206.2 lb./ac.  
 (iii) None of the effects is significant.  
 (iv) Av. yield of grain in lb./ac.

	C <sub>1</sub>	C <sub>2</sub>	C <sub>3</sub>	Mean
S <sub>1</sub>	868	1041	1078	996
S <sub>2</sub>	993	902	894	929
S <sub>3</sub>	863	1041	1011	972
Mean	908	995	994	966

S.E. of difference of two

- |                                   |                 |
|-----------------------------------|-----------------|
| 1. C marginal means               | = 43.6 lb /ac.  |
| 2. S marginal means               | = 68.7 lb./ac.  |
| 3. S means at the same level of C | = 119.1 lb./ac. |
| 4. C means at the same level of S | = 106.5 lb./ac. |

Crop :- Jowar (*Kharif*).

Site :- Govt. Exptl. Farm, Nagpur.

Ref :- Mh. 51(122).

Type :- 'C'.

Object :- To find out the optimum spacing for *Jowar* crop.

## 1. BASAL CONDITIONS :

(i) (a) Cotton—*Jowar*. (b) Cotton. (c) N.A. (ii) (a) Black cotton soil. (b) Refer soil analysis, Nagpur. (iii) 16.7.1951. (iv) (a) and (b) N.A. (c) 10 lb./ac. (d) As per treatments. (e) N.A. (v) N.A. (vi) *Saoner* (medium). (vii) Unirrigated. (viii) 4 hoeings. (ix) 38.29°. (x) 4.1.1952.

## 2. TREATMENTS :

3 row to row spacings : C<sub>1</sub>=12", C<sub>2</sub>=18" and C<sub>3</sub>=24".

## 3. DESIGN :

(i) R.B.D. (ii) (a) 3. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 66' × 16½'. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) N.A. (iii) Grain and cobs yield. (iv) (a) N.A. (b) and (c) N.A. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 2073 lb./ac.  
 (ii) 225.2 lb /ac.  
 (iii) Treatments do not differ significantly.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
C <sub>1</sub>	2144
C <sub>2</sub>	1980
C <sub>3</sub>	2100
S.E./mean	= 112.6 lb./ac.

Crop :- Jowar (*Kharif*).  
Site :- Govt. Exptl. Farm, Nagpur.

Ref :- Mh. 52(140).  
Type :- 'C'.

Object :- To find out the optimum spacing for *Jowar* crop.

1. BASAL CONDITIONS :

- (i) (a) Cotton—*Jowar*. (b) Cotton. (c) N.A. (ii) (a) Black cotton. (b) Refer soil analysis, Nagpur. (iii) 15.7.1952. (iv) (a) 5—6 *bakharings*. (b) Sown by *argada* with Sarata. (c) 10 lb./ac. (d) As per treatments. (e) N.A. (v) Nil. (vi) *Sooner* (medium). (vii) Unirrigated. (viii) 4 to 5 hoeings and 1 weeding. (ix) 29.32° (x) 8.12 1952.

2. TREATMENTS :

3 row spacings :  $C_1=12''$ ,  $C_2=18''$  and  $C_3=24''$ .

3. DESIGN :

- (i) R.B.D. (ii) (a) 3. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 66' × 16.5'. (v) N.A. (vi) Yes.

4. GENERAL :

- (i) Normal. (ii) Nil. (iii) Grain yield. (iv) (a) N.A. (b) No. (c) N.A. (v) (a) N.A. (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

- (i) 1037 lb./ac.  
(ii) 125.4 lb./ac.  
(iii) Treatment differences are not significant.  
(iv) Av yield of grain in lb./ac.

Treatment	Av. yield
$C_1$	1040
$C_2$	1050
$C_3$	1020
S.E./mean	= 62.7 lb./ac.

Crop :- Jowar (*Kharif*).  
Site :- Govt. Exptl. Farm, Nagpur.

Ref :- Mh. 53(223).  
Type :- 'C'.

Object :- To study the effect of different methods of sowing *Jowar*.

1. BASAL CONDITIONS :

- (i) (a) Cotton—*Jowar*. (b) Cotton. (c) N.A. (ii) (a) Black cotton soil. (b) Refer soil analysis, Nagpur. (iii) 19.7.1953. (iv) (a) 5—6 *bakharings*. (b) As per treatments. (c) 10 lb./ac. (d) N.A. (e) N.A. (v) Nil. (vi) *Sooner* (medium). (vii) Unirrigated. (viii) 4 hoeings and 3 weedings. (ix) 33.70°. (x) 23.12.1953.

2. TREATMENTS :

- 3 methods of sowing :  
1. *Argada* sowing.  
2. Dibbling one plant at a place.  
3. Dibbling two plants at a place.

3. DESIGN :

- (i) R.B.D. (ii) (a) 3. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 40' × 27.2'. (v) N.A. (vi) Yes.

4. GENERAL :

- (i) Normal. (ii) Nil. (iii) Cobs and grain yield. (iv) (a) N.A. (b) No. (c) N.A. (v) (a) N.A. (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

- (i) 1993 lb./ac.  
(ii) 166.8 lb./ac.  
(iii) Treatments do not differ significantly.

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

Treatment	Av. yield
1.	2068
2.	1875
3.	2038
S.E./mean	=83.4 lb./ac.

Crop :- Jowar (*Kharif*).  
Site :- Govt. Exptl. Farm, Nagpur.

Ref :- Mh. 53(224).  
Type :- 'C'.

Object :—To find out the effect of topping on *Jowar* crop.

1. BASAL CONDITIONS :

(i) (a) Cotton—*Jowar*. (b) Cotton. (c) N.A. (ii) (a) Black cotton soil. (b) Refer soil analysis, Nagpur. (iii) 18.7.1953. (iv) (a) N.A. (b) Sowing by *Argada*. (c) 10 lb./ac. (d) and (e) N.A. (v) Nil. (vi) Improved *Saonar* (late). (vii) Unirrigated. (viii) 3 hoeings and 3 weedings. (ix) 39 10". (x) 23.12 1953.

2. TREATMENTS :

1. No topping.
2. Topping after 40 days of sowing.
3. Topping after 60 days of sowing.

3. DESIGN :

(i) R.B.D. (ii) (a) 3. (b) N.A. (iii) 6. (iv) (a) N.A. (b) 36.3' × 30'. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Grain yield. (iv) (a) N.A. (b) and (c) N.A. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

- (i) 1713 lb./ac.
- (ii) 203.6 lb./ac.
- (iii) Treatments differ highly significantly.
- (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	1998
2.	1520
3.	1622
S.E./mean	= 83.1 lb./ac.

Crop :- Jowar.  
Site :- Govt. Exptl. Farm, Nagpur.

Ref :- Mh. 53(222).  
Type :- 'C'.

Object :—To compare the effect on yield of *Jowar* sown mixed with *udld* and *Tur*.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) and (c) N.A. (ii) (a) Black cotton soil. (b) Refer soil analysis, Nagpur. (iii) 19 7.1953. (iv) (a) and (b) N.A. (c) As per treatments. (d) and (e) N.A. (v) Nil. (vi) Medium. (vii) Unirrigated. (viii) N.A. (ix) 39.10". (x) 24.12.1953.

## 2. TREATMENTS :

1. *Jowar* alone, seed rate 10 lb./ac.
2. *Jowar* at 7½ lb./ac. + *udid* at 2½ lb./ac.
3. *Jowar* at 7½ lb./ac. + *tur* at 2½ lb./ac.
4. *Jowar* manured at 20 lb./ac. of N as A/S.

## 3. DESIGN :

- (i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 5. (iv) (a) 0.62th. ac. (b) 66' × 16.5'. (v) N.A. (vi) Yes.

## 4. GENERAL :

- (i) Good. (ii) Nil. (iii) Grain yield. (iv) (a) N.A. (b) and (c) No. (v) (a) N.A. (b) Nil. (vi) Nil. (vii) Yield of *tur* and *udid*. N.A.

## 5. RESULTS :

- (i) 1796 lb./ac.  
 (ii) 309.6 lb./ac.  
 (iii) Treatment differences are significant.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
✓ 1.	1778
2.	1446
3.	1830
✓ 4.	2131
S.E./mean	=138.4 lb./ac.

Crop :- *Jowar (Rabi)*.

Ref :- Mh. 51(158).

Site :- Agri. Res. Stn., Padegaon.

Type :- 'C'.

Object :- To find out the suitable sowing date for *Jowar*.

## 1. BASAL CONDITIONS :

- (i) (a) Nil. (b) N.A. (c) N.A. (ii) (a) 'B' type. (b) Refer soil analysis, Padegaon. (iii) As per treatments. (iv) (a) to (c) N.A. (v) 40 lb./ac. of N as A/S+cake in 1:2. (vi) M-35-1. (vii) Irrigated. (viii) 2 weedings. (ix) 14.68". (x) D<sub>1</sub> on 29.12.1951, D<sub>2</sub> on 12.1.1952, D<sub>3</sub> on 2.2.1952, D<sub>4</sub> on 15.2.1952, D<sub>5</sub>=21.2.1952.

## 2. TREATMENTS :

5 sowing dates : D<sub>1</sub>=1.8.1951, D<sub>2</sub>=15.8.1951, D<sub>3</sub>=30.8.1951, D<sub>4</sub>=14.9.1951 and D<sub>5</sub>=30.9.1951.

## 3. DESIGN :

- (i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 4. (iv) (a) 48' × 28'. (b) 34.03' × 24'. (v) N.A. (vi) Yes.

## 4. GENERAL :

- (i) Not good. (ii) Nil. (iii) Grain yield. (iv) (a) No. (b) and (c) No. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 348 lb./ac.  
 (ii) 48.3 lb./ac.  
 (iii) Treatment differences are highly significant.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
D <sub>1</sub>	272
D <sub>2</sub>	286
D <sub>3</sub>	374
D <sub>4</sub>	427
D <sub>5</sub>	380
S.E./mean	=24.2 lb./ac.

Crop :- Jowar (*Kharif*).  
Site :- Agri. Res. Stn., Padegaon.

Ref :- Mh. 51(157).  
Type :- 'C'.

Object :- To find the suitable sowing date for *Jowar* crop.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Jowar*. (c) N.A. (ii) (a) 'B' type. (b) Refer soil analysis, Padegaon. (iii) As per treatments. (iv) (a) N.A. (b) Sowing by drilling. (c) 8 lb./ac. (d) 12" between rows. (e) N.A. (v) 40 lb./ac. of N as cake at sowing. (vi) *Elichpuri*. (vii) Irrigated. (viii) 3 weedings. (ix) 14.68". (x) D<sub>1</sub>, D<sub>2</sub> and D<sub>3</sub> on 27.11.1951, D<sub>4</sub> on 1.12.1951 and D<sub>5</sub> on 9.12.1951.

2. TREATMENTS :

5 sowing dates : D<sub>1</sub>=15.6.1951, D<sub>2</sub>=30.6.1951, D<sub>3</sub>=15.7.1951, D<sub>4</sub>=30.7.1951 and D<sub>5</sub>=14.8.1951.

3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 4. (iv) (a) 48'×28'. (b) 30.03'×24'. (v) N.A. (vi) Yes.

4. GENERAL :

(i) N.A. (ii) About 50% damage due to attack of birds. (iii) Grain and fodder yield. (iv) (a) 1951—1953. (b) and (c) No. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 696 lb./ac.  
(ii) 238.0 lb./ac.  
(iii) Treatment differences are highly significant.  
(iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
D <sub>1</sub>	360
D <sub>2</sub>	470
D <sub>3</sub>	1290
D <sub>4</sub>	1287
D <sub>5</sub>	274
S.E./mean	=119.0 lb./ac.

Crop :- Jowar (*Kharif*).  
Site :- Agri. Res. Stn., Padegaon.

Ref. :- Mh. 52(193).  
Type :- 'C'.

Object :- To find a suitable sowing date for *Jowar* crop.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Wheat. (c) N.A. (ii) (a) 'B' type. (b) Refer soil analysis, Padegaon. (iii) As per treatments. (iv) (a) N.A. (b) Hand sowing. (c) 10 lb./ac. (d) 1' between rows. (e) N.A. (v) 40 lb./ac. of N as cake. (vi) *Elichpuri*. (vii) Irrigated. (viii) 3 weedings. (ix) 11.01". (x) D<sub>1</sub> & D<sub>2</sub> on 4. 12. 1952, D<sub>3</sub> on 20.12.1952, D<sub>4</sub> on 25.12.1952 and D<sub>5</sub> on 25.12.1952.

2. TREATMENTS :-

5 sowing dates :- D<sub>1</sub>=15th June, 1952, D<sub>2</sub>=30th June, 1952, D<sub>3</sub>=15th July, 1952, D<sub>4</sub>=30th July, 1952 and D<sub>5</sub>=14th August, 1952.

3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 4. (iv) (a) 4 8'×28'. (b) 34.03'×24'. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Very low yield. (ii) Attack of stemborer and birds. (iii) Grain and fodder yield. (iv) (a) 1951—1953. (b) and (c) No. (v) (a) and (b) N.A. (vi) and (vii) Nil.



## 5. RESULTS :

- (i) 576 lb./ac.  
 (ii) 173.8 lb./ac.  
 (iii) Treatment differences are highly significant.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
D <sub>1</sub>	533
D <sub>2</sub>	546
D <sub>3</sub>	586
D <sub>4</sub>	896
D <sub>5</sub>	320
S.E./mean	=86.9 lb./ac.

Crop :- Jowar (*Rabi*).

Ref :- Mh. 52(45)

Site :- Govt. Main Farm, Parbhani.

Type :- 'C'.

Object :- To determine the optimum spacing for *Jowar* crop.

## 1. BASAL CONDITIONS :

- i) Groundnut—*Jowar*. (b) Groundnut. (c) Nil. (ii) (a) Medium black cotton soil. (b) Refer soil analysis, Parbhani. (iii) 6. 10. 1952. (iv) (a) 6 harrowings. (b) Sown by dibbling. (c) N.A. (d) As per treatments. (e) 2-3 seed per dibble thinned to one. (v) Nil. (vi) P. J-4 R. (vii) Unirrigated. (viii) 2 weedings. (ix) 25.38". (x) 21.3.1953.

## 2. TREATMENTS :

All combinations of (1) and (2)

- (1) 3 plant to plant spacings : P<sub>1</sub>=12", P<sub>2</sub>=15" and P<sub>3</sub>=18".  
 (2) 3 row to row spacings : R<sub>1</sub>=3", R<sub>2</sub>=6" and R<sub>3</sub>=9".

## 3. DESIGN :

- (i) 3x3 Fact. in R.B.D. (ii) (a) 9. (b) N.A. (iii) 6. (iv) (a) N.A. (b) 1/120 th ac. (v) N.A. (vi) Yes.

## 4. GENERAL :

- (i) Normal (ii) Nil. (iii) Stern thickness and grain yield. (iv) (a) 1952 to 1954. (b) and (c) No. (v) (a) and (b) Nil. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 1388 lb./ac.  
 (ii) 291.6 lb./ac.  
 (iii) Main effect of P alone is significant.  
 (iv) Av. yield of grain in lb./ac.

	P <sub>1</sub>	P <sub>2</sub>	P <sub>3</sub>	Mean
R <sub>1</sub>	1062	1469	1289	1273
R <sub>2</sub>	1283	1297	1534	1371
R <sub>3</sub>	1268	1640	1651	1520
Mean	1204	1468	1491	1388

S.E. of marginal means = 68.0 lb./ac.  
 S.E. of body of table = 121.0 lb./ac.

**Crop :-Jowar (Kharif).**  
**Site :-Govt. Main Farm, Parbhani.**

**Ref :-Mh. 53(24).**  
**Type :-'C'.**

**Object :-To determine the optimum spacing for Jowar crop.**

**1. BASAL CONDITIONS :**

(i) (a) Groundnut—Jowar. (b) Groundnut. (c) Nil. (ii) (a) Medium black cotton soil. (b) Refer soil analysis, Parbhani. (iii) 4.10.1953. (iv) (a) 5 harrowings. (b) Sown by dibbling. (c) N.A. (d) As per treatments. (e) 2—3 seed per dibble thinned to one. (v) Nil. (vi) P.J.-4 R. (vii) Unirrigated. (viii) 3 weedings. (ix) 34.23". (x) 7.4.1954.

**2. TREATMENTS :**

All combinations of (1) and (2)

(1) 3 plant to plant spacings :  $P_1=12"$ ,  $P_2=15"$  and  $P_3=18"$ .

(2) 3 row to row spacings :  $R_1=3"$ ,  $R_2=6"$  and  $R_3=9"$ .

**3. DESIGN :**

(i)  $3 \times 3$  Fact. in R.B.D. (ii) (a) 9. (b) N.A. (iii) 6. (iv) (a) N.A. (b) 1/120 ac. (v) N.A. (vi) Yes.

**4. GENERAL :**

(i) Normal. (ii) Nil. (iii) Grain and Kadbi yield and stem thickness. (iv) (a) 1952—1954. (b) and (c) N.A. (v) (a) and (b) Nil. (vi) and (vii) Nil.

**5. RESULTS :**

(i) 777.9 lb./ac.

(ii) 258.7 lb./ac.

(iii) None of the effects is significant.

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

	$P_1$	$P_2$	$P_3$	Mean
$R_1$	794.4	751.2	777.6	774.4
$R_2$	842.4	764.4	700.8	769.2
$R_3$	854.4	741.6	774.0	790.0
Mean	830.4	752.4	750.8	777.9

S.E. of any marginal mean

= 61.0 lb./ac.

S.E. of body of table

= 105.6 lb./ac.

**Crop :-Jowar (Kharif).**  
**Site :-Govt. Main Farm, Parbhani.**

**Ref :-Mh. 53(22).**  
**Type :-'C'.**

**Object :-To determine the optimum spacing for Jowar crop.**

**1. BASAL CONDITIONS :**

(i) (a) Jowar -Groundnut—Cotton. (b) Cotton. (c) Nil. (ii) (a) Medium black. (b) Refer soil analysis, Parbhani. (iii) 26.6.1953. (iv) (a) 3 harrowings. (b) By dibbling. (c) N.A. (d) As per treatments. (e) 2-3 seeds per hill thinned to one. (v) Nil. (vi) P.J. 4-K. (vii) Unirrigated. (viii) 3 weedings. (ix) 34.64". (x) 15.12.1953.

**2. TREATMENTS :**

Main-plot treatments :

3 row to row spacings :  $R_1=12"$ ,  $R_2=15"$  and  $R_3=18"$ .

Sub-plot treatments :

3 plant to plant spacings :  $P_1=3"$ ,  $P_2=6"$  and  $P_3=9"$ .

## 3. DESIGN :

(i) Split-plot. (ii) (a) 3 main-plots/block, 3 sub-plots/main-plot. (b) N.A. (iii) 6. (iv) (a) 1/172th ac., 1/132th ac., and 1/110th ac., for 12", 15" and 18" spacings respectively. (b) 1/272th ac., 1/218th ac., and 1/181th ac. for 12", 15" and 18" spacings respectively. (v) Two border rows were discarded for every plot at harvest. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) Nil. (iii) *Kadbi* thickness and grain yield. (iv) (a) 1952—1954. (b) and (c) N.A. (v) (a) and (b) Nil. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 673 lb./ac.  
 (ii) (a) 242.8 lb./ac.  
 (b) 163.9 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>	Mean
P <sub>1</sub>	702	628	684	671
P <sub>2</sub>	632	685	715	677
P <sub>3</sub>	618	658	735	670
Mean	651	657	711	673

## S.E. of difference of two

1. R marginal means = 80.9 lb./ac.  
 2. P marginal means = 54.6 lb./ac.  
 3. P means at the same level of R = 94.6 lb./ac.  
 4. R means at the same level of P = 111.9 lb./ac.

Crop :- Jowar (*Kharif*).

Ref :- Mh. 48(7).

Site :- Govt. Main Farm, Parbhani.

Type :- 'C'.

Object :- To ascertain the best seed rate for *Jowar* crop.

## 1. BASAL CONDITIONS .

(i) (a) Cotton—Groundnut or Gram—*Jowar*. (b) Groundnut. (c) Nil. (ii) (a) Light black soil. (b) Refer soil analysis, Parbhani. (iii) 25.6.1948. (iv) (a) One ploughing and 4 *bakharings*. (b) and (d) Sown 15" apart by seed drill. (c) As per treatments. (e) N.A. (v) Nil (vi) P.J.4—K. (vii) Unirrigated. (viii) One hoeing and one weeding. (ix) 42.12". (x) 1.12.1948.

## 2. TREATMENTS :

3 seed rates : R<sub>1</sub>=8 lb./ac., R<sub>2</sub>=10 lb./ac. and R<sub>3</sub>=12 lb./ac.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 3. (b) N.A. (iii) 8. (iv) (a) 63'×22½'. (b) 57'×20'. (v) Two border rows discarded by every plot at harvest. (vi) Yes.

## 4. GENERAL :

(i) Stand was gappy. (ii) Nil. (iii) Measurements of *kadbi* thickness (bottom and central node) of 25 plants for each plot. *Kadbi* and grain yield. (iv) (a) 1947—1949. (b) and (c) No. (v) (a) and (b) Nil. (vi) Nil. (vii) The stand was gappy and hence the results are not reliable.

## 5. RESULTS :

- (i) 35.01 lb./ac.  
 (ii) 26.22 lb./ac.  
 (iii) Treatment differences are not significant.

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

Treatment	Av. yield
R <sub>1</sub>	41.26
R <sub>2</sub>	35.14
R <sub>3</sub>	28.65
S.E./mean	=9.23 lb./ac.

Crop :- Jowar (*Kharif*).

Ref :- Mh. 49(14).

Site :- Govt. Main Farm, Parbhani.

Type :- 'C'.

Object :- To ascertain the best seed rate for *Jowar* crop.

## 1. BASAL CONDITIONS :

(i) (a) Cotton—Groundnut or Gram—*Jowar*. (b) Groundnut. (c) Nil. (ii) (a) Light black. (b) Refer soil analysis, Parbhani. (iii) 27.6.1949. (iv) (a) One ploughing and 4 *bakharings*. (b) By seed drill. (c) As per treatments. (d) 15" (e) N.A. (v) Nil. (vi) P.J.4—K. (vii) Unirrigated. (viii) 1 weeding and 1 hoeing. (ix) 39.05". (x) 8.12.1249.

## 2. TREATMENTS :

3 seed rates : R<sub>1</sub>=8, R<sub>2</sub>=10 and R<sub>3</sub>=12 lb./ac.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 3. (b) N.A. (iii) 8. (iv) (a) 63'×22½'. (b) 57'×20'. (v) Two border rows were discarded for every plot at harvest. (vi) Yes.

## 4. GENERAL :

(i) Stand was gappy. (ii) Nil. (iii) Measurements of *kadbi* thickness (bottom and central node) of 25 plants for each plot and grain yield. (iv) (a) 1947—1949. (b) and (c) No. (v) (a) and (b) Nil. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 219.2 lb./ac.

(ii) 44.46 lb./ac.

(iii) Treatment differences are not significant.

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

Treatment	Av. yield
R <sub>1</sub>	234.3
R <sub>2</sub>	220.8
R <sub>3</sub>	201.8
S.E./mean	—15.72 lb./ac.

Crop :- Jowar (*Rabi*).

Ref :- Mh. 48(8).

Site :- Govt. Main Farm, Parbhani.

Type :- 'C'.

Object :- To determine the optimum seed rate for *Jowar* crop.

## 1. BASAL CONDITIONS:

(i) (a) Cotton—*Jowar*—Groundnut. (b) Cotton. (c) Nil. (ii) (a) Black cotton soil. (b) Refer soil analysis, Parbhani. (iii) 13.10.1948. (iv) (a) One ploughing and 4 harrowings. (b) Sown by seed drill. (c) As per treatments. (d) 18" apart. (e) N.A. (v) Nil. (vi) P.J.—4—R. (vii) Unirrigated. (viii) 1 weeding and 2 hoeings. (ix) 44.49". (x) 21.3.1949.

## 2. TREATMENTS :

3 seed rates : 8 lb./ac. R<sub>2</sub>=10 lb./ac, and R<sub>3</sub>=12 lb./ac.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 3. (b) N.A. (iii) 8. (iv) (a) 63'×22.5'. (b) 57'×20'. (v) 2 rows all round plot. (vi) Yes.

## 4. GENERAL :

(i) Uneven stand. (ii) Heavy attack of sugary disease and aphids. (iii) Diameter of stalk at lower most internode and central internodes, grain and *kadbi* yield. (iv) (a) 1947 to 1954. (b) and (c) N.A. (v) (a) and (b) Nil. (vi) Nil. (vii) Excessive rains in November affected the yield.

## 5. RESULTS :

- (i) 76.00 lb./ac.  
 (ii) 20.52 lb./ac.  
 (iii) Treatment differences are highly significant.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
R <sub>1</sub>	55.48
R <sub>2</sub>	95.76
R <sub>3</sub>	76.76
S.E./mean	= 7.20 lb./ac.

Crop :- Jowar (*Rabi*).

Ref :- Mh. 49(15).

Site :- Govt. Main Farm, Parbhani.

Type :- 'C'.

Object :- To determine the optimum seed rate for *Jowar* crop.

## 1. BASAL CONDITIONS :

(i) (a) Cotton-*Jowar*-Groundnut. (b) Cotton. (c) Nil. (ii) (a) Black cotton soil. (b) Refer soil analysis, Parbhani. (iii) 14.10.1949. (iv) (a) 4 harrowings. (b) Sown by seed drill. (c) As per treatments. (d) 18" apart. (e) N.A. (v) Nil. (vi) P.J.—4—R. (vii) Unirrigated. (viii) N.A. (ix) 40.30". (x) 25.3.1950.

## 2. TREATMENTS :

3 seed rates : R<sub>1</sub>=8 lb./ac., R<sub>2</sub>=10 lb./ac. and R<sub>3</sub>=12 lb./ac.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 3. (b) N.A. (iii) 8. (iv) (a) 63'×22.5' (b) 57'×20'. (v) 2 rows on all sides of the net plot size. (vi) Yes.

## 4. GENERAL :

(i) Normal. (ii) Nil. (iii) *Kadbi* and grain yield. (iv) (a) 1947—1954. (b) and (c) N.A. (v) (a) and (b) Nil. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 256.8 lb./ac.  
 (ii) 44.54 lb./ac.  
 (iii) Treatment differences are not significant.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
R <sub>1</sub>	262.4
R <sub>2</sub>	244.3
R <sub>3</sub>	263.6
S.E./mean	= 15.75 lb./ac.

Crop :- Jowar (*Rabi*).

Ref :- Mh. 50(23).

Site :- Govt. Main Farm, Parbhani.

Type :- 'C'.

Object :- To determine the optimum seed rate for *Jowar* crop.

## 1. BASAL CONDITIONS :

(i) (a) Cotton-*Jowar*-Groundnut. (b) Cotton. (c) Nil. (ii) (a) Black cotton soil. (b) Refer soil analysis, Parbhani. (iii) 9.10.1950. (iv) (a) 4 harrowings. (b) Sown by seed drill. (c) As per treatments. (d) 18" apart. (e) N.A. (v) Nil. (vi) P.J.-4-R. (vii) Unirrigated. (viii) Weedings. (ix) 29.34". (x) 20.3.1951.

## 2. TREATMENTS :

3 seed rates :  $R_1=8$  lb./ac.,  $R_2=10$  lb./ac. and  $R_3=12$  lb./ac.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 3. (b) N.A. (iii) 8. (iv) (a)  $63' \times 22.5'$ . (b)  $57' \times 20'$ . (v) 2 rows all round the net plot. (vi) Yes.

## 4. GENERAL :

(i) Normal. (ii) Diameter of stalk at lower most internode and central internode and grain yield. (iv) (a) 1947 - 1954. (b) and (c) N.A. (v) (a) and (b) Nil. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 583.0 lb./ac.

(ii) 76.38 lb./ac.

(iii) Treatment differences are not significant.

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

Treatment	Av. yield
$R_1$	605.0
$R_2$	561.0
$R_3$	582.0
S.E./mean	=27.0 lb./ac.

Crop :- Jowar (*Rabi*).

Ref :- Mh. 51(23).

Site :- Govt. Main Farm, Parbhani.

Type :- 'C'.

Object :- To determine the optimum seed rate for *Jowar* crop.

## 1. BASAL CONDITIONS :

(i) (a) Cotton—*Jowar*—Groundnut. (b) Cotton. (c) Nil. (ii) (a) Medium black cotton soil. (b) Refer soil analysis, Parbhani. (iii) 15.10.1951. (iv) (a) 3 harrowings. (b) Sown by seed drill. (c) As per treatments. (d)  $18''$  apart. (e) N.A. (v) Nil. (vi) P.J-4-R. (vii) Unirrigated. (viii) N.A. (ix)  $28.60''$ . (x) 26.3.1952.

## 2. TREATMENTS :

3 seed rates :  $R_1=8$  lb./ac.,  $R_2=10$  lb./ac. and  $R_3=12$  lb./ac.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 3. (b) N.A. (iii) 8. (iv) (a)  $63' \times 22.5'$ . (b)  $1/38$ th ac. (v) 2 rows on all sides. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) Nil. (iii) Grain and *kadbi* yield. Thickness of the stem at the lowest and at the central internodes. (iv) (a) 1947—1954. (b) and (c) N.A. (v) (a) and (b) Nil. (vi) Crop received little or no rain during growth period. Conditions were generally droughty. (vii) Nil.

## 5. RESULTS :

(i) 1120 lb./ac.

(ii) 34.20 lb./ac.

(iii) Treatment differences are significant.

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

Treatment	Av. yield
$R_1$	1161
$R_2$	1137
$R_3$	1064
S.E./mean	= 12.00 lb. ac.

Crop :- Jowar (*Rabi*).

Ref :- Mh. 52(44).

Site :- Govt. Main Farm, Parbhani.

Type :- 'C'.

Object :- To determine the optimum seed rate for *Jowar* crop.

## 1. BASAL CONDITIONS :

(i) (a) Cotton—*Jowar*—Groundnut. (b) Cotton. (c) Nil. (ii) (a) Medium black cotton soil. (b) Refer soil analysis, Parbhani. (iii) 7.10.1952. (iv) (a) 3 harrowings. (b) Sown by seed drill. (c) As per treatments. (d) 18" apart. (e) N.A. (v) Nil. (vi) P.J.-4-R. (vii) Unirrigated. (viii) N.A. (ix) 25.38" (x) 22.3.1953.

## 2. TREATMENTS :

3 seed rates :  $R_1=8$  lb./ac.,  $R_2=10$  lb./ac. and  $R_3=12$  lb./ac.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 3. (b) N.A. (iii) 8. (iv) (a) 63' × 22.5'. (b) 1/38 th ac. (v) 2 rows on all sides. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) N.A. (iii) Grain and *kadbi* yield, thickness of the stem at the lowest and at the central internodes. (iv) (a) 1947—1954. (b) and (c) No. (v) (a) and (b) Nil. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 1128 lb./ac.  
 (ii) 174.0 lb./ac.  
 (iii) Treatment differences are not significant.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
$R_1$	1189
$R_2$	1125
$R_3$	1068
S.E./mean	= 62.0 lb./ac.

Crop :- Jowar (*Rabi*).

Ref :- Mh. 53(23).

Site :- Govt. Main Farm, Parbhani.

Type :- 'C'.

Object :- To determine the optimum seed rate for *Jowar* crop.

## 1. BASAL CONDITIONS :

(i) (a) Cotton—*Jowar*—Groundnut. (b) Cotton. (c) Nil. (ii) (a) Medium black cotton soil. (b) Refer soil analysis, Parbhani. (iii) 8.10.1953. (iv) (a) One ploughing and 3 harrowings. (b) Sown by seed drill. (c) As per treatments. (d) 18" apart. (e) N.A. (v) Nil. (vi) P.J.-4-R. (vii) Unirrigated. (viii) N.A. (ix) 34.23". (x) 10.4.1954.

## 2. TREATMENTS :

3 seed rates :  $R_1=4$  lb./ac.,  $R_2=8$  lb./ac. and  $R_3=12$  lb./ac.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 3. (b) N.A. (iii) 8. (iv) (a) 1/33.5th ac. (b) 1/40th ac. (v) 2 rows on all sides. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) N.A. (iii) Grain and *kadbi* yield. Thickness of the stem at the lowest and at the central internodes. (iv) (a) 1947—1954. (b) and (c) No. (v) (a) and (b) Nil. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 846.0 lb./ac.  
 (ii) 272.8 lb./ac.  
 (iii) Treatment differences are not significant.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
$R_1$	734.0
$R_2$	826.0
$R_3$	976.0
S.E./mean	= 96.0 lb./ac.

Crop :- Jowar (*Rabi*).  
Site :- Agri. College Farm, Poona.

Ref :- Mh. 51(178).  
Type :- 'C'.

Object :—To find out the effect of dates of sowing on the growth and yield of *Jowar*.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) N.A. (c) N.A. (ii) (a) Medium black soil. (b) Refer soil analysis, Poona. (iii) As per treatments. (iv) (a) N.A. (b) Drilling by 3 coultered Poona seed drill. (c) 8 lb./ac. (d) Between rows 18" ; between plants-irregular. (e) N.A. (v) Nil. (vi) M-35-1. (vii) Irrigated. (viii) 2 to 3 weedings and hoeings. (ix) 26.62". (x) N.A.

2. TREATMENTS :

6 dates of sowing :  $D_1=17.8.1951$ ,  $D_2=30.8.1951$ ,  $D_3=24.9.1951$ ,  $D_4=6.10.1951$ ,  $D_5=17.10.1951$  and  $D_6=27.10.1951$ .

3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 5. (iv) (a) 38'×18'. (b) 35'×15'. (v) 1.5' ring round the net plot. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) The crop was affected in seedling stage by *Jowar* stem fly. (iii) Grain and fodder yield. (iv) (a) N.A. (b) No. (c) No. (v) (a) N.A. (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 861 lb./ac.  
(ii) 254.2 lb./ac.  
(iii) Treatments do not differ significantly.  
(iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
$D_1$	1097
$D_2$	619
$D_3$	844
$D_4$	865
$D_5$	959
$D_6$	778
S.E./mean	=113.6 lb./ac.

Crop :- Jowar (*Rabi*).  
Site :- Agri. College Farm, Poona.

Ref :- Mh. 52(211).  
Type :- 'C'.

Object :— To find out the effect of dates of sowing on growth and yield of *Jowar*.

1. BASAL-CONDITIONS :

(i) (a) N.A. (b) N.A. (c) N.A. (ii) (a) Medium black. (b) Refer soil analysis, Poona. (iii) As per treatments. (iv) (a) N.A. (b) Drilling by 3 coultered Poona seed drill. (c) 8 lb./ac. (d) Between rows 18" ; between plants-irregular. (e) N.A. (v) Nil. (vi) M-35-1. (vii) Irrigated. (viii) 2 to 3 weedings and hoeings. (ix) 22.03". (x) N.A.

2. TREATMENTS :

5 sowing dates :  $D_1=17.8.1952$ ,  $D_2=30.8.1952$ ,  $D_3=24.9.1952$ ,  $D_4=6.10.1952$  and  $D_5=17.10.1952$ .

3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 4. (iv) (a) 38'×18'. (b) 35'×15'. (v) 1.5' ring round the net plot. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) The treatments were affected in early stages by *Jowar* stem fly. (iii) Grain and fodder yield. (iv) (a) N.A. (b) No. (c) No. (v) (a) and (b) N.A. (vi) and (vii) Nil.



## 5. RESULTS :

- (i) 1277 lb./ac.  
 (ii) 413.4 lb./ac.  
 (iii) Treatments do not differ significantly.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
D <sub>1</sub>	1301
D <sub>2</sub>	1301
D <sub>3</sub>	1410
D <sub>4</sub>	1338
D <sub>5</sub>	1032
S.E./mean	=206.7 lb./ac.

Crop :- Jowar (*Kharif*).

Ref :- Mh. 52(213).

Site :- Agri. College Farm, Poona.

Type :- 'C'.

Object :- To study the effect of different preparatory tillages on yield of *Jowar*.

## 1. BASAL CONDITIONS :

- (i) (a) Cotton—*Jowar*. (b) Cotton. (c) Nil. (ii) (a) Medium black. (b) Refer soil analysis, Poona. (iii) 20.6.1952. (iv) (a) One ploughing. (b) Drilling. (c) 10 lb./ac. (d) Between rows 18" and between plants-irregular. (e) —. (v) Nil. (vi) N.A. (vii) Unirrigated. (viii) Weeding from 27.6.1952 to 30.6.1952 and interculturing on 7.7.1952. (ix) 22.03". (x) 16.12.1952.

## 2. TREATMENTS :

1. Harrowing only.
2. Ploughing year after year.
3. Ploughing every alternate year.
4. Ploughing every third year.

## 3. DESIGN :

- (i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 6. (iv) (a) 132'×12'. (b) 124'×9'. (v) 4'×1.5'. (vi) Yes.

## 4. GENERAL :

- (i) Withering was noticed. For want of rain, the growth was checked. There was [no grain formation  
 (ii) Attack of stem borer was noticed to the extent of 20%. (iii) Fodder yield. (iv) (a) 1949—1956. (b) and (c) No. (v) (a) and (b) Nil. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 9030 lb./ac.  
 (ii) 967.6 lb./ac.  
 (iii) Treatment differences are highly significant.  
 (iv) Av. yield of fodder in lb./ac.

Treatment	Av. yield
1.	7442
2.	10302
3.	9464
4.	8911
S.E./mean	=395.1 lb./ac.

Crop :- Jowar (*Rabi*).

Ref :- Mh. 53(191).

Site :- Agri. College Farm, Poona.

Type :- 'C'.

Object :- To study the effect of different tillages on the yield of *Jowar*.

## 1. BASAL CONDITIONS :

- (i) (a) *Jowar*—Cotton. (b) Cotton. (c) Nil. (ii) (a) Light brown, shallow to medium; depth 1 foot. (b) Refer soil analysis, Poona. (iii) 16.9.1953. (iv) (a) As per treatments. (b) to (e) N.A. (v) Nil. (vi) *Maldandi*. 35-1. (vii) Unirrigated. (viii) Interculturing thrice and weeding once. (ix) 5.24". (x) 26.1.1954.

**2. TREATMENTS :**

1. Harrowing only.
2. Ploughing every year.
3. Ploughing alternate year.
4. Ploughing every third year.

**3. DESIGN :**

- (i) R.B.D. (ii) (a) 7 (including 3 dummies). (b) N.A. (iii) 6. (iv) (a) 132'×12'. (b) 124'×8'. (v) N.A. (vi) Yes.

**4. GENERAL :**

- (i) Faulty germination. Yield affected due to heavy rains. (ii) Attack of stem fly at early stage. (iii) Grain and fodder yield. (iv) (a) 1949—1956. (b) No. (c) N.A. (v) (a) and (b) N.A. (vi) and (vii) Nil.

**5. RESULTS :**

- (i) 267.3 lb./ac.  
 (ii) 90.60 lb./ac.  
 (iii) Treatments do not differ significantly.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	290.4
2.	202.4
3.	303.6
4.	272.8
S.E./mean	=37.04 lb./ac.

Crop :- Jowar (*Rabi*).

Site :- Agri. Res. Stn., Sholapur.

Ref :- Mh. 48(105).

Type :- 'C'.

Object:—To study the optimum frequency and time of harrowings.

**1. BASAL CONDITIONS:**

- (i) (a) Gram—*Jowar*. (b) Gram. (c) Nil. (ii) (a) Medium deep. (b) Refer soil analysis, Sholapur. (iii) N.A. (iv) (a) As per treatments. (b) Drilling. (c) 4 lb./ac. (d) 18" between rows. (e) N.A. (v) Nil. (vi) M-35-1. (vii) Unirrigated. (viii) 3 interculturings. (ix) 39.18". (x) N.A.

**2. TREATMENTS :**

One harrowing in each month as follows :—

1. May.
2. May and June.
3. May, June and July.
4. May, June, July and August.
5. June.
6. June and July.
7. June, July and August.
8. July.
9. July and August.
10. August.

**3. DESIGN :**

- (i) R.B.D. (ii) (a) 10. (b) N.A. (iii) 4. (iv) (a) 36'×36'. (b) 33'×33'. (v) 1.5' ring around the net plot. (vi) Yes.

**4. GENERAL :**

- (i) N.A. (ii) Nil. (iii) Grain and fodder yield. (iv) (a) 1946—1949. (b) No. (c) Nil. (v) (a) N.A. (b) N.A. (vi) and (vii) Nil.

**RESULTS :**

- (i) 359 lb./ac.  
 (ii) 133.6 lb./ac.  
 (iii) Treatments do not differ significantly.

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

Treatment	Av. yield
1.	295
2.	242
3.	403
4.	392
5.	276
6.	441
7.	340
8.	357
9.	421
10.	422
S.E./mean	= 66.8 lb./ac.

Crop :- Jowar (*Rabi*).

Ref :- Mh. 49(133).

Site :- Agri. Res. Stn., Sholapur.

Type :- 'C'.

Object :- To study the optimum frequency and time of harrowing.

## 1. BASAL CONDITIONS :

(i) (a) Gram—*Jowar*. (b) Gram. (c) Nil. (ii) (a) Medium deep. (b) Refer soil analysis, Sholapur. (iii) N.A. (iv) (a) Harrowings as per treatments. (b) Drilling. (c) 4 lb./ac. (d) 18" between rows. (e) N.A. (v) Nil. (vi) M-35-1. (vii) Unirrigated. (viii) 2 interculturings. (ix) 38.17". (x) N.A.

## 2. TREATMENTS :

One harrowing each in the following months :

1. May.
2. May and June.
3. May, June and July.
4. May, June, July and August.
5. June.
6. June and July.
7. June, July and August.
8. July.
9. July and August.
10. August.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 10. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 33" x 33". (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) Nil. (iii) Grain and fodder yield. (iv) (a) 1946-1949. (b) No. (c) Nil. (v) (a) N.A. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 205 lb./ac.
- (ii) 114.4 lb./ac.
- (iii) Treatments differ significantly.
- (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	154
2.	106
3.	307
4.	273
5.	87
6.	198
7.	142
8.	302
9.	306
10.	177
S.E./mean	= 57.2 lb./ac.

Crop :- Jowar (*Rabi*).  
Site :- Agri. Res. Stn., Sholapur.

Ref :- Mh. 48(103)  
Type :- C.

Object :- To study the optimum frequency and time of interculturing of *Jowar* crop.

1. BASAL CONDITIONS :

(i) (a) Gram-*Jowar*. (b) Gram. (c) Nil. (ii) (a) Medium deep. (b) Refer soil analysis, Sholapur. (iii) N.A. (iv) (a) 4 harrowings. (b) Drilling. (c) 4 lb./ac. (d) 18" between rows. (e) —. (v) Nil. (vi) M-35-1. (vii) Unirrigated. (viii) As per treatments. (ix) 39.18%. (x) N.A.

2. TREATMENTS :

One interculturing per month :

1. October.
2. October and November.
3. October, November and December.
4. October, November, December and January.
5. November.
6. November and December.
7. November, December and January.
8. December.
9. December and January.
10. January.

3. DESIGN :

(i) R.B.D. (ii) (a) 10. (b) N.A. (iii) 4. (iv) (a) 200' × 20'. (b) 197' × 17'. (v) 1.5' alaround the net plot. (vi) Yes.

4. GENERAL :

(i) N.A. (ii) Nil. (iii) Grain and fodder yield. (iv) (a) N.A. (b) No. (c) Nil. (v) (a) Mohol. (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

- (i) 229 lb./ac.  
(ii) 60.0 lb./ac.  
(iii) Treatments differ significantly.  
(iv) Av yield of grain in lb./ac.

Treatment	Av. yield
1.	232
2.	334
3.	207
4.	176
5.	214
6.	261
7.	205
8.	202
9.	270
10.	188
S.E./mean	= 30.0 lb./ac.

Crop :- Jowar (*Rabi*).  
Site :- Agri. Res. Stn., Sholapur.

Ref :- Mh. 49(129).  
Type :- 'C'.

Object :- To study optimum frequency and time of interculturing.

1. BASAL CONDITIONS :

(i) (a) Gram-*Jowar*. (b) Gram. (c) Nil. (ii) (a) Medium deep. (b) Refer soil analysis, Sholapur. (iii) N.A. (iv) (a) 4 harrowings. (b) Drilling. (c) 4 lb./ac. (d) 18" between rows. (e) N.A. (v) Nil. (vi) M-35-1. (vii) Unirrigated. (viii) As per treatments. (ix) 38.17%. (x) N.A.

## 2. TREATMENTS :

One interculturing each month :

1. November.
2. November and December.
3. November, December and January.
4. November, December, January and February.
5. December.
6. December and January.
7. December, January and February.
8. January.
9. January and February.
10. February.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 10. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 197' x 17'. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) Nil. (iii) Grain and fodder yield. (iv) (a) N.A. (b) No. (c) Nil. (v) (a) N.A. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 209 lb./ac.  
 (ii) 86.48 lb./ac.  
 (iii) Treatments do not differ significantly.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	270
2.	271
3.	222
4.	143
5.	220
6.	264
7.	191
8.	177
9.	129
10.	204
S.E./mean	=43.24 lb./ac.

Crop :- Jowar (*Rabi*).  
 Site :- Agri. Res. Stn., Sholapur.

Ref :- Mh. 50(153).  
 Type :- 'C'.

Object : To find out optimum frequency and time of interculturing for *Jowar* crop.

## 1. BASAL CONDITIONS :

(i) (a) Gram—*Jowar*. (b) Gram. (c) Nil. (ii) (a) Medium deep. (b) Refer soil analysis, Sholapur. (iii) N.A. (iv) (a) 4 harrowings. (b) Drilling. (c) 4 lb./ac. (d) 18" between rows. (e) N.A. (v) Nil. (vi) M-35-1. (vii) Unirrigated. (viii) As per treatments. (ix) 24.04". (x) N.A.

## 2. TREATMENTS :

One interculturing each month :

1. October.
2. October and November.
3. October, November and December.
4. October, November, December and January.
5. November.
6. November and December.
7. November, December and January.
8. December.
9. December and January.
10. January.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 10. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 197'×17'. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) Nil. (iii) Grain and fodder yield. (iv) (a) and (b) N.A. (c) Nil. (v) (a) Mohol. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 331 lb./ac.  
 (ii) 110.8 lb./ac.  
 (iii) Treatments do not differ significantly.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	352
2.	380
3.	366
4.	360
5	464
6.	331
7.	234
8.	347
9.	240
10.	238
S.E./mean	= 55.4 lb./ac.

Crop :- Jowar (*Rabi*).

Site :- Agri. Res. Stn., Sholapur.

Ref :- Mh. 51(65).

Type :- 'C'.

Object :- To find out the effect of harrowing and interculturing on *Jowar*.

## 1. BASAL CONDITIONS :

(i) (a) No. (b) *Jowar*. (c) Nil. (ii) (a) Deep black. (b) Refer soil analysis, Sholapur. (iii) 6.10.1951.  
 (iv) (a) As per treatments. (b) N.A. (c) 4 lb./ac. (d) 18". (e) N.A. (v) Nil. (vi) M-35-1 (medium).  
 (vii) Unirrigated. (viii) As per treatments. (ix) 6". (x) 12.2.1952.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) Number of harrowings :  $H_1=2$ ,  $H_2=3$  and  $H_3=4$ .

(2) Number of interculturings :  $I_1=1$ ,  $I_2=2$ ,  $I_3=3$  and  $I_4=4$ .

## 3. DESIGN :

(i) 3×4 Fact. in R.B.D. (ii) (a) 12. (b) N.A. (iii) 4. (iv) (a) 32'.7"×48'. (b) 26'.7"×42'. (v) 3' around the net plot. (vi) Yes.

## 4. GENERAL :

(i) Normal. (ii) Nil. (iii) Height, count of plants and grain yield. (iv) (a) 1951-1955. (b) and (c) No. (v) (a) Chas and Jeur. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 381 lb./ac.  
 (ii) 110.6 lb./ac.  
 (iii) Main effect of H alone is highly significant. Others are not significant.

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

	H <sub>1</sub>	H <sub>2</sub>	H <sub>3</sub>	Mean
I <sub>1</sub>	263	430	449	381
I <sub>2</sub>	297	399	538	411
I <sub>3</sub>	226	482	450	399
I <sub>4</sub>	240	403	361	335
Mean	256	428	459	

S.E. of marginal mean of I = 31.93 lb./ac.  
 S.E. of marginal mean of H = 27.65 lb./ac.  
 S.E. of body of table = 55.31 lb /ac.

Crop :- Jowar (*Rabi*).

Ref :- Mh. 52(94).

Site :- Agri. Res. Stn., Sholapur.

Type :- 'C'

Object :- To find out the effect of harrowing and interculturing on yield of *Jowar* in dry tract.

## 1. BASAL CONDITIONS :

(i) (a) Gram—*Jowar*. (b) Gram. (c) Nil. (ii) (a) Deep black. (b) Refer soil analysis, Sholapur. (iii) 10.10.1952. (iv) (a) 2 harrowings. (b) N.A. (c) 4 lb /ac. (d) 18°. (e) N.A. (v) Nil. (vi) M-35-1 (medium). (vii) Unirrigated. (viii) As per treatments. (ix) 2". (x) 12.2.1953.

## 2. TREATMENTS :

All combinations of (1) and (2) -

- (1) Number of harrowings : H<sub>1</sub>=2, H<sub>2</sub>=3 and H<sub>3</sub>=4.  
 (2) Number of interculturings : I<sub>1</sub>=1, I<sub>2</sub>=2, I<sub>3</sub>=3 and I<sub>4</sub>=4.

## 3. DESIGN :

(i) 3×4 Fact. in R.B.D. (ii) (a) 12. (b) N.A. (iii) 4. (iv) 31'-7"×48'. (b) 26'-7"×42'. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) Above normal. (ii) Nil. (iii) 3 heights and 2 counts. (iv) (a) 1951 to 1955. (b) No. (c) N.A. (v) (a) Chas and Jeur. (b) N.A. (vi) Nil. (vii) As the sowing was delayed, only 2 interculturings were given instead of 3 and 4 interculturings. Hence I<sub>3</sub> and I<sub>4</sub> were pooled with I<sub>2</sub>.

## 5. RESULTS :

- (i) 984 lb./ac.  
 (ii) 156.4 lb /ac.  
 (iii) Main effect of H and interaction H×I are significant.  
 (iv) Av. yield of grain in lb./ac.

	H <sub>1</sub>	H <sub>2</sub>	H <sub>3</sub>	Mean
I <sub>1</sub>	751	1214	936	967
I <sub>2</sub>	936	1041	991	989
M4an	890	1084	977	

S.E. of marginal mean of H = 39.1 lb./ac.  
 S.E. of marginal mean of I = 45.1 lb./ac.  
 S.E. of body of table = 78.2 lb./ac.

Crop :- Jowar (*Rabi*).  
Site :- Agri. Res. Stn., Sholapur.

Ref :- Mh. 53(146).  
Type :- 'C'.

Object :—To find out the effect of harrowing and interculturing on yield of *Jowar* in dry tract.

1. BASAL CONDITIONS :

(i) (a) Gram—*Jowar*. (b) Gram. (c) Nil. (ii) (a) Deep black. (b) Refer soil analysis, Sholapur. (iii) 14.10.1953. (iv) (a) As per treatments. (b) N.A. (c) 4 lb./ac. (d) 18". (e) N.A. (v) Nil. (vi) M-35-1 (medium). (vii) Unirrigated. (viii) As per treatments. (ix) 9". (x) 28.2.1954.

2. TREATMENTS :

All combinations of (1) and (2)

- (1) Number of harrowings :  $H_1=2$ ,  $H_2=3$  and  $H_3=4$ .  
(2) Number of interculturings :  $I_1=1$ ,  $I_2=2$ ,  $I_3=3$  and  $I_4=4$ .

3. DESIGN :

(i)  $3 \times 4$  Fact. in R.B.D. (ii) (a) 12. (b) N.A. (iii) 4. (iv) (a)  $32'-7" \times 48'$ . (b)  $26'-7" \times 42'$  (v) N.A. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) Height, count of plants and grain yield. (iv) (a) 1951 to 1955. (b) No. (c) N.A. (v) (a) Chas and Jeur. (b) N.A. (vi) Nil. (vii) As the sowing of *Rabi Jowar* was delayed, only 3 interculturings were given instead of 4 interculturings. Hence  $I_4$  pooled with  $I_3$ .

5. RESULTS :

- (i) 466.6 lb./ac.  
(ii) 95.83 lb./ac.  
(iii) Main effect of H and interaction  $H \times I$  are significant.  
(iv) Av. yield of grain in lb./ac.

	$H_1$	$H_2$	$H_3$	Mean
$I_1$	394	456	472	441
$I_2$	444	521	503	489
$I_3$	370	490	543	468
Mean	395	490	515	

S.E. of marginal mean of H = 23.96 lb./ac.  
S.E. of marginal mean of  $I_1$  and  $I_2$  = 27.66 lb./ac.  
S.E. of marginal mean of  $I_3$  = 19.56 lb./ac.  
S.E. of body of table = 58.46 lb./ac.

Crop :- Jowar (*Rabi*).  
Site :- Agri. Res. Stn., Sholapur.

Ref :- Mh. 48(104).  
Type :- 'C'.

Object :—To find out the proper time of sowing *Jowar*.

1. BASAL CONDITIONS :

(i) (a) *Jowar* after gram. (b) Gram. (c) Nil. (ii) (a) Medium deep. (b) Refer soil analysis, Sholapur. (iii) As per treatments. (iv) 4 harrowings. (b) Drilling. (c) 4 lb./ac. (d) 18" between rows. (e) N.A. (v) Nil. (vi) M-35-1. (vii) Unirrigated. (viii) 4 interculturings. (ix)  $39 \times 18"$ . (x) N.A.

2. TREATMENTS :

15 dates of sowing :  $D_1=13.9.1948$ ,  $D_2=15.9.1948$ ,  $D_3=17.9.1948$ ,  $D_4=19.9.1948$ ,  
 $D_5=21.9.1948$ ,  $D_6=23.9.1948$ ,  $D_7=25.10.1948$ ,  $D_8=15.10.1948$ ,  
 $D_9=17.10.1948$ ,  $D_{10}=19.10.1948$ ,  $D_{11}=23.10.1948$ ,  $D_{12}=25.10.1948$ ,  
 $D_{13}=27.10.1948$ ,  $D_{14}=29.10.1948$ . and  $D_{15}=31.10.1948$ .



## 3. DESIGN :

(i) R.B.D. (ii) (a) 15. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 27' × 27'. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) Nil. (iii) Grain yield. (iv) (a) N.A.—1949. (b) No. (c) Nil. (v) (a) Mohol. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 123 lb./ac.  
 (ii) 81.56 lb./ac.  
 (iii) Treatment differences are highly significant.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield	Treatment	Av. yield
D <sub>1</sub>	152	D <sub>9</sub>	123
D <sub>2</sub>	119	D <sub>10</sub>	86
D <sub>3</sub>	149	D <sub>11</sub>	119
D <sub>4</sub>	164	D <sub>12</sub>	81
D <sub>5</sub>	35	D <sub>13</sub>	40
D <sub>6</sub>	248	D <sub>14</sub>	36
D <sub>7</sub>	252	D <sub>15</sub>	63
D <sub>8</sub>	188		

S.E./mean = 40.78 lb./ac.

Crop :- Jowar (*Rabi*).

Ref :- Mh. 49(132).

Site :- Agri. Res. Stn., Sholapur.

Type :- 'C'.

Object :- To find out suitable time of sowing *Jowar*.

## 1. BASAL CONDITIONS .

(i) (a) *Jowar* after gram. (b) Gram. (c) Nil. (ii) (a) Medium deep. (b) Refer soil analysis, Sholapur. (iii) As per treatments. (iv) (a) 4 harrowings. (b) Drilling. (c) 4 lb./ac. (d) 18" between rows. (e) N.A. (v) Nil. (vi) M-35-1. (vii) Unirrigated. (viii) 4 interculturings. (ix) 38.17". (x) N.A.

## 2. TREATMENTS :

6 sowing dates : D<sub>1</sub>=13.9.1949, D<sub>2</sub>=15.9.1949, D<sub>3</sub>=17.9.1949, D<sub>4</sub>=7.10.1949, D<sub>5</sub>=9.10.1949 and D<sub>6</sub>=11.10.1949.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 27' × 30'. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) Nil. (iii) Grain and fodder yield. (iv) (a) N.A.—1949. (b) No. (c) Nil. (v) (a) Mohol. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 222 lb./ac.  
 (ii) 87.28 lb./ac.  
 (iii) Treatments do not differ significantly.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
D <sub>1</sub>	239
D <sub>2</sub>	177
D <sub>3</sub>	225
D <sub>4</sub>	176
D <sub>5</sub>	240
D <sub>6</sub>	277
S.E./mean	= 43.64 lb./ac.

Crop :- Jowar (*Rabi*).  
Site :- Agri. Res. Stn., Sholapur.

Ref :- Mh. 48(112).  
Type :- 'C'.

Object :- To determine the optimum frequency of ploughing for *Jowar* crop.

### 1. BASAL CONDITIONS :

(i) (a) Gram—*Jowar*. (b) Gram. (c) Nil. (ii) (a) Medium deep. (b) Refer soil analysis, Sholapur.  
(iii) N.A. (iv) (a) 4 harrowings. Ploughings as per treatment. (b) Drilling. (c) 4 lb/ac. (d) 18" between rows. (e) N.A. (v) Nil. (vi) M-35-1. (vii) Unirrigated. (viii) 2 interculturings. (ix) 39.18".  
(x) N.A.

### 2. TREATMENTS :

A = Harrowed only.

B<sub>1</sub> = Ploughed every 3 years starting with 1946.

B<sub>2</sub> = Ploughed every 3 years starting with 1947.

B<sub>3</sub> = Ploughed every 3 years starting with 1948.

C<sub>1</sub> = Ploughed every 4 years starting with 1946.

C<sub>2</sub> = Ploughed every 4 years starting with 1947.

C<sub>3</sub> = Ploughed every 4 years starting with 1948.

C<sub>4</sub> = Ploughed every 4 years starting with 1949.

D<sub>1</sub> = Ploughed every 6 years starting with 1946.

D<sub>2</sub> = Ploughed every 6 years starting with 1947.

D<sub>3</sub> = Ploughed every 6 years starting with 1948.

D<sub>4</sub> = Ploughed every 6 years starting with 1949.

D<sub>5</sub> = Ploughed every 6 years starting with 1950.

D<sub>6</sub> = Ploughed every 6 years starting with 1951.

For this year treatments are :

1. Harrowed only (A).
2. Ploughed in 1946 (B<sub>1</sub>, C<sub>1</sub> and D<sub>1</sub>).
3. Ploughed in 1947 (B<sub>2</sub>, C<sub>2</sub> and D<sub>2</sub>).
4. Ploughed in 1948 (B<sub>3</sub>, C<sub>3</sub> and D<sub>3</sub>).
5. No ploughing (C<sub>4</sub>, D<sub>4</sub> and D<sub>5</sub> and D<sub>6</sub>).

### 3. DESIGN :

(i) R.B.D. (ii) (a) 14. (b) N.A. (iii) 4. (iv) (a) [36'×45'. (b) 33'×42'. (v) 1.5' around. (vi) As per rotations.

### 4. GENERAL :

(i) N.A. (ii) Nil. (iii) Grain yield. (iv) (a) 1946—1956. (b) As per ploughing rotation. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

### 5. RESULTS :

- (i) 301 lb./ac.
- (ii) 84.04 lb./ac.
- (iii) Treatments do not differ significantly.
- (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1. A	298
2. (B <sub>1</sub> +C <sub>1</sub> +D <sub>1</sub> )	281
3. (B <sub>2</sub> +C <sub>2</sub> +D <sub>2</sub> )	312
4. (B <sub>3</sub> +C <sub>3</sub> +D <sub>3</sub> )	316
5. (C <sub>4</sub> +D <sub>4</sub> +D <sub>5</sub> +D <sub>6</sub> )	297
S.E /mean	= 52.87 lb./ac.

Crop :- Jowar (*Rabi*).  
Site :- Agri. Res. Stn., Sholapur.

Ref :- Mh. 49(144)/48(112).  
Type :- 'C'.

Object :- To determine the optimum frequency of ploughing for *Jowar* crop.

### 1. BASAL CONDITIONS :

(i) (a) Gram--*Jowar*. (b) Gram. (c) Nil. (ii) (a) Medium deep. (b) Refer soil analysis, Sholapur.  
(iii) N.A. (iv) (a) Ploughing as per treatments. 4 harrowings. (b) Drilling. (c) 4 lb./ac. (d) 18" between rows. (e) N.A. (v) Nil. (vi) M-35-1. (vii) Unirrigated. (viii) 2 interculturings. (ix) 38.17".  
(x) N.A.

## 2. TREATMENTS :

A = Harrowed only.

B<sub>1</sub> = Ploughed every 3 years starting with 1946.B<sub>2</sub> = Ploughed every 3 years starting with 1947.B<sub>3</sub> = Ploughed every 3 years starting with 1948.C<sub>1</sub> = Ploughed every 4 years starting with 1946.C<sub>2</sub> = Ploughed every 4 years starting with 1947.C<sub>3</sub> = Ploughed every 4 years starting with 1948.C<sub>4</sub> = Ploughed every 4 years starting with 1949.D<sub>1</sub> = Ploughed every 6 years starting with 1946.D<sub>2</sub> = Ploughed every 6 years starting with 1947.D<sub>3</sub> = Ploughed every 6 years starting with 1948.D<sub>4</sub> = Ploughed every 6 years starting with 1949.D<sub>5</sub> = Ploughed every 6 years starting with 1950.D<sub>6</sub> = Ploughed every 6 years starting with 1951.

Treatments for this year are :

1. Harrowed only (A).
2. Ploughed in 1946 (B<sub>1</sub>, C<sub>1</sub> and D<sub>1</sub>).
3. Ploughed in 1947 (B<sub>2</sub>, C<sub>2</sub> and D<sub>2</sub>).
4. Ploughed in 1948 (B<sub>3</sub>, C<sub>3</sub> and D<sub>3</sub>).
5. Ploughed in 1949 (C<sub>4</sub> and D<sub>4</sub>).
6. No ploughing (D<sub>5</sub> and D<sub>6</sub>).

## 3. DESIGN :

(i) R.B.D. (ii) (a) 14. (b) N.A. (iii) 4. (iv) (a) 36' × 45'. (b) 33' × 42'. (v) 1.5' around. (vi) As per rotation.

## 4. GENERAL :

(i) N.A. (ii) Nil. (iii) Grain yield. (iv) (a) 1946-1956. (b) As per ploughing rotations. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 28 lb./ac.

(ii) 48.79 lb./ac.

(iii) Treatments do not differ significantly.

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

Treatment	Av. yield
1. A	347
2. (B <sub>1</sub> +C <sub>1</sub> +D <sub>1</sub> )	337
3. (B <sub>2</sub> +C <sub>2</sub> +D <sub>2</sub> )	307
4. (B <sub>3</sub> +C <sub>3</sub> +D <sub>3</sub> )	291
5. (C <sub>4</sub> +D <sub>4</sub> )	347
6. (D <sub>5</sub> +D <sub>6</sub> )	339
S.E./mean	= 33.03 lb./ac.

Crop :- Jowar (*Rabi*).

Site :- Agri. Res. Stn., Sholapur.

Ref :- Mh. 50(165)/49(144)/48(112).

Type :- 'C'.

Object :- To determine the optimum frequency of ploughing for *Jowar* crop.

## 1. BASAL CONDITIONS :

(i) (a) Gram—*Jowar*. (b) Gram. (c) Nil. (ii) (a) Medium deep. (b) Refer soil analysis, Sholapur. (iii) N.A. (iv) (a) 4 harrowings. Ploughing as per treatments. (b) Drilling. (c) 4 lb./ac. (d) 18" between rows. (e) N.A. (v) Nil. (vi) M-35-1. (vii) Unirrigated. (viii) 4 interculturings. (ix) 24.04". (x) N.A.

## 2. TREATMENTS :

A = Harrowed only.

B<sub>1</sub> = Ploughed every 3 years starting withB<sub>2</sub> = Ploughed every 3 years starting with 1947.B<sub>3</sub> = Ploughed every 3 years starting with 1948.C<sub>1</sub> = Ploughed every 4 years starting with 1946.C<sub>2</sub> = Ploughed every 4 years starting with 1947.C<sub>3</sub> = Ploughed every 4 years starting with 1948.C<sub>4</sub> = Ploughed every 4 years starting with 1949.D<sub>1</sub> = Ploughed every 6 years starting with 1946.D<sub>2</sub> = Ploughed every 6 years starting with 1947.D<sub>3</sub> = Ploughed every 6 years starting with 1948.D<sub>4</sub> = Ploughed every 6 years starting with 1949.D<sub>5</sub> = Ploughed every 6 years starting with 1950.D<sub>6</sub> = Ploughed every 6 years starting with 1951.

Treatment for this year are :

1. Harrowed only (A).
2. Ploughed in 1946, 1949 (B<sub>1</sub>).
3. Ploughed in 1947, 1950 (B<sub>2</sub>).
4. Ploughed in 1948 (B<sub>3</sub>, C<sub>3</sub>, D<sub>3</sub>).
5. Ploughed in 1946, 1950 (C<sub>1</sub>).
6. Ploughed in 1947 (C<sub>2</sub>, D<sub>2</sub>).
7. Ploughed in 1949 (C<sub>4</sub>, D<sub>4</sub>).
8. Ploughed in 1946 (D<sub>1</sub>).
9. Ploughed in 1950 (D<sub>5</sub>).
10. No ploughing (D<sub>6</sub>).

### 3. DESIGN :

(i) R.B.D. (ii) (a) 14. (b) N.A. (iii) 4. (iv) (a) 45'×36'. (b) 42'×33'. (v) 1.5' around. (vi) As per rotation:

### 4. GENERAL :

(i) N.A. (ii) Nil. (iii) Grain yie'd. (iv) (a) 1946—1956. (b) As per ploughing rotation. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

### 5. RESULTS :

- (i) 440 lb./ac.
- (ii) 76.73 lb./ac.
- (iii) Treatments do not differ significantly.
- (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1. A	426
2. B <sub>1</sub>	470
3. B <sub>2</sub>	444
4. (B <sub>3</sub> +C <sub>3</sub> +D <sub>3</sub> )	443
5. C <sub>1</sub>	435
6. (C <sub>2</sub> +D <sub>2</sub> )	415
7. (C <sub>4</sub> +D <sub>4</sub> )	402
8. D <sub>1</sub>	453
9. D <sub>5</sub>	448
10. D <sub>6</sub>	466
S.E./mean	=91.95 lb./ac.

Crop :- Jowar (*Rabi*).

Ref :- Mh. 51(235)/50(165)/49(144)/48(112).

Site :- Agri. Res. Stn., Sholapur.

Type :- 'C'.

Object :- To determine the optimum frequency of ploughing for *Jowar* crop.

### 1. BASAL CONDITIONS :

(i) (a) Gram—*Jowar*. (b) Gram. (c) Nil. (ii) (a) Medium deep. (b) Refer soil analysis, Sholapur. (iii) 28.9.1951. (iv) (a) 4 harrowings. Ploughings as per treatments. (b) Drilling. (c) 4 lb./ac. (d) 18". between rows. (e) N.A. (v) Nil. (vi) M-35-1. (vii) Unirrigated. (viii) 4 interculturings. (ix) 24.81" (x) 7.2.1952.

### 2. TREATMENTS :

A = Harrowed only.  
 B<sub>1</sub> = Ploughed every 3 years starting with 1946.  
 B<sub>2</sub> = Ploughed every 3 years starting with 1947.  
 B<sub>3</sub> = Ploughed every 3 years starting with 1948.  
 C<sub>1</sub> = Ploughed every 4 years starting with 1946.  
 C<sub>2</sub> = Ploughed every 4 years starting with 1947.  
 C<sub>3</sub> = Ploughed every 4 years starting with 1948.

C<sub>4</sub> = Ploughed every 4 years starting with 1949.  
 D<sub>1</sub> = Ploughed every 6 years starting with 1946.  
 D<sub>2</sub> = Ploughed every 6 years starting with 1947.  
 D<sub>3</sub> = Ploughed every 6 years starting with 1948.  
 D<sub>4</sub> = Ploughed every 6 years starting with 1949.  
 D<sub>5</sub> = Ploughed every 6 years starting with 1950.  
 D<sub>6</sub> = Ploughed every 6 years starting with 1951.

Treatments for this year are

1. Harrowed only (A).
2. Ploughed in 1946, 1949 (B<sub>1</sub>).
3. Ploughed in 1947, 1950 (B<sub>2</sub>).
4. Ploughed in 1948, 1951 (B<sub>3</sub>).
5. Ploughed in 1946, 1950 (C<sub>1</sub>).
6. Ploughed in 1947, 1951 (C<sub>2</sub>).
7. Ploughed in 1948 (C<sub>3</sub>, D<sub>3</sub>).
8. Ploughed in 1949 (C<sub>4</sub>, D<sub>4</sub>).
9. Ploughed in 1946 (D<sub>1</sub>).
10. Ploughed in 1947 (D<sub>2</sub>).
11. Ploughed in 1950 (D<sub>5</sub>).
12. Ploughed in 1951 (D<sub>6</sub>).

3. DESIGN :

(i) R.B.D. (ii) (a) 14. (b) N.A. (iii) 4. (iv) (a) 36'×45'. (b) 33'×42'. (v) 1.5' around. (vi) As per rotation.

4. GENERAL :

(i) N.A. (ii) Nil. (iii) Grain yield. (iv) (a) 1946—1956. (b) As per ploughing rotation. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

- (i) 351 lb./ac.
- (ii) 60.22 lb./ac.
- (iii) Treatments do not differ significantly.
- (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield	Treatment	Av. yield
1. A.	340	7. (C <sub>3</sub> +D <sub>3</sub> )	365
2. B <sub>1</sub>	394	8. (C <sub>4</sub> +D <sub>4</sub> )	364
3. B <sub>2</sub>	397	9. D <sub>1</sub>	294
4. B <sub>3</sub>	350	10. D <sub>2</sub>	295
5. C <sub>1</sub>	376	11. D <sub>5</sub>	345
6. C <sub>2</sub>	352	12. D <sub>6</sub>	343
S.E./mean		=36.88 lb./ac.	

Crop :- Jowar (*Rabi*). Ref :- Mh. 52(373)/51(235)/50(165)/49(144)/43(112).

Site :- Agri. Res. Stn., Sholapur.

Type :- 'C'.

Object :- To determine the optimum frequency of ploughing for *Jowar* crop.

1. BASAL CONDITIONS :

(i) (a) Gram-*Jowar*. (b) Gram. (c) Nil. (ii) (a) Medium deep. (b) Refer soil analysis, Sholapur. (iii) 5.10.1952. (iv) (a) 4 harrowings, ploughing as per treatments. (b) Drilling. (c) 4 lb./ac. (d) 18" between rows. (e) N.A. (v) Nil. (vi) M-35-1. (vii) Unirrigated. (viii) 2 interculturings. (ix) 20.76". (x) 9.2.1953.

2. TREATMENTS:

A = Harrowed only.

B<sub>1</sub> = Ploughed every 3 years starting with 1946.

B<sub>2</sub> = Ploughed every 3 years starting with 1947.

B<sub>3</sub> = Ploughed every 3 years starting with 1948.

C<sub>1</sub> = Ploughed every 4 years starting with 1946.

C<sub>2</sub> = Ploughed every 4 years starting with 1947.

C<sub>3</sub> = Ploughed every 4 years starting with 1948.

Treatments for this year are

1. Harrowed only (A).

2. Ploughed in 1946, 1949 and 1952 (B<sub>1</sub>).

3. Ploughed in 1947, 1950 (B<sub>2</sub>).

4. Ploughed in 1948, 1951 (B<sub>3</sub>).

5. Ploughed in 1946, 1950 (C<sub>1</sub>).

6. Ploughed in 1947, 1951 (C<sub>2</sub>).

7. Ploughed in 1948, 1952 (C<sub>3</sub>).

C<sub>4</sub> = Ploughed every 4 years starting with 1949.

D<sub>1</sub> = Ploughed every 6 years starting with 1946.

D<sub>2</sub> = Ploughed every 6 years starting with 1947.

D<sub>3</sub> = Ploughed every 6 years starting with 1948.

D<sub>4</sub> = Ploughed every 6 years starting with 1949.

D<sub>5</sub> = Ploughed every 6 years starting with 1950.

D<sub>6</sub> = Ploughed every 6 years starting with 1951.

8. Ploughed in 1949 (C<sub>4</sub>, D<sub>4</sub>).

9. Ploughed in 1946, 1952 (D<sub>1</sub>).

10. Ploughed in 1947 (D<sub>2</sub>).

11. Ploughed in 1948 (D<sub>3</sub>).

12. Ploughed in 1950 (D<sub>5</sub>).

13. Ploughed in 1951 (D<sub>6</sub>).

3. DESIGN :

(i) R.B.D. (ii) (a) 14. (b) N.A. (iii) 4. (iv) (a) 36'×45'. (b) 33'×42'. (v) 1.5' around. (vi) As per rotation.

## 4. GENERAL :

(i) N.A. (ii) Nil. (iii) Grain and fodder yield. (iv) (a) 1946 to 1956. (b) As per rotation. (c) Nil. (v) (a) N.A. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 524 lb./ac.  
 (ii) 89.51 lb./ac.  
 (iii) Treatments differ significantly.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield	Treatment	Av. yield
1. A	498	8. (C <sub>4</sub> +D <sub>4</sub> )	500
2. B <sub>1</sub>	456	9. D <sub>1</sub>	664
3. B <sub>2</sub>	519	10. D <sub>2</sub>	484
4. B <sub>3</sub>	555	11. D <sub>3</sub>	601
5. C <sub>1</sub>	493	12. D <sub>5</sub>	445
6. C <sub>2</sub>	524	13. D <sub>6</sub>	458
7. C <sub>3</sub>	620		
	S.E./mean		=54.81 lb./ac.

Crop :- Jowar (*Rabi*). Ref :- Mh. 53(375)/52(373)/52(235)/50(165)/4 9(144)/48(112).

Site :- Agri. Res. Stn., Sholapur.

Type :- 'C'.

Object :- To determine the optimum frequency of ploughing for *Jowar* crop.

## 1. BASAL CONDITIONS :

(i) (a) Gram-*Jowar*. (b) Gram. (c) Nil. (ii) (a) Medium deep. (b) Refer soil analysis, Sholapur. (iii) 14.10.1953. (iv) (a) 4 harrowings. Ploughing as per treatment. (b) Drilling. (c) 4 lb./ac. (d) 18" between rows. (e) N.A. (v) Nil. (vi) M-35-1. (vii) Unirrigated. (viii) 3 interculturings. (ix) 35.96". (x) 13.1954.

## 2. TREATMENTS :

A = Harrowed only.

B<sub>1</sub> = Ploughed every 3 years starting with 1946.

B<sub>2</sub> = Ploughed every 3 years starting with 1947.

B<sub>3</sub> = Ploughed every 3 years starting with 1948.

C<sub>1</sub> = Ploughed every 4 years starting with 1946.

C<sub>2</sub> = Ploughed every 4 years starting with 1947.

C<sub>3</sub> = Ploughed every 4 years starting with 1948.

C<sub>4</sub> = Ploughed every 4 years starting with 1949.

D<sub>1</sub> = Ploughed every 6 years starting with 1946.

D<sub>2</sub> = Ploughed every 6 years starting with 1947.

D<sub>3</sub> = Ploughed every 6 years starting with 1948.

D<sub>4</sub> = Ploughed every 6 years starting with 1949.

D<sub>5</sub> = Ploughed every 6 years starting with 1950.

D<sub>6</sub> = Ploughed every 6 years starting with 1951.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 14. (b) N.A. (iii) 4. (iv) (a) 36' × 45'. (b) 33' × 42'. (v) 1.5' around. (vi) As per rotation.

## 4. GENERAL :

(i) Growth was checked due to excess of rainfall and late sowing. (ii) Nil. (iii) Grain yield. (iv) (a) 1946 to 1956. (b) As per ploughing rotations. (c) Nil. (v) (a) N.A. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 168 lb./ac.  
 (ii) 50.16 lb./ac.  
 (iii) Treatments differ significantly.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield	Treatment	Av. yield
1. A	166	8. C <sub>4</sub>	189
2. B <sub>1</sub>	188	9. D <sub>1</sub>	176
3. B <sub>2</sub>	185	10. D <sub>2</sub>	137
4. B <sub>3</sub>	182	11. D <sub>3</sub>	127
5. C <sub>1</sub>	173	12. D <sub>4</sub>	170
6. C <sub>2</sub>	155	13. D <sub>5</sub>	173
7. C <sub>3</sub>	146	14. D <sub>6</sub>	181
	S.E./mean		=25.08 lb./ac.

Crop :-Jowar (*Rabi*).

Ref :-Mh. 51(231).

Site :-Agri. Res. Stn., Mohol.

Type :-'CV'.

Object :-To study the suitable sowing date for *Jowar* varieties.

## 1. BASAL CONDITIONS :

(i) (a) Gram - *Jowar*. (b) Gram. (c) Nil. (ii) (a) Medium black. (b) Refer soil analysis, Mohol. (iii) As per treatments. (iv) (a) 3 harrowings. (b) Drilling. (c) 4 lb./ac. (d) 18" between rows. (e) N.A. (v) Nil. (vi) As per treatments. (vii) Unirrigated. (viii) 3 interculturings. (ix) 7.49%. (x) N.A.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 2 varieties :  $V_1$ =M-35 1 and  $V_2$ =Nandyal.(2) 5 dates of sowing :  $D_1$ =1.8.1951,  $D_2$ =16.8.1951,  $D_3$ =1.9.1951,  $D_4$ =16.9.1951 and  $D_5$ =1.10.1951.

## 3. DESIGN

(i) 2x5 Fact. in R.B.D. (ii) (a) 10. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 1/80 ac. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) Nil. (iii) Grain yield. (iv) (a) 1951—1953. (b) No. (c) Nil. (v) (a) and (b) Nil. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 252 lb./ac.

(ii) 72.67 lb./ac.

(iii) Main effect of D alone is highly significant.

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

	$V_1$	$V_2$	Mean
$D_1$	136	208	172
$D_2$	223	265	244
$D_3$	184	181	183
$D_4$	353	208	280
$D_5$	439	324	382
Mean	267	237	252

S.E. of marginal mean of V

= 16.25 lb./ac.

S.E. of marginal mean of D

= 25.69 lb./ac.

S.E. of body of table

= 36.33 lb./ac.

Crop :-Jowar (*Rabi*).

Ref :-Mh. 52(366).

Site :-Agri. Res. Stn., Mohol.

Type :-'CV'.

Object :-To study the suitable sowing dates of *Jowar* varieties.

## 1. BASAL CONDITIONS :

(i) (a) Gram - *Jowar*. (b) Gram. (c) Nil. (ii) (a) Medium black. (b) Refer soil analysis, Mohol. (iii) As per treatments. (iv) (a) 4 harrowings. (b) Drilling. (c) 4 lb./ac. (d) 18" between rows. (e) N.A. (v) Nil. (vi) As per treatments. (vii) Unirrigated. (viii) 2 interculturings. (ix) 5.03%. (x) N.A.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 2 varieties :  $V_1$ =M-35-1 and  $V_2$ =Nandyal.(2) 5 dates of sowing :  $D_1$ =1.8.1952,  $D_2$ =16.8.1952,  $D_3$ =1.9.1952,  $D_4$ =16.9.1952 and  $D_5$ =1.10.1952.

## 3. DESIGN :

(i) 2×5 Fact. in R.B.D. (ii) (a) 10. (b) N.A. (iii) 4. (iv) (a) 46'×19.50'. (b) 40'×13.50'. (v) 3' around. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) N.A. (iii) Grain yield. (iv) (a) 1951—1953. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) Nil. (vii) Nil.

## 5. RESULTS :

(i) 253 lb./ac.  
 (ii) 268.6 lb./ac.  
 (iii) None of the effects is significant.  
 (iv) Av. yield of grain in lb./ac.

	V <sub>1</sub>	V <sub>2</sub>	Mean
D <sub>1</sub>	225	227	226
D <sub>2</sub>	283	144	213
D <sub>3</sub>	442	455	448
D <sub>4</sub>	242	113	178
D <sub>5</sub>	163	227	200
Mean	273	233	

S.E. of marginal mean of V  
 S.E. of marginal mean of D  
 S.E. of body of table

= 60.10 lb./ac.  
 = 94.97 lb./ac.  
 = 134.30 lb./ac.

Crop :- Jowar.

Ref :- Mh. 53(338).

Site :- Agri. Res. Stn., Mohol.

Type :- 'CV'.

Object :- To find out a suitable sowing date for *Jowar* varieties.

## 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Medium black. (b) Refer soil analysis, Mohol. (iii) As per treatments. (iv) (a) N.A. (b) Drilling. (c) 4 lb./ac. (d) 18". (e) N.A. (v) Nil. (vi) As per treatments. (vii) Unirrigated. (viii) N.A. (ix) 8.89". (x) 8 and 9.3.1954.

## 2. TREATMENTS :

Main-plot treatments :

5 sowing dates : D<sub>1</sub>=1.8.1953, D<sub>2</sub>=16.8.1953, D<sub>3</sub>=1.9.1953, D<sub>4</sub>=16.9.1953 and D<sub>5</sub>=1.10.1953.

Sub-plot treatments :

— 2 varieties : V<sub>1</sub>=M-35-1 and V<sub>2</sub>=Nandyal.

## 3. DESIGN :

(i) Split-plot. (ii) (a) 5 main-plots/block ; 2 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 46'×19½'. (b) 40'×13½'. (v) 3' around. (vi) Yes.

## 4. GENERAL :

(i) Not satisfactory. (ii) Attack of stem-borer and sugary disease observed. (iii) Grain and fodder yield. (iv) (a) 1951—N.A. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 338 lb./ac.  
 (ii) (a) 88.74 lb./ac.  
 (b) 56.06 lb./ac.  
 (iii) Main effect of D alone is significant.



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

	V <sub>1</sub>	V <sub>2</sub>	Mean
D <sub>1</sub>	285	369	327
D <sub>2</sub>	292	278	285
D <sub>3</sub>	271	255	263
D <sub>4</sub>	473	393	433
D <sub>5</sub>	398	368	383
Mean	344	333	338

S.E. of difference of two

1. D marginal means =44.38 lb./ac.
2. V marginal means =17.72 lb./ac.
3. V means at the same level of D =39.65 lb./ac.
4. D means at the same level of V =52.48 lb./ac.

Crop :-Jowar (*Rabi*).

Ref :-Mh. 51(219).

Site :-Agri. Res. Stn., Sholapur.

Type :-'CV'.

Object :—To study a suitable sowing date and variety of *Jowar* crop.**1. BASAL CONDITIONS :**

(i) (a) Gram—*Jowar*. (b) Gram. (c) Nil. (ii) (a) Medium deep. (b) Refer soil analysis, Sholapur. (iii) As per treatments. (iv) (a) 4 harrowings. (b) Drilling. (c) 4 lb./ac. (d) 18" between rows. (e) N.A. (v) Nil. (vi) As per treatments. (vii) Unirrigated. (viii) 4 interculturings. (ix) 24'81". (x) 15.2.1952.

**2. TREATMENTS :**

All combinations of (1) and (2)

(1) 2 varieties : V<sub>1</sub>=M-35-1 and V<sub>2</sub>=Nandyal.(2) 5 dates of sowing : D<sub>1</sub>=29.7.1951, D<sub>2</sub>=14.8.1951, D<sub>3</sub>=28.8.1951, D<sub>4</sub>=12.9.1951 and D<sub>5</sub>=27.9.1951.**3. DESIGN :**

(i) 2×5 Fact. in R.B.D. (ii) (a) 10. (b) N.A. (iii) 3. (iv) (a) 40'×22'. (b) 34'×16'. (v) 3' around the plot. (vi) Yes.

**4. GENERAL :**

(i) Growth checked due to excess of moisture in soil. (ii) Nil. (iii) Grain and fodder yield. (iv) (a) 1951—1953. (b) No. (c) Nil. (v) (a) Mohol. (b) N.A. (vi) and (vii) Nil.

**5. RESULTS :**

(i) 151 lb./ac.

(ii) 55 24 lb./ac.

(iii) Main effects of D and V are highly significant while their interaction is not significant.

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

	V <sub>1</sub>	V <sub>2</sub>	Mean
D <sub>1</sub>	82	72	77
D <sub>2</sub>	78	62	70
D <sub>3</sub>	122	133	127
D <sub>4</sub>	280	119	199
D <sub>5</sub>	325	237	281
Mean	177	124	

S.E. of marginal mean of D  
 S.E. of marginal mean of V  
 S.E. of body of table

=22.56 lb./ac.  
 =14.26 lb./ac.  
 =31.89 lb./ac.

Crop :-Jowar (*Rabi*).  
 Site :-Agri. Res. Stn., Sholapur.

Ref :-Mh. 52(351).  
 Type :-'CV'.

Object :-To study suitable sowing date and variety of *Jowar*.

#### 1. BASAL CONDITIONS :

(i) (a) Gram—*Jowar*. (b) Gram. (c) Nil. (ii) (a) Medium deep. (b) Refer soil analysis, Sholapur.  
 (iii) As per treatments. (iv) (a) 4 harrowings. (b) Drilling. (c) 4 lb./ac. (d) 18" between rows. (e) N.A.  
 (v) Nil. (vi) As per treatments. (vii) Unirrigated. (viii) 3 interculturings. (ix) 20.76". (x) 16.2.1953.

#### 2. TREATMENTS :

All combinations of (1) and (2)

(1) 2 varieties : V<sub>1</sub>=M-35-1 and V<sub>2</sub>=Nandyal.

(2) 5 dates of sowing : D<sub>1</sub>=25.7.1952, D<sub>2</sub>=9.8.1952, D<sub>3</sub>=24.8.1952, D<sub>4</sub>=11.9.1952 and D<sub>5</sub>=25.9.1952.

#### 3. DESIGN :

(i) 2×5 Fact. in R.B.D. (ii) (a) 10. (b) N.A. (iii) 3. (iv) [(a) 40'×22'. (b) 34'×16'. (v) 3' around. (vi) Yes.

#### 4. GENERAL :

(i) Growth was checked due to severe attack of pests. (ii) Appearance of sugary disease and also attack of stemborer. (iii) Grain and fodder yield. (iv) (a) 1951—1953. (b) and (c) No. (v) (a) and (b) N.A. (vi) and (vii) Nil.

#### 5. RESULTS :

(i) 287 lb./ac.

(ii) 73.50 lb./ac.

(iii) Main effects of D and V are highly significant while their interaction is not significant.

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

	V <sub>1</sub>	V <sub>2</sub>	Mean
D <sub>1</sub>	180	247	213
D <sub>2</sub>	208	230	219
D <sub>3</sub>	177	337	257
D <sub>4</sub>	232	460	346
D <sub>5</sub>	319	487	403
Mean	223	352	

S.E. of marginal mean of V  
 S.E. of marginal mean of D  
 S.E. of body of table

=18.98 lb./ac.  
 =30.01 lb./ac.  
 =42.44 lb./ac.

Crop :- Jowar (*Rabi*).

Ref :- Mh. 53(361).

Site :- Agri. Res. Stn., Sholapur.

Type :- 'CV'.

Object :- To study the effect of sowing dates on yield of different varieties of *Jowar*.

## 1. BASAL CONDITIONS :

(i) (a) Gram—*Jowar*. (b) Gram. (c) N.A. (ii) (a) Medium deep. (b) Refer soil analysis, Sholapur. (iii) As per treatments. (iv) (a) 3 harrowings. (b) Drilling. (c) 4 lb./ac. (d) 18" between rows. (e) —. (v) Nil. (vi) As per treatments. (vii) Unirrigated. (viii) 3 interculturings. (ix) 35.96%. (x) 5.3.1954.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 2 varieties :  $V_1=M=35-1$  and  $V_2=Nandyal$ .(2) 5 dates of sowing :  $D_1=27.7.1953$ ,  $D_2=10.8.1953$ ,  $D_3=25.8.1953$ ,  $D_4=17.9.1953$  and  $D_5=23.9.1953$ .

## 3. DESIGN :

(i)  $2 \times 5$  Fact. in R.B.D. (ii) (a) 10. (b) N.A. (iii) 3. (iv) (a)  $40' \times 22'$ . (b)  $34' \times 16'$ . (v) 3' around. (vi) Yes.

## 4. GENERAL :

(i) Growth poor (ii) Severe attack of stem borer and *chikata* disease. (iii) Grain and fodder yield. (iv) (a) 1951—53. (b) and (c) No. (v) (a) and (b) No. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 120 lb./ac.

(ii) 47.44 lb./ac.

(iii) Main effects of D and V are highly significant while their interaction is not significant.

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

	$V_1$	$V_2$	Mean
$D_1$	122	56	89
$D_2$	138	63	100
$D_3$	78	70	74
$D_4$	203	107	155
$D_5$	220	139	179
Mean	152	87	

S.E. of marginal mean of V = 12.25 lb./ac.

S.E. of marginal mean of D = 19.37 lb./ac.

S.E. of body of table = 27.39 lb./ac.

Cop :- Jowar (*Rabi*).

Ref :- Mh. 49(104).

Site :- Govt. Expt. Farm, Tharsa.

Type :- 'CV'.

Object :- To find out the economic method of *Jowar* cultivation.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) N.A. (c) N.A. (ii) (a) Black medium soil. (b) Refer soil analysis, Tharsa. (iii) 1st week of October 1949. (iv) (a) As per treatments. (b) As per treatments. (c) 12 lb./ac. (d) As per treatments. (e) N.A. (v) Nil. (vi) As per treatments. (vii) Irrigated. (viii) N.A. (ix) 49.70%. (x) 1st week of March 1950.

## 2. TREATMENTS :

## Main-plot treatments :

2 methods of cultivation :  $C_1$ =Local method and  $C_2$ =Improved (Dr. Kulkarni's) method.

## Sub-plot treatments :

2 varieties :  $V_1$ =Unarlehi and  $V_2$ =M-35 Sholapur.

## Details of Dr. Kulkarni's method.

1. Jowar to be taken after leguminous crop or fallow.
2. Deep ploughing in summer and 4 to 5 *bakharings* in monsoon.
3. Application of G.N.C. at 8 md./ac. and mixing it in soil.
4. Preparing ridges and furrows at 15" distance. Breadth of ridges should be 18". Ridges are to be cut at the ends on one of the either sides as in sugarcane.
5. Dibbling of seeds in both sides of ridges keeping 18" distance between two dibbles. Dibbling on both sides should not be opposite but diagonal.
6. Irrigation at an interval of 10 to 12 days according to soil moisture.
7. When crop has grown up to 6" height 1 or 2 weedings by hand at an interval of 15 days.
8. Bone super phosphate at 4 cwt./ac. mixed with G.N.C. at 4 bags/ac. to be spread by hand around each plant, a little away from stem, about an inch or two deep and covered with earth.

## 3. DESIGN :

(i) Split-plot. (ii) (a) 2 main-plots/block ; 2 sub-plots/main-plot. (b) N.A. (iii) 6. (iv) (a) N.A. (b) 1/20 ac. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) Nil. (iii) Grain yield. (iv) (a) 1949- N.A. (b) No. (c) N.A. (v) (a) N.A. (b) N.A. (vi) No reasons are given for low yields. (vii) Plot wise yield N.A.

## 5. RESULTS :

- (i) 416 lb./ac.  
 (ii) N.A.  
 (iii) N.A.  
 (iv) Av. yield of grain in lb./ac.

	$C_1$	$C_2$	Mean
$V_1$	580	254	417
$V_2$	640	188	414
Mean	610	221	

S.E.—N.A.

Crop :- Jowar (*Rabi*).

Ref :- Mh. 50(131).

Site :- Govt. Expt. Farm, Tharsa.

Type :- 'CV'.

Object :—To find out the economic method of *Jowar* cultivation.

## 1. BASAL CONDITIONS :

(i) (a) *Jowar*-Gram. (b) Gram. (c) N.A. (ii) (a) Medium black. (b) Refer soil analysis, Tharsa. (iii) 2nd week of October 1950. (iv) (a) As per treatments. (b) As per treatments. (c) 12 lb./ac. (d) As per treatments. (e) N.A. (v) Nil. (vi) As per treatments. (vii) Irrigated. (viii) N.A. (ix) 35.73". (x) 22.2.1951.

## 2. TREATMENTS :

## Main-plot treatments :

2 methods of cultivation :  $C_1$ =Local and  $C_2$ =Dr. Kulkarni's method.

## Sub-plot treatments :

2 varieties :  $V_1$ =Unarlehi,  $V_2$ =M-35 Sholapur.

For details of Dr. Kulkarni's method refer to Mh. 49(104) above.

## 3. DESIGN :

(i) Split-plot. (ii) (a) 2 main-plots/block ; 2 sub-plots/main-plot. (b) N.A. (iii) 6. (iv) (a) N.A. (b) 1/20 ac. (v) N.A. (vi) Yes.

## 4. GENERAL :

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

## 5. RESULTS :

(i) 1642 lb./ac.  
 (ii) (a) 206.2 lb./ac.  
 (b) 437.4 lb./ac.  
 (iii) Main effect of C alone is highly significant.  
 (iv) Av. yield of grain in lb /ac.

	C <sub>1</sub>	C <sub>2</sub>	Mean
V <sub>1</sub>	1919	1462	1690
V <sub>2</sub>	1905	1282	1593
Mean	1911	1372	

## S.E. of difference of two

1. C marginal means = 84.1 lb./ac.
2. V marginal means = 178.6 lb./ac.
3. V means at the same level of C = 181.6 lb./ac.
4. C means at the same level of V = 252.5 lb./ac.

Crop :- Jowar (*Rabi*).

Ref :- Mh. 53(296).

Site :- Govt. Expt. Farm, Tharsa.

Type :- 'CV'.

Object :- To find out the economic method of *Jowar* cultivation.

## 1. BASAL CONDITIONS:

(i) (a) Nil. (b) Peas. (c) N.A. (ii) (a) Black medium soil. (b) Refer soil analysis, Tharsa. (iii) 12.10.1953.  
 (iv) (a) As per treatments. (b) As per treatments. (c) N.A. (d) As per treatments. (e) N.A. (v) Nil.  
 (vi) As per treatments. (vii) Irrigated. (viii) As per treatments. (ix) Nil. (x) 22, 23.3.1954.

## 2. TREATMENTS :

## Main-plot treatments :

2 methods of cultivation : C<sub>1</sub>=Local method and C<sub>2</sub>=Dr. Kulkarni's method.

## Sub-plot treatments :

2 varieties : V<sub>1</sub>=*Unarlehi* (local) and V<sub>2</sub>=M-35, Sholapur.

For details of Dr. Kulkarni's method refer to Mh. 49(104).

## 3. DESIGN :

(i) Split-plot. (ii) (a) 2 main-plots/block ; 2 sub-plots/main-plot. (b) N.A. (iii) 6. (iv) (a) N.A. (b) 66'×16.5'.  
 (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) Local method—satisfactory ; Dr. Kulkarni's method—better. (ii) Nil. (iii) Straw and grain yield.  
 (iv) (a) 1950—N.A. (b) N.A. (c) N.A. (v) (a) N.A. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 1792 lb./ac.  
 (ii) (a) 496.8 lb./ac.  
 (b) 397.6 lb./ac.  
 (iii) None of the effects is significant.

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

	C <sub>1</sub>	C <sub>2</sub>	Mean
V <sub>1</sub>	1456	1702	1579
V <sub>2</sub>	1930	2081	2006
Mean	1693	1892	

S.E. of difference of two

1. C marginal means =202.8 lb./ac.
2. V marginal means =162.2 lb./ac.
3. V means at the same level of C =259.8 lb./ac.
4. C means at the same level of V =229.5 lb./ac.

✓ Crop :- Jowar (*Kharif*).

Ref :- Mh. 52(226).

Site :- Govt. Seed and Demonstration Farm, Achalpur. Type :- 'CM'.

Object :—To study the effect of manures and cultural practices on *Jowar* yield.

## 1. BASAL CONDITIONS :

(i) (a) Cotton—*Jowar*—Groundnut. (b) Cotton. (c) N.A. (ii) (a) Medium black. (b) N.A. (iii) 31.7.1952 and 1.8.1952. (iv) (a) 2 heavy and 3 light *bakharings*. (b) to (e) N.A. (v) Nil. (vi) *Saoner* (medium). (vii) Unirrigated. (viii) 2 hoeings and 1 weeding. (ix) 12.09". (x) 5.1.1953.

## 2. TREATMENTS :

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

- (1) 3 seed rates : R<sub>1</sub>=10, R<sub>2</sub>=15 and R<sub>3</sub>=20 lb./ac.
- (2) 3 levels of N : N<sub>0</sub>=0, N<sub>1</sub>=15 and N<sub>2</sub>=30 lb./ac.
- (3) 3 spacings : S<sub>1</sub>=12", S<sub>2</sub>=15" and S<sub>3</sub>=18".

## 3. DESIGN :

(i) 3<sup>3</sup> completely confounding RNS<sup>3</sup>. (ii) (a) 9 plots/block ; 3 blocks/replication. (b) N.A. (iii) 2. (iv) (a) N.A. (b) 66' × 16.5'. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) Not satisfactory. (ii) Nil. (iii) Grain and straw yield. (iv) (a) 1952—N.A. (b) No. (c) N.A. (v) (a), (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 423 lb./ac.
- (ii) 234.0 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>	Mean	S <sub>1</sub>	S <sub>2</sub>	S <sub>3</sub>
N <sub>0</sub>	349	496	299	381	384	437	322
N <sub>1</sub>	564	416	422	467	400	373	629
N <sub>2</sub>	586	359	320	422	491	381	392
Mean	500	424	347	423	425	397	448
S <sub>1</sub>	406	518	352	425			
S <sub>2</sub>	512	440	239	397			
S <sub>3</sub>	581	313	450	448			

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

=55.2 lb./ac.  
=95.6 lb./ac.

✓ Crop :- Jowar (*Kharif*).

Ref :- Mh. 53(237).

Site :- Govt. Seed and Demonstration Farm, Achalpur. Type :- 'CM'.

Object :- To study the effect of manures and cultural practices on *Jowar*.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Cotton. (c) N.A. (ii) (a) Medium black. (b) N.A. (iii) 11.7.1953. (iv) (a) 2 heavy and 3 light *bakharings* in March 1953. (b) Sowing by *tiffan*. (c) to (e) N.A. (v) N.A. (vi) *Saoner* (medium). (vii) Unirrigated. (viii) 3 hoeings and 1 weeding. (ix) 34.91". (x) 13.12.1953.

2. TREATMENTS :

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

(1) 3 seed rates :  $R_1=6$ ,  $R_2=9$  and  $R_3=12$  lb./ac.

(2) 3 levels of N :  $N_0=0$ ,  $N_1=15$  and  $N_2=30$  lb./ac.

(3) 3 spacings :  $S_1=12"$ ,  $S_2=15"$  and  $S_3=18"$ .

3. DESIGN :

(i)  $3^3$  confounded. (ii) (a) 27. (b) N.A. (iii) 2. (iv) (a) N.A. (b)  $66' \times 16.5'$ . (v) N.A. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) Grain yield. (iv) (a) 1953-1956. (b) No. (c) N.A. (v) (a) and (b) N.A. (vi) Nil. (vii) Plot wise yield data N.A. and hence analysed as R.B.D. with 27 treatments.

5. RESULTS :

(i) 1764 lb./ac.

(ii) 403.6 lb./ac.

(iii) None of the effects is significant.

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

	$R_1$	$R_2$	$R_3$	Mean	$S_1$	$S_2$	$S_3$
$N_0$	1671	1941	1773	1795	1625	1830	1931
$N_1$	1802	1474	1820	1699	1673	1754	1669
$N_2$	1613	1977	1807	1759	1763	1691	1942
Mean	1695	1797	1800	1764	1687	1758	1847
$S_1$	1648	1765	1649	1687			
$S_2$	1981	1666	1628	1758			
$S_3$	1457	1961	2124	1847			

S.E. of any marginal mean

= 95.1 lb./ac.

S.E. of body of tables

= 164.8 lb./ac.

Crop :- Jowar (*Kharif*).

Ref :- Mh. 53(123).

Site :- Govt. Seed and Demonstration Farm, Buldana.

Type :- 'CM'.

Object :- To study the effect of manures and cultural practices on *Jowar* crop.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) and (c) N.A. (ii) (a) Medium black. (b) Refer soil analysis, Buladna. (iii) 16.7.1953. (iv) (a) and (b) N.A. (c) and (d) As per treatments. (e) N.A. (v) Nil. (vi) *Saoner* (late). (vii) Unirrigated. (viii) 2 hoeings. (ix) 36.52". (x) 14.12.1953.

**2. TREATMENTS :**

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

(1) 3 seed rates :  $R_1=6$ ,  $R_2=9$  and  $R_3=12$  lb./ac.(2) 3 spacings between rows :  $S_1=12''$ ,  $S_2=15''$  and  $S_3=18''$ .(3) 3 levels of N as A/S :  $N_0=0$ ,  $N_1=15$  and  $N_2=30$  lb./ac.**3. DESIGN :**(i)  $3^3$  Fact. in R.B.D. (ii) (a) 27. (b) N.A. (iii) 2. (iv) (a) N.A. (b)  $66' \times 16.5'$ . (v) N.A. (vi) Yes.**4. GENERAL :**

(i) Normal. (ii) Nil. (iii) Grain yield. (iv) (a) 1953—N.A. (b) No. (c) N.A. (v) (a) and (b) N.A. (vi) and (vii) Nil.

**5. RESULTS :**

(i) 815 lb./ac.

(ii) 294.8 lb./ac.

(iii) Interaction  $R \times S \times N$  is highly significant. Others are not significant.

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

	$R_1$	$R_2$	$R_3$	Mean	$S_1$	$S_2$	$S_3$
$N_0$	808	638	737	728	716	802	666
$N_1$	827	786	918	844	949	846	737
$N_2$	937	714	971	874	823	1098	701
Mean	857	713	876	815	829	915	701
$S_1$	871	765	852	829			
$S_2$	977	605	1164	915			
$S_3$	724	769	611	701			

S.E. of any marginal mean

= 69.5 lb./ac.

S.E. of body of tables

= 120.4 lb./ac.

Crop :- Jowar (*Rabi*).

Ref :- Mh. 48(22).

Site :- Agri. Res. Stn., Kopergaon.

Type :- 'CM'.

Object :- To study the N and  $P_2O_5$  requirements of irrigated *Jowar* with different seed rates.**1. BASAL CONDITIONS :**(i) (a) Nil. (b) Fallow. (c) 2 bags/ac. of G.N.C. (ii) (a) Medium black. (b) Refer soil analysis, Kopergaon. (iii) 18.10.1948. (iv) (a) N.A. (b) Drilling. (c) As per treatments. (d)  $12''$  between rows. (e) N.A. (v) 5 C.L./ac of F.Y.M. (vi) M-35-1. (vii) Irrigated. (viii) 1 top dressing, 1 weeding and 1 hoeing. (ix) Nil. (x) 9.3.1949.**2. TREATMENTS :**

Main-plot 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) 4 levels of  $P_2O_5$  :  $P_0=0$ ,  $P_1=20$ ,  $P_2=40$  and  $P_3=60$  lb./ac.

Sub-plot treatments :

3 seed rates :  $R_1=10$ ,  $R_2=15$  and  $R_3=20$  lb./ac.N as A/S and  $P_2O_5$  as Super.



## 3. DESIGN :

(i) Split-plot. (ii) (a) 16 main-plots/block and 3 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 35'×20'.  
(b) Sub-plot 27'×10'. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) Germination was fair ; heavy lodging due to heavy rains during November. (ii) Chikata disease and rust. (iii) Grain yield. (iv) (a) 1948—1953. (b) No. (c) N.A. (v) (a) Nil. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 655.6 lb./ac.  
(ii) (a) 497.2 lb./ac.  
(b) 303.8 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	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>	P <sub>3</sub>
R <sub>1</sub>	646.0	603.0	733.8	690.8	668.5	622.4	690.4	613.0	747.6
R <sub>2</sub>	595.2	665.0	573.6	688.8	630.6	649.6	687.0	569.4	616.6
R <sub>3</sub>	722.0	645.8	590.8	713.2	668.0	599.8	742.0	691.0	639.0
Mean	654.4	638.1	632.7	697.5	655.6	623.9	706.5	624.7	667.7
P <sub>0</sub>	545.3	654.1	548.8	747.4	623.9				
P <sub>1</sub>	718.6	693.3	685.3	728.5	706.5				
P <sub>2</sub>	713.3	553.6	583.4	648.5	624.7				
P <sub>3</sub>	640.2	651.4	713.3	665.8	667.7				

## S.E. of difference of two

1. N or P marginal means = 101.5 lb./ac.
2. R marginal means = 53.7 lb./ac.
3. R means at the same level of N or P = 107.5 lb./ac.
4. N or P means at the same level of R = 134.2 lb./ac.
5. means in body of N×P table = 203.0 lb./ac.

Crop :- Jowar (*Rabi*).

Ref :- Mh. 49 (37).

Site :- Agri. Res. Stn., Kopergaon

Type :- 'CM'.

Object :- To study the N and P<sub>2</sub>O<sub>5</sub> requirements of irrigated *Jowar* with different seed rates.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fallow in *Kharif*, *Jowar* in *Rabi*. (c) 2 bags/ac. of G.N.C. (ii) (a) Medium black. (b) Refer soil analysis, Kopergaon. (iii) 13.10.1949. (iv) (a) N.A. (b) Drilling. (c) As per treatments. (d) 12". (e) N.A. (v) 5 C.L./ac. of F.Y.M. (vi) M-35-1. (vii) Irrigated. (viii) 1 hoeing and 2 weedings. (ix) Nil. (x) 28,29.2.1950 and 6.7.3.1950.

## 2. TREATMENTS :

Main-plot treatments :

All combinations of (1) and (2)

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

(2) 4 levels of P<sub>2</sub>O<sub>5</sub> : P<sub>0</sub>=0, P<sub>1</sub>=20, P<sub>2</sub>=40 and P<sub>3</sub>=60 lb./ac.

Sub-plot treatments :

3 seed rates : R<sub>1</sub>=10, R<sub>2</sub>=15 and R<sub>3</sub>=20 lb./ac.

N applied as A/S and P<sub>2</sub>O<sub>5</sub> as Super.

## 3. DESIGN :

- (i) Split-plot. (ii) (a) 6 main-plots/block ; 3 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 34.5' × 16'.  
(b) 28' × 10'. (v) 3' rows on either side. (vi) Yes.

## 4. GENERAL :

- (i) Germination satisfactory. (ii) Nil. (iii) Grain yield. (iv) (a) 1948—1953. (b) No. (c) N.A. (v) (a) Nil. (b) N.A. (vi) Nil. (vii) There was severe cold in middle of February.

## 5. RESULTS :

- (i) 637 lb./ac.  
(ii) (a) 645.7 lb./ac.  
(b) 182.4 lb./ac.  
(iii) Main effect of R is highly significant and interactions N × P, N × R and P × R are 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	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>	P <sub>3</sub>
R <sub>1</sub>	528	587	713	672	650	605	671	597	727
R <sub>2</sub>	579	646	558	670	613	631	668	554	599
R <sub>3</sub>	702	628	574	693	649	583	721	672	621
Mean	636	620	615	678	637	606	687	607	649
P <sub>0</sub>	530	636	533	726	606				
P <sub>1</sub>	699	674	666	708	687				
P <sub>2</sub>	693	538	567	630	607				
P <sub>3</sub>	622	633	693	647	649				

## S.E. of difference of two

1. N or P marginal means = 131.8 lb./ac.
2. R marginal means = 32.2 lb./ac.
3. R means at the same level of N or P = 64.4 lb./ac.
4. N or P means at the same level of R = 141.9 lb./ac.
5. means in body of N × P table = 263.6 lb./ac.

Crop :- Jowar (*Rabi*).

Ref :- Mh. 50(51).

Site :- Agri. Res. Stn., Kopergaon.

Type :- 'CM'.

Object :- To study the N and P<sub>2</sub>O<sub>5</sub> requirements of irrigated Jowar with different seed rates.

## 1. BASAL CONDITIONS :

- (i) (a) Nil. (b) Fallow. (c) Nil. (ii) (a) Medium black. (b) Refer soil analysis, Kopergaon. (iii) 3.10.1950. (iv) (a) N.A. (b) Drilling. (c) As per treatments. (d) 12". (e) N.A. (v) 5 C.L./ac. of F.Y.M. (vi) M-35-1. (vii) Irrigated. (viii) 2 weedings and 2 threshing. (ix) Nil. (x) 16 to 19.2.1951.

## 2. TREATMENTS :

Main-plot treatments :

All combinations of (1) and (2)

- (1) 4 levels of N : N<sub>0</sub>=0, N<sub>1</sub>=20, N<sub>2</sub>=40 and N<sub>3</sub>=60 lb./ac.
- (2) 4 levels of P<sub>2</sub>O<sub>5</sub> : P<sub>0</sub>=0, P<sub>1</sub>=20, P<sub>2</sub>=40 and P<sub>3</sub>=60 lb./ac.

Sub-plot treatments :

3 seed rates : R<sub>1</sub>=10, R<sub>2</sub>=15 and R<sub>3</sub>=20 lb./ac.

Applied as A/S and P<sub>2</sub>O<sub>5</sub> as Super.

## 3. DESIGN :

(i) Split-plot. (ii) (a) 16 main-plots/block ; 3 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 18' x 30'. (b) 12' x 33'. (v) Approx 3½' or 3 lines on either side. (vi) Yes.

## 4. GENERAL :

(i) Germination good and growth normal. (ii) Nil. (iii) Grain yield. (iv) (a) 1948 to 1953. (b) No. (c) N.A. (v) (a) Nil. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 2527 lb./ac.  
 (ii) (a) 820.7 lb./ac.  
 (b) 606.2 lb./ac.  
 (iii) Main effect of N is highly significant and interaction N x R 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>	N <sub>3</sub>	Mean	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>	P <sub>3</sub>
R <sub>1</sub>	2191	2566	2882	2698	2584	2369	2577	2669	2721
R <sub>2</sub>	2305	2210	2272	2674	2440	2431	2326	2582	2421
R <sub>3</sub>	2177	2271	2692	3096	2558	2207	2623	2705	2699
Mean	2224	2349	2615	2823	2527	2336	2509	2652	2614
r <sub>0</sub>	1868	1689	2895	2891	2336				
P <sub>1</sub>	2418	2571	2308	2740	2509				
P <sub>2</sub>	2399	2514	2570	3126	2652				
P <sub>3</sub>	2212	2621	2688	2934	2614				

## S.E. of difference of two

1. N or P marginal means = 167.6 lb./ac.
2. R marginal means = 107.2 lb./ac.
3. R means at the same level of N or P = 214.3 lb./ac.
4. N or P means at the same level of R = 242.1 lb./ac.
5. means in body of N x P table = 335.2 lb./ac.

Crop :- Jowar (*Rabi*).

Ref :- Mh. 51(53).

Site :- Agri. Res. Stn., Kopergaon.

Type :- 'CM'.

Object :- To study the N and P<sub>2</sub>O<sub>5</sub> requirements of irrigated *Jowar* with different seed rates.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) Wheat. (c) 3 bags/ac. of G.N.C. and 50 lb./ac. of A/S. (ii) (a) Medium black (b) Refer soil analysis, Kopergaon. (iii) 30.9.1951. (iv) (a) N.A. (b) Drilling. (c) As per treatments. (d) 12". (e) N.A. (v) 5 C.L./ac. of F.Y.M. (vi) M-35-1. (vii) Irrigated. (viii) 1 hoeing and 1 thinning. (ix) Nil. (x) 25, 26.2.1952.

## 2. TREATMENTS :

## Main-plot treatments :

All combinations of (1) and (2)

- (1) 4 levels of N : N<sub>0</sub>=0, N<sub>1</sub>=20, N<sub>2</sub>=40 and N<sub>3</sub>=60 lb./ac.
- (2) 4 levels of P<sub>2</sub>O<sub>5</sub> : P<sub>0</sub>=0, P<sub>1</sub>=20, P<sub>2</sub>=40 and P<sub>3</sub>=60 lb./ac.

## Sub-plot treatments :

3 seed rates : R<sub>1</sub>=10, R<sub>2</sub>=15 and R<sub>3</sub>=20 lb./ac.  
 N applied as A/S and P<sub>2</sub>O<sub>5</sub> as Super.

**3. DESIGN :**

(i) Split-plot. (ii) (a) 16 main-plots/block ; 3 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 30'×18'. (b) 23'×12'. (v) 3' at either end. 4 lines on east side and 3 lines on west side. (vi) Yes.

**4. GENERAL :**

(i) Germination good. Growth normal. (ii) Chikata attack. (iii) Grain yield. (iv) (a) 1948 to 1953. (b) No. (c) N.A. (v) (b) (a) Nil. (b) N.A. (vi) and (vii) Nil.

**5. RESULTS :**

(i) 2509 lb./ac.

(ii) (a) 785.1 lb./ac.

(b) 509.8 lb./ac.

(iii) Main effect of N and interaction P×R 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>	N <sub>3</sub>	Mean	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>	P <sub>3</sub>
R <sub>1</sub>	2287	2366	2752	2668	2499	2294	2442	2591	2744
R <sub>2</sub>	2092	2417	2668	2667	2461	2363	2600	2582	2298
R <sub>3</sub>	2146	2654	2734	2658	2548	2316	2501	2427	2946
Mean	2174	2480	2692	2664	2509	2326	2514	2533	2637
P <sub>0</sub>	1981	2378	2705	2240	2326				
P <sub>1</sub>	2228	2450	2523	2855	2514				
P <sub>2</sub>	2295	2306	2406	2624	2533				
P <sub>3</sub>	2192	2786	2635	2935	2637				

**S.E. of difference of two**

- |  |                |
|--|----------------|
| 1. N or P marginal means               | =160.6 lb./ac. |
| 2. R marginal means                    | = 90.1 lb./ac. |
| 3. R means at the same level of N or P | =180.3 lb./ac. |
| 4. N or P means at the same level of R | =217.7 lb./ac. |
| 5. means in body of N×P table          | =320.5 lb./ac. |

Crop :- Jowar (*Rabi*).

Site :- Agri. Res. Stn., Kopergaon.

Ref :- Mh. 52(82).

Type :- 'CM'.

Object :- To study the N and P<sub>2</sub>O<sub>5</sub> requirements of irrigated *Jowar* with different seed rates.

**1. BASAL CONDITIONS :**

(i) (a) Wheat—*Jowar*. (b) *Rabi*—Wheat and *Kharif*—Fallow. (c) 3 bags/ac. of G.N.C.+75 lb./ac. of A/S. (ii) (a) Medium black. (b) Refer soil analysis, Kopergaon. (iii) 27, 28 and 29.9.1952. (iv) (a) N.A. (b) Drilling. (c) As per treatments. (d) 12". (e) N.A. (v) Nil. (vi) M-35-1. (vii) Irrigated. (viii) 1 weeding. (ix) Nil. (x) 19 to 22.2.1953.

**2. TREATMENTS :**

Main-plot treatments : All combination of (1) & (2)

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

(2) 4 levels of P<sub>2</sub>O<sub>5</sub> : P<sub>0</sub>=0, P<sub>1</sub>=20, P<sub>2</sub>=40 and P<sub>3</sub>=60 lb./ac.

Sub-plot treatments :

3 seed rates : R<sub>1</sub>=10, R<sub>2</sub>=15 and R<sub>3</sub>=20 lb./ac.

N applied as A/S and P<sub>2</sub>O<sub>5</sub> as Super.

## DESIGN :

- (i) Split-plot. (ii) (a) 16 main-plots/block ; 3 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 26' x 21'.  
(b) 20' x 14'. (v) 3 rows on one side and 4 rows on other. 3' at either end. (vi) Yes.

## 4. GENERAL :

- (i) Growth was satisfactory. (ii) Slight attack of white chikata disease. (iii) Grain and fodder yield. (iv)  
(a) 1948-1953. (b) No. (c) N.A. (v) (a) Nil. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 1759 lb./ac.  
(ii) (a) 409.9 lb./ac.  
(b) 231.4 lb./ac.  
(iii) Only main effect of N and P are significant. All others 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	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>	P <sub>3</sub>
R <sub>1</sub>	1521	1787	1779	1963	1763	1439	1819	1934	1858
R <sub>2</sub>	1654	1781	1903	1800	1785	1541	1791	2009	1797
R <sub>3</sub>	1552	1691	1873	1800	1729	1471	1799	1765	1881
Mean	1576	1753	1852	1854	1759	1483	1803	1903	1845
P <sub>0</sub>	1361	1524	1590	1461	1483				
P <sub>1</sub>	1596	1864	1876	1878	1803				
P <sub>2</sub>	1670	1851	1991	2100	1903				
P <sub>3</sub>	1678	1774	1950	1980	1845				

## S.E. of difference of two

- |  |                 |
|--|-----------------|
| 1. N or P marginal means               | = 83.7 lb./ac.  |
| 2. R marginal means                    | = 40.9 lb./ac.  |
| 3. R means at the same level of N or P | = 81.9 lb./ac.  |
| 4. N or P means at the same level of R | = 107.1 lb./ac. |
| 5. means in body of N x P table        | = 167.3 lb./ac. |

Crop :- Jowar (*Kharif*).

Ref :- Mh. 51(128).

✓ Site :- Govt. Exptl. Farm, Nagpur.

Type :- 'CM'.

Object :- To study the effect of N with different seed rates and spacing for *Jowar* crop.

## 1. BASAL CONDITIONS :

- (i) (a) Cotton-Jowar. (b) Cotton. (c) N.A. (ii) (a) Black cotton soil. (b) Refer soil analysis, Nagpur.  
(iii) N.A. (iv) (a) N.A. (b) NA. (c) As per treatments. (d) As per treatments. (e) N.A. (v) Nil.  
(vi) Sooner—(late). (vii) Unirrigated. (viii) 2 weedings and 2 hoeings. (ix) 38.29°. (x) N.A.

## 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>=15 and N<sub>2</sub>=30 lb./ac. of N.  
(2) 3 spacings : S<sub>1</sub>=12", S<sub>2</sub>=15", and S<sub>3</sub>=18".  
(3) 3 seed rates : R<sub>1</sub>=10, R<sub>2</sub>=15 and R<sub>3</sub>=20 lb./ac.

## 3. DESIGN :

- (i) 3<sup>2</sup> partially confounding RNS<sup>2</sup> and RN<sub>2</sub>S (ii) (a) 9 plots/block ; 3 blocks/replication. (b) N.A.  
(iii) 2. (iv) (a) N.A. (b) 66' x 16.5'. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Nil. (iii) Grain and fodder yield. (iv) (a) N.A. (b) No. (c) N.A. (v) (a) N.A. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 1763 lb./ac.  
 (ii) 316.0 lb./ac.  
 (iii) Interactions  $R \times N$  and  $N \times S$  alone are significant.  
 (iv) Av. yield of grain in lb./ac.

	$N_0$	$N_1$	$N_2$	Mean	$S_1$	$S_2$	$S_3$
$R_1$	1688	1959	2395	2014	1896	2135	2010
$R_2$	1472	1592	2037	1700	1841	1747	1513
$R_3$	1557	1435	1744	1579	1689	1584	1463
Mean	1572	1662	2059	1763	1809	1822	1662
$S_1$	1666	1838	1923	1809			
$S_2$	1429	1678	2359	1822			
$S_3$	1622	1470	1895	1662			

S.E. of marginal mean of N, S or R = 74.5 lb./ac.  
 S.E. of body of any table = 129.0 lb./ac.

Crop :- Jowar (*Kharif*).

Ref :- Mh. 52(138).

Site :- Govt. Exptl. Farm, Nagpur.

Type :- 'CM'.

Object :- To study the effect of N with different seed rates and line to line spacing on *Jowar* crop.

## 1. BASAL CONDITIONS :

(i) (a) *Jowar—Jowar*. (b) *Jowar*. (c) Nil. (ii) (a) Black cotton. (b) Refer soil analysis, Nagpur. (iii) 18.7.1952. (iv) (a) 2 ploughings and 5 *bakharings*. (b) N.A. (c) and (d) As per treatments. (e) N.A. (v) 10 C.L./ac. of F.Y.M. (vi) *Saoner* (medium). (vii) Unirrigated. (viii) 3 interculturings and 3 weedings. (ix) 29.32". (x) 11.12.1952.

## 2. TREATMENTS :

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

- (1) 3 levels of N :  $N_0=0$ ,  $N_1=15$  and  $N_2=30$  lb./ac.  
 (2) 3 line to line spacings :  $S_1=12''$ ,  $S_2=15''$  and  $S_3=18''$ .  
 (3) 3 seed rates :  $R_1=10$ ,  $R_2=15$  and  $R_3=20$  lb./ac.

## 3. DESIGN :

(i)  $3^3$  partially confounding.  $RNS^2$  and  $RNS^3$  (ii) (a) 9 plots/block ; 3 blocks/replication. (iii) 2. (iv) (a) N.A. (b) 66' x 16.5'. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) Normal. (ii) Attack of top shoot-borer. (iii) Grain yield. (iv) (a) N.A. (b) No. (c) N.A. (v) (a) and (b) N.A. (vi) Nil. (vii) Rep. I had a poor growth.

## 5. RESULTS :

- (i) 834 lb./ac.  
 (ii) 458.0 lb./ac.  
 (iii) Main effect of N alone is 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	S <sub>1</sub>	S <sub>2</sub>	S <sub>3</sub>
R <sub>1</sub>	755	1028	1270	1018	1137	658	1258
R <sub>2</sub>	382	753	1043	726	894	717	567
R <sub>3</sub>	540	881	854	759	740	1015	521
Mean	559	887	1056	834	924	797	782
S <sub>1</sub>	706	972	1093	924			
S <sub>2</sub>	438	892	1060	797			
S <sub>3</sub>	533	798	1014	782			

S.E. of any marginal mean = 108.0 lb./ac.  
 S.E. of body of any table = 187.0 lb./ac.

Crop :- Jowar (*Kharif*).

Ref :- Mh. 53(239).

Site :- Govt. Exptl. Farm, Nagpur.

Type :- 'CM'.

Object :- To study the effect of N with different seed rates and line to line spacing on *Jowar* crop.

## 1. BASAL CONDITIONS :

(i) (a) Cotton - *Jowar*. (b) Cotton. (c) N.A. (ii) (a) Black cotton soil. (b) Refer soil analysis, Nagpur.  
 (iii) 22.7.1953. (iv) (a) and (b) N.A. (c) and (d) As per treatments. (e) N.A. (v) Nil. (vi) *Saoner*  
 (late). (vii) Unirrigated. (viii) 2 hoeings and 3 weedings. (ix) 39.34°. (x) 27.12.1953.

## 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>=15 and N<sub>2</sub>=30 lb./ac.  
 (2) 3 spacings b: between lines : S<sub>1</sub>=12", S<sub>2</sub>=15" and S<sub>3</sub>=18".  
 (3) 3 seed rates : R<sub>1</sub>=10, R<sub>2</sub>=15 and R<sub>3</sub>=20 lb./ac.

## 3. DESIGN :

(i) 3<sup>3</sup> partially confounding RNS<sup>2</sup> and RN<sup>2</sup>S (ii) (a) 9 plots/block ; 3 blocks/replication. (b) N.A.  
 (iii) 2. (iv) (a) N.A. (b) 1/44 ac. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Nil. (iii) Grain yield. (iv) (a) N.A. (b) No. (c) N.A. (v) (a) and (b) N.A. (vi) and  
 (vii) Nil.

## 5. RESULTS :

- (i) 2775 lb./ac.  
 (ii) 371.5 lb /ac.  
 (iii) All the effects are 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>	S <sub>3</sub>
R <sub>1</sub>	2736	2988	3328	3017	3058	3143	2351
R <sub>2</sub>	2835	2685	2909	2810	2791	2637	3001
R <sub>3</sub>	2040	2725	2715	2493	2406	2414	2659
Mean	2537	2799	2984	2775	2752	2731	2837
S <sub>1</sub>	2602	2686	2967	2751			
S <sub>2</sub>	2450	2641	3103	2731			
S <sub>3</sub>	2558	3071	2832	2837			

S.E. of any marginal mean = 87.6 lb./ac.  
 S.E. of body of any table = 151.7 lb./ac.

Crop :- Jowar (*Kharif*).  
Site :- Agri. College Farm, Poona.

Ref :- Mh. 51(182).  
Type :- 'CM'.

Object :- To study the effect of deep and shallow tillage with and without F.Y.M. on the yield of Jowar.

1. BASAL CONDITIONS :

(i) (a) Cotton—Jowar. (b) Cotton. (c) N.A. (ii) (a) Medium black. (b) Refer soil analysis, Poona. (iii) 17.7.1951. (iv) (a) As per treatments. (b) Drilling. (c) 10 lb./ac. (d) Between rows 24" ; between plants irregular. (e) N.A. (v) Nil. (vi) *Nilwa* (vii) Unirrigated. (viii) 3 interculturings. (ix) 26.62". (x) 10.12.1951.

2. TREATMENTS :

All combinations of (1) and (2)

(1) 2 levels of F.Y.M. :  $F_0=0$  and  $F_1=5$  C.L./ac.

(2) 2 cultural operations :  $C_1$ =Harrowing only and  $C_2$ =Ploughing to a depth of 5" to 6".

3. DESIGN :

(i) 2x2 Fact. in R.B.D. (ii) (a) 4. (b) N.A. (iii) 8. (iv) (a) 132'x20.5'. (b) 124'x16'. (v) 4'x2.25'. (vi) Yes.

4. GENERAL :

(i) The effect of draught period seriously checked the growth of plants (ii) There was an attack of stemborer and leaf rust. (iii) Grain and fodder yield. Number of earheads and weight of earheads. (iv) (a) 1930—N.A. (b) No. (c) N.A. (v) (a) and (b) No. (vi) and (vii) Nil.

5. RESULTS :

(i) 188.0 lb./ac.

(ii) 140.0 lb /ac.

(iii) None of the effects is significant.

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

	$F_0$	$F_1$	Mean
$C_1$	173.0	132.0	152.0
$C_2$	198.0	248.0	223.0
Mean	185.0	190.0	188.0

S.E. of any marginal mean =35.0 lb./ac.

S.E. of body of table =49.5 lb./ac.

Crop :- Jowar (*Kharif*).  
Site :- Agri. College Farm, Poona.

Ref :- Mh. 52(212).  
Type :- 'CM'.

Object :- To study the effect of deep and shallow tillage with and without F.Y.M. on Jowar crop.

1. BASAL CONDITIONS :

(i) (a) Cotton—Jowar. (b) Cotton. (c) N.A. (ii) (a) Medium black. (b) Refer soil analysis, Poona. (iii) 20,21.6.1952. (iv) (a) As per treatments. (b) Drilling. (c) 10 lb./ac. (d) Spacing between rows 24" ; between plants irregular. (e) N.A. (v) Nil. (vi) *Nilwa*. (vii) Unirrigated. (viii) 1 interculturing and 2 weedings. (ix) 22.03". (x) 29.1.1953.

2. TREATMENTS :

All combinations of (1) and (2)

(1) 2 levels of F.Y.M. :  $F_0=0$  and  $F_1=5$  C.L./ac.

(2) 2 cultural operations :  $C_1$ =Harrowing and  $C_2$ =Ploughing to a depth of 5" to 6".



## 3. DESIGN:

(i) 2×2 Fact. in R.B.D. (ii) (a) 4. (b) N.A. (iii) 8. (iv) (a) 132'×20'. (b) 124'×16'. (v) 4'×2'. (vi) Yes.

## 4. GENERAL:

(i) The growth of the crop was not good. Due to failure of rains at later stages, there was no grain formation. (ii) Stem borer attack during the month of August and September. (iii) Fodder yield. (iv) (a) 1930—N.A. (b) No. (c) N.A. (v) (a) and (b) Nil. (vi) Nil. (vii) As the yield data for grain could not be procured due to failure of rains, analysis of fodder yield was carried out.

## 5. RESULTS:

- (i) 5056 lb./ac.  
 (ii) 666.1 lb./ac.  
 (iii) Main effects of F and C are highly significant while their interaction is not significant.  
 (iv) Av. yield of fodder in lb./ac.

	F <sub>0</sub>	F <sub>1</sub>	Mean
C <sub>1</sub>	3307	5406	4356
C <sub>2</sub>	4597	6916	5756
Mean	3952	6161	5056

S.E. of any marginal mean = 166.5 lb./ac.  
 S.E. of body of table = 235.6 lb./ac.

Crop :- Jowar.

Ref :- Mh. 53(67).

Site :- Agri. College Farm, Poona.

Type :- 'CM'.

Object :- To see the effect of deep and shallow tillage with and without F.Y.M. on Jowar crop.

## 1. BASAL CONDITIONS:

(i) (a) Jowar—Cotton. (b) Cotton. (c) 5 C.L./ac. of F.Y.M. as per manured treatments only. F.Y.M. is applied as a basal dose. (ii) (a) Medium black. (b) Refer soil analysis, Poona. (iii) 16.6.1953. (iv) (a) As per treatments. (b) to (e) N.A. (v) Nil. (vi) Nilwa (medium). (vii) Unirrigated. (viii) 2 interculturings. (ix) 16.64°. (x) Nipping on 21 to 29.11.1953 and thrashing was done on 22-25.1.1954.

## TREATMENTS:

All combinations of (1) and (2)

(1) 2 levels of F.Y.M.: F<sub>0</sub>=0 and F<sub>1</sub>=5 C.L./ac.

(2) 2 cultural operations: C<sub>1</sub>=Harrowing only and C<sub>2</sub>=Ploughing only to 4'—5' depth by victory plough.

F.Y.M. applied as basal dose by spreading.

## 3. DESIGN:

(i) 2×2 Fact. in R.B.D. (ii) (a) 4. (b) N.A. (iii) 8. (iv) (a) 132'×20'. (b) 124'×16'. (v) One row along length, 4' along breadth. (vi) Yes.

## 4. GENERAL:

(i) Stand of the crop was excellent in all plots. (ii) Crop affected by army-worms, caterpillars in early stage. Central shoots and ears were eaten by them. Due to good rains in August and September, this was made up and growth was good. (iii) Grain yield. (iv) (a) 1930—N.A. (b) Yes. (c) N.A. (v) (a) and (b) No. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 132.0 lb./ac.  
 (ii) 67.17 lb./ac.  
 (iii) None of the effects is significant.  
 (iv) Av. yield of grain in lb./ac.

	F <sub>0</sub>	F <sub>1</sub>	Mean
C <sub>1</sub>	162.0	136.0	149.0
C <sub>2</sub>	122.0	107.0	114.0
Mean	142.0	122.0	132.0

S.E. of any marginal mean =17.95 lb./ac.  
 S.E. of body of table =25.38 lb./ac.

Crop :-Jowar (*Rabi*).

Ref :-Mh. 50(154).

Site :-Agri. Res. Stn., Sholapur.

Type :-'CM'.

Object :—To study the different methods of *Jowar* cultivation.

## 1. BASAL CONDITIONS:

- (i) (a) Gram—*Jowar*. (b) Gram. (c) Nil. (ii) (a) Medium deep. (b) Refer soil analysis, Sholapur.  
 (iii) N.A. (iv) (a) 4 harrowings. (b) Drilling. (c) 4 lb./ac. (d) As per treatments. (e) N.A. (v) Nil.  
 (vi) M-35-1. (vii) Unirrigated. (viii) 2 interculturings to Bombay dry farming method. (ix) 24.04".  
 (x) N.A.

## 2. TREATMENTS:

- 12.5 lb./ac. of N as G.N.C. + 25 lb./ac. of P<sub>2</sub>O<sub>5</sub> as B.M. + 2½ ton/ac. of F.Y.M. with usual 12" spacing.
- Bombay dry farming method—18" spacing, 5 C.L./ac. of F.Y.M.
- Local cultivators' method—12" spacing.

## 3. DESIGN :

- (i) R.B.D. (ii) (a) 3. (b) N.A. (iii) N.A. (iv) N.A. (v) N.A. (vi) Yes.

## 4. GENERAL :

- (i) N.A. (ii) N.A. (iii) N.A. (iv) (a) and (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 554 lb./ac.  
 (ii) N.A.  
 (iii) N.A.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	711
2.	590
3.	360
S.E./mean	N.A.

Crop :- Jowar (*Rabi*).  
Site :- Agri. Res. Stn., Sholapur.

Ref :- Mh. 48(106).  
Type :- 'CM'.

Object :- To study the effect of organic manures along with cultural practices on *Jowar*.

1. BASAL CONDITIONS :

(i) (a) Gram-*Jowar*. (b) Gram. (c) Nil. (ii) (a) Medium deep. (b) Refer soil analysis, Sholapur. (iii) N.A. (iv) (a) 4 harrowings. (b) Drilled. (c) 4 lb./ac. (d) 18" between rows. (e) —. (v) Nil. (vi) M-35-1. (vii) Unirrigated. (viii) 3 interculturings. (ix) 39.18". (x) N.A.

2. TREATMENTS :

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

- (1) 2 sources of organic manures :  $O_1$ =G.M. and  $O_2$ =Compost.  
(2) 3 levels of organic manures :  $L_0$ =0,  $L_1$ =2500 and  $L_2$ =5000 lb./ac.  
(3) 2 cultural practices :  $C_1$ =ploughing once and  $C_2$ =Discing once.

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)  $33' \times 27'$ . (v) N.A. (vi) Yes.

4. GENERAL :

(i) N.A. (ii) Nil. (iii) Grain and fodder yield. (iv) (a) 1948 to 1949. (b) No. (c) Nil. (v) (a) N.A. (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

- (i) 330 lb./ac.  
(ii) 94.46 lb./ac.  
(iii) L effect is significant and 'selective vs others' effect is highly significant. Others are not significant.  
(iv) Av. yield of grain in lb./ac.

Selective treatments (averaged over  $L_0$  plots)

$C_1$  only = 269 lb./ac.  
 $C_2$  only = 268 lb./ac.  
S.E./mean = 33.40 lb./ac.

	$L_1$	$L_2$	Mean	$C_1$	$C_2$
$O_1$	348	437	392	400	386
$O_2$	304	355	329	365	294
Mean	326	396	361	382	340
$C_1$	336	429			
$C_2$	316	364			

S.E. of any marginal mean = 23.61 lb./ac.  
S.E. of body of any table = 33.40 lb./ac.

Crop :- Jowar (*Rabi*).  
Site :- Agri. Res. Stn., Sholapur.

Ref :- Mh. 49(131).  
Type :- 'CM'.

Object :- To study the effect of organic manures along with cultural practice on *Jowar*.

1. BASAL CONDITIONS :

(i) (a) Gram-*Jowar*. (b) Gram. (c) Nil. (ii) (a) Medium deep. (b) Refer soil analysis, Sholapur. (iii) N.A. (iv) (a) 4 harrowings. (b) Drilled. (c) 4 lb./ac. (d) 18" between rows. (e) —. (v) Nil. (vi) M-35-1. (vii) Unirrigated. (viii) 2 interculturings. (ix) 38.17". (x) N.A.

**2. TREATMENTS :**

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

- (1) 2 sources of organic manures :  $O_1$ =G.M. and  $O_2$ =Compost.  
 (2) 3 levels of organic manure :  $L_0=0$ ,  $L_1=2500$ , and  $L_2=5000$  lb./ac.  
 (3) 2 cultural operations :  $C_1$ =Ploughing once and  $C_2$ =Discing once.

**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)  $33' \times 33'$ . (v) N.A. (vi) Yes.

**4. GENERAL :**

- (i) Normal. (ii) Nil. (iii) Grain and fodder yield. (iv) (a) 1948 to 1949. (b) No. (c) Nil. (v) (a) N.A. (b) N.A. (vi) and (vii) Nil.

**5. RESULTS :**

- (i) 372 lb./ac.  
 (ii) 127.3 lb./ac.  
 (iii) Only main effect of L is highly significant. Others are not significant.  
 (iv) Av. yield of grain in lb /ac.

Selective treatments (averaged over  $L_0$  plots.)

$C_1$ only	=361 lb./ac.
$C_2$ only	=346 lb./ac.
S.E./mean	= 45.0 lb./ac.

	$L_1$	$L_2$	Mean	$C_1$	$C_2$
$O_1$	304	469	386	418	355
$O_2$	333	419	376	409	343
Mean	318	444	381	414	349
$C_1$	352	474			
$C_2$	285	414			

S.E. of any marginal mean =31.8 lb./ac.  
 S.E. of body of any table =45.0 lb./ac.

Crop :- Jowar (*Kharif*).

Site :- Agri. Res. Stn., Dhulia.

Ref :- Mh. 53(216).

Type :- 'D'.

Object :- To study the effect of Indol acetic acid (Hormone treatment) on *Jowar*.

**1. BASAL CONDITIONS :**

- (i) (a) Nil. (b) Cotton in *Kharif* 1952-53. (c) 10 C.L./ac. of F.Y.M. (ii) (a) Medium black. (b) N.A. (iii) 27.6.1953. (iv) (a) N.A. (b) Seeds drilled. (c) 10 lb./ac. (d) 18" apart. (e) N.A. (v) Nil. (vi) *Satpni*. (vii) Unirrigated. (viii) 2 interculturings and 1 weeding. (ix) 21.84". (x) 26.10.1953.

**2. TREATMENTS :**

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

- (1) 3 concentrations of "Indol Acetic Acid" with which the seeds were treated :

$C_1=0.10$ ,  $C_2=1.00$  and  $C_3=10.00$  P.P.M.

- (2) 3 durations of treatment of seed :  $T_1=12$  minutes,  $T_2=2$  hours and  $T_3=20$  hours.

**3. DESIGN :**

- (i) R.B.D. (ii) (a) 10. (b) N.A. (iii) 4. (iv) (a)  $40' \times 18'$ . (b)  $30' \times 12'$ . (v) 5' on both the sides and 2 rows on each side. (vi) Yes.

## 4. GENERAL :

(i) Plants slender and tall with smaller earheads, probably due to thick sowing. (ii) Nil. (iii) No. of plants, average height of 5 week old and 10 week old crop, grain and fodder yield. (iv) (a) 1953—N.A. (b) No. (c) N.A. (v) (a) Jalagaon. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 872 lb./ac.  
 (ii) 197.0 lb./ac.  
 (iii) None of the effects is significant.  
 (iv) Av. yield of grain in lb./ac.

Control=1068 lb./ac.

	T <sub>1</sub>	T <sub>2</sub>	T <sub>3</sub>	Mean
C <sub>1</sub>	804	743	809	785
C <sub>2</sub>	851	796	794	814
C <sub>3</sub>	879	1055	923	952
Mean	845	865	842	850

S.E. of marginal mean of C = 56.9 lb./ac.  
 S.E. of marginal mean of T = 56.9 lb./ac.  
 S.E. of body of table = 98.5 lb./ac.

Crop :- Jowar (*Kharif*).

Site :- Agri. Res. Stn., Dhulia.

Ref :- Mh. 53(217).

Type :- 'D'.

Object :- To study the effect of hormone treatment (2-4-D) of seed on the yield of *Jowar*.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Cotton in *Kharif* 1952-53. (c) F.Y.M. at 10 C.L./ac. (ii) (a) Medium black. (b) N.A. (iii) 30.6.1953. (iv) (a) N.A. (b) Seeds drilled with 3 coultured seed drill. (c) 10 lb/ac. (d) 18" apart. (e) N.A. (v) N.A. (vi) *Satpani*. (vii) Unirrigated. (viii) 2 interculturings and 1 weeding. (ix) 21.84". (x) 26.10.1953.

## 2. TREATMENTS :

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

(1) 3 durations of treatment of seed : T<sub>1</sub>=12 minutes, T<sub>2</sub>=2 hrs. and T<sub>3</sub>=20 hrs.

(2) 3 seed treatments : C<sub>1</sub>=Water, C<sub>2</sub>=2-4-D of 0.10 P.P.M. and C<sub>3</sub>=2-4-D of 0.01 P.P.M.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 10. (b) N.A. (iii) 4. (iv) (a) 40'×18'. (b) 30'×12'. (v) 5' length wise and 3' breadth wise on both the sides of net plot. (vi) Yes.

## 4. GENERAL :

(i) Plants tall and thin with smaller earheads, probably due to dense sowing. (ii) Nil. (iii) No. of plants, average height of 5 week and 10 week old crop, grain and fodder yield. (iv) (a) 1953—N.A. (b) No. (c) N.A. (v) (a) Jalagaon and Kopergaon. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 1264 lb./ac.  
 (ii) 237.6 lb./ac.  
 (iii) None of the effects is significant.

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

Control = 1448 lb./ac.

	T <sub>1</sub>	T <sub>2</sub>	T <sub>3</sub>	Mean
C <sub>1</sub>	1121	1142	1085	1116
C <sub>2</sub>	1459	1216	1359	1345
C <sub>3</sub>	1242	1390	1168	1267
Mean	1274	1249	1204	1243

S.E. of any marginal mean = 68.6 lb./ac.

S.E. of body of table = 118.8 lb./ac.

Crop :- Jowar (*Kharif*).

Ref :- Mh 52(381).

Site :- Agri. Res. Stn., Jalagaon.

Type :- 'D'.

Object :- To see the effect of hormone treatment of seed on growth and yield of *Jowar*.**1. BASAL CONDITIONS :**

(i) (a) Nil (ii) Gram. (c) Nil. (ii) (a) Deep black cotton soil. (b) Refer soil analysis, Jalagaon. (iii) 10.7.1952. (iv) (a) N.A. (b) Drilling. (c) 6 lb./ac. (d) 12" between rows. (e) N.A. (v) Nil. (vi) *Aishpuri* (late). (vii) Unirrigated. (viii) 1 hoeing and 1 weeding. (ix) 16.41". (x) 29.11.1952.

**2. TREATMENTS :**

1. Seeds treated with water for 30 minutes.
2. Seeds treated with 0.01 p.p.m. 2-4-D for 30 minutes.
3. Seeds treated with 0.1 p.p.m. 2-4-D for 30 minutes.
4. Seeds treated with water for two hours.
5. Seeds treated with 0.01 p.p.m. 2-4-D for 2 hours.
6. Seeds treated with 0.1 p.p.m. 2-4-D for hours.
7. Seeds treated with 1.0 p.p.m. 2-4-D for 2 hours.
8. Control (untreated seed).

**3. DESIGN :**

(i) R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a) 42' x 18'. (b) 36' x 12'. (v) 3' ring. (vi) Yes.

**4. GENERAL :**(i) Growth was fairly good. (ii) Attack of stemborer and *striga* observed. (iii) Grain yield, plant count etc. (iv) (a) 1952-1954. (b) N.A. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.**5. RESULTS :**

- (i) 298 lb./c.  
(ii) 45.40 lb./ac.  
(iii) Treatment differences are significant.  
(iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	310
2.	304
3.	273
4.	258
5.	388
6.	286
7.	284
8.	284
S.E /mean	=22.70 lb./ac.

Crop :- Jowar (*Kharif*).  
Site :- Agri. Res. Stn., Jalagaon.

Ref :- Mh. 53(128).  
Type :- 'D'.

Object :- To see the effect of hormone treatment of seed on growth and yield of *Jowar*.

#### 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Groundnut. (c) N.A. (ii) (a) Deep black cotton type having a depth of 10 to 13 feet. (b) Refer soil analysis, Jalagaon. (iii) 10.7.1953. (iv) (a) N.A. (b) Seeds drilled. (c) 6 lb./ac. (d) 18" spacing between rows. (e) N.A. (v) Nil. (vi) *Aispuri*. (vii) Unirrigated. (viii) 2 hoeings and 2 weedings. (ix) 23.77°. (x) 29.11.1953.

#### 2. TREATMENTS :

All combinations of (1) and (2)+a Control (seed not soaked)

(1) Seed soaked in :  $C_1$ =Water,  $C_2$ =0.01 p.p.m. of 2-4-D and  $C_3$ =0.10 p.p.m. of 2-4-D.  
(2) Duration for which seeds soaked :  $T_1$ =12 minutes,  $T_2$ =2 hours and  $T_3$ =20 hours.

#### 3. DESIGN :

(i) R.B.D. (ii) (a) 10. (b) 84' x 90'. (iii) 4. (iv) (a) 42' x 18'. (b) 36' x 12'. (v) 3' all round the net plot. (vi) Yes.

#### 4. GENERAL :

(i) The germination was satisfactory. (ii) In the beginning attack of stemborer was observed to some extent. Attack of *striga* was also observed on many plants. (iii) Weight of *Jowar* grain and *kalbi*; percentage germination at the end of 10 days; height and two measurements of diameters of 4 random plants in each plot on 5th and 10th week after sowing of *Jowar*. (iv) (a) 1953-1954. (b) No. (c) N.A. (v) (a) Dhulia. (b) N.A. (vi) and (vii) Nil.

#### 5. RESULTS :

(i) 1223 lb./ac.  
(ii) 232.9 lb./ac.  
(iii) None of the effects is significant.  
(iv) Av. yield of grain in lb./ac.

	Control = 1194 lb./ac.			
	$T_1$	$T_2$	$T_3$	Mean
$C_1$	1281	1131	1241	1218
$C_2$	1179	1143	1308	1212
$C_3$	1133	1231	1388	1250
Mean	1198	1170	1312	

S.E. of any marginal mean = 67.2 lb./ac.  
S.E. of body of table = 116.5 lb./ac.  
S.E. of control vs any other mean in the body of table = 164.7 lb./ac.

Crop :- Jowar (*Kharif*).  
Site :- Agri. Res. Stn., Jalagaon.

Ref :- Mh. 53(129).  
Type :- 'D'.

Object :- To study the effect of treating seed with Indol acetic acid on the growth and yield of *Jowar*.

#### 1. BASAL CONDITIONS :

(i) (a) No. (b) Groundnut. (c) N.A. (iii) (a) Deep black cotton type having a depth of 10 to 13 feet. (b) Refer soil analysis, Jalagaon. (iii) 10.7.1953. (iv) (a) N.A. (b) Drilled. (c) 6 lb./ac. (d) Between rows 18". (e) —. (v) Nil. (vi) *Aispuri*. (vii) Unirrigated. (viii) Hoeing on 22.7.1953 and 19.8.1953 weeding on 23.7.1953 and 19.8.1953. (ix) 23.77°. (x) 29.11.1953.

## 2. TREATMENTS :

All combinations (1) and (2) + a control (seeds untreated).

(1) 3 concentrations of Indol acetic acid in P.P.M. :  $C_1=0.10$ ,  $C_2=1.00$  and  $C_3=10.00$ .

(2) 3 intervals of applications :  $T_1=12$  minutes,  $T_2=2$  hours and  $T_3=20$  hours.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 10. (b)  $8' \times 90'$ . (iii) 4. (iv) (a)  $42' \times 18'$ . (b)  $36' \times 12'$ . (v) 3' all round the net plot. (vi) Yes.

## 4. GENERAL :

(i) Stand of the crop was some what uneven. Condition of the experiment was fairly good. (ii) Attack of stem borer and *striga* was observed. (iii) Weight of *jowar* grain and *kadbi*; percentage germination after 10 days; height and diameter of 4 random plants in each sub-plot on 5th and 10th week after sowing. (v) (a) 1953 to 1954. (b) No. (c) No. (v) (a) Dhulia. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 1217 lb./ac.

(ii) 253.1 lb./ac.

(iii) None of the effects is significant.

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

Control = 1227 lb./ac.

	$T_1$	$T_2$	$T_3$	Mean
$C_1$	1289	1251	1193	1245
$C_2$	1047	1152	1347	1182
$C_3$	1154	1207	1300	1220
Mean	1163	1204	1280	

S.E. of any marginal mean

= 73.1 lb./ac.

S.E. of body of table

= 126.6 lb./ac.

S.E. of control vs any other mean in the body of table

= 178.9 lb./ac.

Crop :- Jowar (*Kharif*).  
Site :- Agri. Res. Stn., Karad.

Ref :- Mh. 52(24).  
Type :- 'D'.

Object :- To test the effect of 2-4-D on the yield of *Jowar*.

## 1. BASAL CONDITIONS :

(i) (a) *Jowar*-Groundnut. (b) Groundnut. (c) 5 C.L./ac. of F.Y.M. (ii) (a) Clay-loam. (b) Refer soil analysis, Karad (iii) 24.6.1952. (iv) (a) 1 ploughing and 2 harrowings. (b) to (e) N.A. (v) 5 C.L./ac. of F.Y.M. application one month before sowing. (vi) *Shenoli* 3-1 (late). (vii) Unirrigated. (viii) N.A. (ix) 27.10". (x) 10.12.1952.

## 2. TREATMENTS :

Seed soaked in the following chemicals for the stated duration :

1. Water (for 30 minutes).
2. 0.01 p.p.m. of 2-4-D (30 minutes).
3. 0.1 p.p.m. of 2-4-D (30 minutes).
4. Water (for 5 hours).
5. 0.01 p.p.m. of 2-4-D (for five hours).
6. 0.10 p.p.m. of 2-4-D (for five hours).
7. 1.00 p.p.m. of 2-4-D (for five hours).
8. Control (seed untreated).

## 3. DESIGN :

(i) R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a)  $42' \times 18'$ . (b)  $36' \times 12'$ . (v) 3' on each side. (vi) Yes.



## 4. GENERAL :

- (i) No lodging. (ii) Slight attack of stemborer. Affected plants uprooted and buried (iii) Grain yield. (iv) (a) No. (b) No. (c) N.A. (v) (a) N.A. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 818 lb./ac.  
 (ii) 4080 lb./ac.  
 (iii) Treatments do not differ significantly.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	703
2.	1328
3.	635
4.	711
5.	745
6.	446
7.	898
8.	1111
S.E./mean	=204.0 lb./ac.

Crop :- Jowar (*Kharif*).

Ref :- Mh. 53(299).

Site :- Agri. Res. Stn., Karad.

Type :- 'D'.

Object :- To study the effect of 2-4-D hormone on yield of *Jowar*.

## 1. BASAL CONDITIONS :

- (i) (a) Groundnut—*Jowar*. (b) Groundnut. (c) 5 C.L./ac. of F.Y.M. (ii) (a) Medium black. (b) Refer soil analysis, Karad. (iii) 18.7.1953. (iv) (a) 1 ploughing and 2 harrowings. (b) to (e) N.A. (v) 5 C.L./ac. of F.Y.M. one month before sowing. (vi) *Shenoli* 4-5. (vii) Unirrigated. (viii) N.A. (ix) 38°. (x) 1.11.1953.

## 2. TREATMENTS :

Seeds soaked as below :

- In water for 20 hours.
- In 0.00033 p.p.m. of 2-4-D solution for 20 hours.
- In 0.001 p.p.m. of 2-4-D solution for 20 hours.
- In 0.0033 p.p.m. of 2-4-D solution for 20 hours.
- In 0.01 p.p.m. of 2-4-D solution for 20 hours.
- In 0.033 p.p.m. of 2-4-D solution for 20 hours.
- Control (seeds untreated ; 2 plots/block.)

## 3. DESIGN

- (i) R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a) 15'×35'. (b) 12'×33'. (v) 1 row on either side. (vi) Yes.

## 4. GENERAL :

- (i) No lodging. (ii) Attack of stemborer. Affected plants removed. (iii) Grain yield. (iv) (a) 1952—N.A. (b) No. (c) N.A. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 975 lb./ac.  
 (ii) 363.7 lb./ac.  
 (iii) Treatments do not differ significantly.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	966
2.	636
3.	815
4.	1282
5.	1275
6.	890
7.	966
S.E./mean	=181.8 lb./ac.

Crop :- Jowar (*Rabi*).

Ref :- Mh. 49(126).

Site :- Agri. Res. Stn., Mohol.

Type :- 'D'.

Object:—To study the efficacy of chemicals in controlling smut disease of *Jowar*.

## 1. BASAL CONDITIONS :

(i) (a) Gram—*Jowar*. (b) Gram. (c) Nil. (ii) (a) Medium black. (b) Refer soil analysis, Mohol. (iii) N.A. (iv) (a) 4 harrowings. (b) Drilled. (c) 4 lb./ac. (d) 18" between rows. (e) N.A. (v) Nil. (vi) M-35-1. (vii) Unirrigated. (viii) 3 interculturings. (ix) 1.14". (x) N.A.

## 2. TREATMENTS :

1. Control.
2. Sulphur treatment.
3. Solar treatment.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 3. (b) N.A. (iii) 8. (iv) (a) N.A. (b) 1/4 *guntha*. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) N.A. (iii) Grain yield. (iv) (a) 1949—1953. (b) N.A. (c) N.A. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 1065 lb./ac.
- (ii) 173.8 lb./ac.
- (iii) Treatments do not differ significantly.
- (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	1026
2.	1076
3.	1092
S.E./mean	= 61.4 lb./ac.

Crop :- Jowar (*Rabi*).

Ref :- Mh. 50(151).

Site :- Agri Res. Stn., Mohol.

Type :- 'D'.

Object:—To study the efficacy of chemicals in controlling smut disease of *Jowar*.

## 1. BASAL CONDITIONS :

(i) (a) Gram—*Jowar*. (b) Gram. (c) Nil. (ii) (a) Medium black. (b) Refer soil analysis, Mohol. (iii) N.A. (iv) (a) 4 harrowings. (b) Drilled. (c) 4 lb./ac. (d) 18" between rows. (e) —. (v) Nil. (vi) M-35-1. (vii) Unirrigated. (viii) 3 interculturings. (ix) 9.91". (x) N.A.

## 2. TREATMENTS :

1. Control.
2. Sulphur treatment.
3. Solar treatment.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 3. (b) N.A. (iii) 6. (iv) (a) N.A. (b) 270 sq. ft. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) Nil. (iii) Grain yield. (iv) (a) 1949—1953. (b) No. (c) Nil. (v) (a), and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 412 lb./ac.
- (ii) 70.02 lb./ac.
- (iii) Treatments do not differ significantly.

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

Treatment	Av. yield
1.	372
2.	397
3.	467
S.E./mean	=28.59 lb./ac.

Crop :- Jowar (*Rabi*).  
Site :- Agri. Res. Stn., Mohol.

Ref :- Mh. 51(230).  
Type :- 'D'.

Object :- To study the efficacy of chemicals in controlling smut disease of *Jowar*.

## 1. BASAL CONDITIONS :

(i) (a) Gram—*Jowar*. (b) Gram. (c) Nil. (ii) (a) Medium black. (b) Refer soil analysis, Mohol. (iii) N.A. (iv) (a) 4 harrowings. (b) Drilled. (c) 4 lb./ac. (d) 18" between rows. (e) —. (v) Nil. (vi) M-35-1. (vii) Unirrigated. (viii) 2 interculturings. (ix) 7.49". (x) N.A.

## 2. TREATMENTS :

1. Control.
2. Sulphur treatment.
3. Solar treatment.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 3. (b) N.A. (iii) 8. (iv) (a) N.A. (b) 20'×13.5'. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) N.A. (iii) Grain yield. (iv) (a) 1949—1953. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 205 lb./ac.
- (ii) 109.4 lb./ac.
- (iii) Treatments do not differ significantly.
- (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	140
2.	197
3.	278
S.E./mean	=38.7 lb./ac.

Crop :- Jowar (*Rabi*).  
Site :- Agri. Res. Stn., Mohol.

Ref :- Mh. 53(355).  
Type :- 'D'.

Object :- To study the efficacy of chemicals in controlling smut disease of *Jowar*.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) N.A. (c) N.A. (ii) (a) Medium black. (b) Refer soil analysis, Mohol. (iii) N.A. (iv) (a) 3 harrowings (b) Drilled. (c) 4 lb./ac. (d) 18" between rows. (e) —. (v) Nil. (vi) M-35-1. (vii) Unirrigated. (viii) 2 interculturings. (ix) 8.89". (x) N.A.

## 2. TREATMENTS :

1. Control.
2. Sulphur treatment.
3. Solar treatment.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 3. (b) N.A. (iii) 9. (iv) (a) N.A. (b) 30' x 9'. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) N.A. (iii) Grain yield. (iv) (a) 1949—1953. (b) No. (c) Nil. (v) (a) N.A. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 267 lb./ac.  
 (ii) 48.17 lb./ac.  
 (iii) Treatments differ highly significantly.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	192
2.	338
3.	272
S.E./mean	= 16.06 lb./ac.

Crop :- Jowar (*Rabi*).

Site :- Agri. Res. Stn., Mohol.

Ref :- Mh. 49(143).

Type :- 'D'.

Object :- To study the effect of Weedicides, Agroxone and Fernoxone, on *striga* disease of *Jowar*.

## 1. BASAL CONDITIONS :

(i) (a) Gram—*Jowar*. (b) Gram. (c) Nil. (ii) (a) Medium black. (b) Refer soil analysis, Mohol. (iii) N.A. (iv) (a) 3 harrowings. (b) Drilled. (c) 4 lb./ac. (d) 18" between rows. (e) —. (v) Nil. (vi) M-35-1. (vii) Unirrigated. (viii) 2 interculturings. (ix) 1.14". (x) N.A.

## 2. TREATMENTS :

- Control.
- Spraying of Agroxone on 6th, 8th, 10th and 12th weeks after sowing.
- Spraying of Fernoxone on 6th, 8th, 10th and 12th weeks after sowing.
- Spraying of Agroxone on 8th, 10th, 12th and 14th weeks after sowing.
- Spraying of Fernoxone on 8th, 10th, 12th and 14th, weeks after sowing.
- Spraying of Agroxone on 10th, 12th, 14th and 16th weeks after sowing.
- Spraying of Fernoxone on 10th, 12th, 14th and 16th weeks after sowing.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 6. (iv) (a) N.A. (b) 1/80 ac. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) N.A. (iii) Grain yield. (iv) (a) 1949—1951. (b) N.A. (c) Nil. (v) (a) N.A. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 120 lb./ac.  
 (ii) 49.15 lb./ac.  
 (iii) Treatments do not differ significantly.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	125
2	118
3.	142
4.	97
5.	153
6.	116
7.	87
S.E./mean	= 20.07 lb./ac.

Crop :- Jowar (*Rabi*).  
Site :- Agri. Res. Stn., Mohol.

Ref :- Mh. 50(150).  
Type :- 'D'.

Object :- To study the effect of Fernoxone, a weedicide, on *striga* disease of Jowar.

1. BASAL CONDITIONS :

(i) (a) Gram-Jowar. (b) Gram. (c) Nil. (ii) (a) Medium black. (b) Refer soil analysis, Mohol. (iii) N.A. (iv) (a) 4 harrowings. (b) Drilled. (c) 4 lb./ac. (d) 18" between rows. (e) —. (v) Nil. (vi) M-35-1. (vii) Unirrigated. (viii) 2 interculturings. (ix) 9.91". (x) N.A.

2. TREATMENTS :

1. Control (no spraying).
2. Spraying of Fernoxone on 6th, 8th, 10th and 12th week after sowing.
3. Spraying of Fernoxone on 8th, 10th, 12th and 14th week after sowing.
4. Spraying of Fernoxone on 10th, 12th, 14th and 16th week after sowing.

3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 525 Sq. ft. (v) N.A. (vi) Yes.

GENERAL :

(i) N.A. (ii) N.A. (iii) Grain yield. (iv) (a) 1949 to 1951. (b) No. (c) Nil. (v) (a) N.A. (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

- (i) 50 lb./ac.  
(ii) 29.54 lb./ac.  
(iii) Treatments do not differ significantly.  
(iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	63
2.	44
3.	58
4.	36
S.E./mean	= 14.70 lb./ac.

Crop :- Jowar (*Rabi*).  
Site :- Agri. Res. Stn., Mohol.

Ref :- Mh. 51(232).  
Type :- 'D'.

Object :- To study the effect of Fernoxone, a weedicide, on *striga* disease of Jowar.

1. BASAL CONDITIONS :

(i) (a) Gram-Jowar. (b) Gram. (c) Nil. (ii) (a) Medium black. (b) Refer soil analysis, Mohol. (iii) N.A. (iv) (a) 3 harrowings. (b) Drilled. (c) 4 lb./ac. (d) 18" between rows. (e) N.A. (v) Nil. (vi) M-35-1. (vii) Unirrigated. (viii) 3 interculturings. (ix) 7.49". (x) N.A.

2. TREATMENTS :

1. Control.
2. Spraying of Fernoxone after 5th and 7th week of sowing.
3. Spraying of Fernoxone after 5th, 7th and 9th week of sowing.
4. Spraying of Fernoxone after 5th, 7th, 9th and 11th week of sowing.
5. Spraying of Fernoxone after 6th, 8th and 11th week of sowing.
6. Hand weeding only.

3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 6. (iv) (a) N.A. (b) 35' × 15'. (v) N.A. (vi) Yes.

4. GENERAL :

(i) N.A. (ii) N.A. (iii) Grain yield. (iv) (a) 1949 to 1951. (b) No. (c) Nil. (v) (a) N.A. (b) N.A. (vi) Nil. (vii) Experiment totally failed—reasons N.A.

## 5. RESULTS :

- (i) 23.50 lb./ac.  
(ii) 27.88 lb./ac.  
(iii) Treatment do not differ significantly.  
(iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	23
2.	20
3.	33
4.	27
5.	5
6.	33
S.E./mean	= 11.38 lb./ac.

Crop :- Jowar (*Rabi*).

Ref :- Mh. 51(229).

Site :- Agri. Res. Stn., Mohol.

Type :- 'D'.

Object :- To see the effect of hormone treatment (2-4-D) on *Jowar*.

## 1. BASAL CONDITIONS :

- (i) (a) Gram—*Jowar*. (b) Gram. (c) Nil. (ii) (a) Medium black. (b) Refer soil analysis, Mohol.  
(iii) N.A. (iv) (a) 3 harrowings. (b) Drilled. (c) 4 lb./ac. (d) 18" between rows. (e) —. (v) Nil.  
(vi) M-35-1. (vii) Unirrigated. (viii) 2 interculturings. (ix) 7.49". (x) N.A.

## 2. TREATMENTS :

All combinations of (1) and (2) + control (seeds untreated).

- (1) 5 concentrations of 2-4-D :  $C_1=0.00$  i.e. seeds treated with water only,  $C_2=0.10$  P.P.M. of 2-4-D,  $C_3=1.00$  P.P.M. of 2-4-D,  $C_4=10.00$  P.P.M. of 2-4-D and  $C_5=100.00$  P.P.M. of 2-4-D.  
(2) 3 durations of soaking :  $T_1$ =Soaked for 12 minutes,  $T_2$ =Soaked for 2 hours and  $T_3$ =Soaked for 20 hours.

## 3. DESIGN :

- (i) R.B.D. (ii) (a) 16. (b) N.A. (iii) 3. (iv) (a) N.A. (b) 27' × 18'. (v) N.A. (vi) Yes.

## 4. GENERAL :

- (i) N.A. (ii) N.A. (iii) Grain yield. (iv) (a) 1951—1954 (Modified in [1952-53.]) (b) N.A. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 550 lb./ac.  
(ii) 140.7 lb./ac.  
(iii) None of the effects is significant.  
(iv) Av. yield of grain in lb./ac.

Control=586 lb./ac.

	$C_1$	$C_2$	$C_3$	$C_4$	$C_5$	Mean
$T_1$	526	586	530	691	665	600
$T_2$	379	557	626	605	612	556
$T_3$	467	551	471	465	517	494
Mean	457	565	542	587	598	

S.E. of marginal mean of C = 46.9 lb./ac.  
S.E. of marginal mean of T = 36.3 lb./ac.  
S.E. of body of table = 81.2 lb./ac.

Crop :- Jowar (*Rabi*).  
Site :- Agri. Res. Stn., Mohol.

Ref :- Mh. 52(364).  
Type :- 'D'.

Object :- To study the effect of different hormones on *Jowar*.

1. BASAL CONDITIONS :

- (i) (a) Gram—*Jowar*. (b) Gram. (c) Nil. (ii) (a) Medium black. (b) Refer soil analysis, Mohol. (iii) N.A.  
(iv) (a) 3 harrowings. (b) Drilled. (c) 4 lb./ac. (d) 18" between rows. (e) —. (v) Nil. (vi) M-35-1.  
(vii) Unirrigated. (viii) 2 interculturings. (ix) 5.03". (x) N.A.

2. TREATMENTS :

1. Control (seeds untreated).
2. Seeds treated with water only for 2 hours.
3. Seeds treated with 2-4-D in 0.10 P.P.M. for 2 hours.
4. Seeds treated with 2-4-D in 1.00 P.P.M. for 2 hours.
5. Seeds treated with 2-4-D in 0.01 P.P.M. for 20 hours.
6. Seeds treated with 2-4-D in 0.10 P.P.M. for 20 hours.
7. Seeds treated with 2-4-D in 1.00 P.P.M. for 20 hours.
8. Seeds treated with I.A.A. in 1.00 P.P.M. for 2 hours.
9. Seeds treated with I.A.A. in 10.00 P.P.M. for 2 hours.
10. Seeds treated with I.A.A. in 1.00 P.P.M. for 20 hours.

3. DESIGN :

- (i) R.B.D. (ii) (a) 10. (b) N.A. (iii) 4. (iv) (a) 36'×12'. (b) 32'×9'. (v) 2'×1.5'. (vi) Yes.

4. GENERAL :

- (i) N.A. (ii) N.A. (iii) Grain yield. (iv) (a) 1951—1954 (modified in 1952-53). (b) and (c) No. (v) (a) and (b) N.A. (vi) Nil. (vii) Experiment totally failed ; reason—N.A.

5. RESULTS :

- (i) 35.50 lb./ac.  
(ii) 38.68 lb./ac.  
(iii) Treatments do not differ significantly.  
(iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	26
2.	18
3.	58
4.	14
5.	30
6.	43
7.	26
8.	26
9.	63
10.	51
S.E./mean	= 19.34 lb./ac.

Crop :- Jowar (*Rabi*).  
Site :- Agri. Res. Stn., Mohol.

Ref :- Mh. 53(215).  
Type :- 'D'.

Object :- To study the effect of different hormones on *Jowar* yield.

1. BASAL CONDITIONS :

- (i) (a) No. (b) Gram. (c) N.A. (ii) (a) Medium black. (b) Refer soil analysis, Mohol. (iii) 22.10.1953.  
(iv) (a) N.A. (b) Drilled with 3 coultered seed drill. (c) 4 lb./ac. (d) 18" apart. (e) —. (v) Nil.  
(vi) M-35-1. (vii) Unirrigated. (viii) 3 bullock hoeings and 2 bullock interculturings. (ix) 8.89". (x) 13.3.1954.

## 2. TREATMENTS :

1. Seed soaked in water for 2 hours.
2. Seed soaked in 2-4-D of concentration 0.10 P.P.M. for 2 hours.
3. Seed soaked in 2-4-D of concentration 1.00 P.P.M. for 2 hours.
4. Seed soaked in I.A.A. of concentration 1.00 P.P.M. for 2 hours.
5. Seed soaked in I.A.A. of concentration 10.00 P.P.M. for 2 hours.
6. Seed soaked in 2-4-D of concentration 0.01 P.P.M. for 20 hours.
7. Seed soaked in 2-4-D of concentration 0.10 P.P.M. for 20 hours.
8. Seed soaked in 2-4-D of concentration 1.00 P.P.M. for 20 hours.
9. Seed soaked in I.A.A. of concentration 1.00 P.P.M. for 20 hours.
10. Control (untreated seed).

## 3. DESIGN :

- (i) R.B.D. (ii) (a) 10. (b) N.A. (iii) 4. (iv) (a) 36' x 12'. (b) 32' x 9'. (v) One row on each side and 2' row at both the ends. (vi) Yes.

## 4. GENERAL :

- (i) Not satisfactory. (ii) Root rot was seen, may be due to high moisture content in the soil. Appearance of sugary disease may be attributed to cool and dry winter. Stem borer and aphids were also noticed on the crop. (iii) Grain and fodder yield. (iv) (a) and (b) No. (c) N.A. (v) (a) Kopergaon. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 147 lb./ac.  
 (ii) 54.92 lb./ac.  
 (iii) Treatments do not differ significantly.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	113
2.	161
3.	137
4.	132
5.	156
6.	156
7.	125
8.	135
9.	173
10.	177
S.E./mean	=27.46 lb./ac.

Crop :- Jowar (*Rabi*).

Site :- Agri. Res. Stn., Mohol.

Ref :- Mh. 48(52).

Type :- 'D'.

Object :- To study the effect of methozone and YF-1541 on *striga* disease of Jowar.

## 1. BASAL CONDITIONS :

- (i) (a) Nil. (b) and (c) N.A. (ii) (a) Light black. (b) Refer soil analysis, Mohol. (iii) 13.10.1948. (iv) (a) 4 harrowings. (b) Drilled. (c) N.A. (d) 18" apart. (e) —. (v) Nil. (vi) M-35-1. (vii) Unirrigated. (viii) 2 interculturings. (ix) 5.38". (x) 7.3.1949.

## 2. TREATMENTS :

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

- (1) 2 chemicals: C<sub>1</sub>—Methozone and C<sub>2</sub>—YF—1541.  
 (2) 2 times of application: T<sub>1</sub>—Pre-emergence and T<sub>2</sub>—Post-emergence of shoots.  
 (3) 4 levels of chemical: L<sub>0</sub>=0, L<sub>1</sub>= $\frac{1}{2}$ , L<sub>2</sub>=1 and L<sub>3</sub>=2 lb./plot.

## 3. DESIGN :

- (i) 4 x 2 x 2 Fact. in R.B.D. (ii) (a) 16. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 22' x 20'. (v) N.A. (vi) Yes.



## 4. GENERAL :

(i) Not satisfactory. (ii) Nil. (iii) Grain yield. (iv) (a) and (b) No. (c) N.A. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 97.1 lb./ac.  
 (ii) 54.29 lb./ac.  
 (iii) None of the effects is significant.  
 (iv) Av. yield of grain in lb./ac.

		Control = 113.5 lb./ac.					
		L <sub>1</sub>	L <sub>2</sub>	L <sub>3</sub>	Mean	T <sub>1</sub>	T <sub>2</sub>
C <sub>1</sub>		62.4	86.5	92.8	80.6	75.1	86.0
C <sub>2</sub>		105.1	108.9	94.2	102.7	96.3	109.2
Mean		83.7	97.7	93.5	97.1	85.7	97.6
T <sub>1</sub>		82.5	85.6	88.9			
T <sub>2</sub>		84.9	109.3	98.1			

S.E. of marginal mean of L = 13.57 lb./ac.  
 S.E. of marginal mean of C or T = 11.08 lb./ac.  
 S.E. of body of table L × C or L × T = 19.20 lb./ac.  
 S.E. of body of table C × T = 15.67 lb./ac.

Crop :- Jowar (*Kharif*).

Ref :- Mh. 51(123).

Site :- Government Exptl. Farm, Nagpur.

Type :- 'D'.

Object :- To find out the effect of commercial manures on *Jowar* crop.

## 1. BASAL CONDITIONS :

(i) (a) No. (b) N.A. (c) N.A. (ii) (a) Black cotton soil. (b) Refer soil analysis, Nagpur. (iii) 17.7.1951.  
 (iv) (a) N.A. (b) N.A. (c) 10 lb./ac. (d) 13° × 12°. (e) N.A. (v) N.A. (vi) *Sooner* (medium). (vii) Unirrigated. (viii) 5 hoeings. (ix) 38.29°. (x) 5.1.1952.

## 2. TREATMENTS :

1. Control (no manure).
2. Seed treated with Growmore.
3. Seed treated with Annapurna.

5 oz. of Annapurna was mixed with 50 oz. of water and 1½ lb. of seed kept in sol. for 12 hr. and dried in sun. 1 lb. of Growmore dissolved in 4 lb. of water and then 1½ lb. of seed kept in sol. for 1 hr. and dried in shade.

## 3. DESIGN :

(i) R.B.D (ii) (a) 3. (b) N.A. (iii) 5. (iv) (a) N.A. (b) 66' × 16.5'. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) N.A. (iii) Yield data for grain and cobs. (iv) (a) N.A. (b) N.A. (c) N.A. (v) (a) N.A. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 2000 lb./ac.  
 (ii) 252.4 lb./ac.  
 (iii) Treatments do not differ significantly.

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

Treatment	Av. yield
1.	1840
2.	2128
3.	2032
S.E./mean	= 112.8 lb./ac.

✓ Crop :- Jowar (*Kharif*).

Ref :- Mh. 52(144).

Site :- Govt. Exptl. Farm, Nagpur.

Type :- 'D'.

Object :- To determine the effect of commercial manures on *Jowar* crop in comparison with A/S and G.N.C.

## 1. BASAL CONDITIONS :

(i) (a) Cotton—*Jowar*. (b) Cotton. (c) N.A. (ii) (a) Black cotton soil. (b) Refer soil analysis, Nagpur. (iii) 17.7.1952. (iv) (a) 5 *bakharings*. (b) By *argada*. (c) 10 lb./ac. (d) N.A. (e) N.A. (v) Nil. (vi) *Saoner* (medium). (vii) Unirrigated. (viii) 4 hoeings. (ix) 29.32". (x) 20.10.1952.

## 2. TREATMENTS :

1. No manure.
2. Seed treated with Growmore.
3. Seed treated with Annapurna.
4. A/S at 20 lb./ac. of N drilled.
5. G.N.C. at 20 lb./ac. of N drilled.

5 oz. of Annapurna with 50 oz. of water and 1½ lb. of seed was kept in sol. for 12 hr. and dried in sun. 1 lb. of Growmore was dissolved in 4 lb. of water then 1½ lb. of seed was kept in sol. for 1 hr. and then seed was dried in shade.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 5. (iv) (a) N.A. (b) 66' x 16.5'. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Nil. (iii) Grain and st aw yield. (iv) (a) 1951—N.A. (b) No. (c) N.A. (v) (a) N.A. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 976 lb./ac.
- (ii) 462.0 lb./ac.
- (iii) Treatments do not differ significantly.
- (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	1000
2.	864
3.	1000
4.	1096
5.	920
S.E./mean	= 206.5 lb./ac.

Crop :- Bajra (*Kharif*).

Ref :- Mh. 48(78).

Site :- Agri. Res. Stn., Akluj.

Type :- 'M'.

Object :- To see the effect of Bone super on *Bajra*.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) Sugarcane. (c) 375 lb./ac. of N as A/S and G.N.C. in 1 : 1 ratio. (ii) (a) 'D' type. (b) Refer soil analysis, Akluj. (iii) June 1948. (iv) (a) Ploughing and harrowing. (b) to (c) N.A. (v) 5 C.L./ac. of F.Y.M. (vi) Akola. (vii) Irrigated. (viii) Weeding. (ix) 21.78". (x) September-October 1948.

## 2. TREATMENTS :

1. No manure.
2. 56 lb./ac. of Bone super.
3. 56 lb./ac. of Bone super + 56 lb./ac. of A/S.
4. 56 lb./ac. of A/S.
5. 150 lb./ac. of G.N.C.

## 3. DESIGN :

- (i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 6. (iv) (a) N.A. (b) 0.50 *guntha*. (v) N.A. (vi) Yes.

## 4. GENERAL :

- (i) No lodging. (ii) Nil. (iii) Grain yield. (iv) (a) 1946 to 1948. (b) No. (c) Nil. (v) (a) Kopergaon, Deolali, Lakhampur. (b) N.A. (vi) No reason given for low yield. (vii) Nil.

## 5. RESULTS :

- (i) 296 lb./ac.  
 (ii) 42.24 lb./ac.  
 (iii) Treatments differ significantly.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	233
2.	253
3.	240
4.	287
5.	467
S.E./mean	= 17.25 lb./ac.

Crop :- Bajra (*Kharif*).

Site :- Agri. Res. Stn., Chas.

Ref :- Mh. 51(73).

Type :- 'M'.

Object :—To find out the optimum dose of N and  $P_2O_5$  for *Bajra*.

## 1. BASAL CONDITIONS :

- (i) (a) Groundnut-*Bajra* and *Tur*. (b) N.A. (c) Nil. (ii) (a) Light *Kharif* soil. (b) N.A. (iii) 13.7.1951.  
 (iv) (a) 2 harrowings. (b) N.A. (c) 3 lb./ac. (d) 12" between rows. (e) N.A. (v) Nil. (vi) Akola.  
 (vii) Unirrigated. (viii) 2 interculturings. (ix) 17.47". (x) 20.10.1951.

## 2. TREATMENTS :

All combinations of (1) and (2)

- (1) 4 levels of N :  $N_0=0$ ,  $N_1=10$ ,  $N_2=20$  and  $N_3=30$  lb./ac.  
 (2) 4 levels of  $P_2O_5$  :  $P_0=0$ ,  $P_1=10$ ,  $P_2=20$  and  $P_3=30$  lb./ac.  
 N applied as G.N.C. and  $P_2O_5$  as Super.

## 3. DESIGN :

- (i) 4×4 Fact. in R.B.D. (ii) (a) 16. (b) N.A. (iii) 4. (iv) (a) 16'×52'. (b) 12'×48' (3 rows of *bajra* and 1 row of *tur*). (v) 2' around the net plot. (vi) Yes.

## 4. GENERAL :

- (i) Below normal. (ii) Nil. (iii) 3 counts, 3 heights and grain yield. (iv) (a) 1951 to 1955. (b) No, duplicate plots are maintained. (c) N.A. (v) (a) Sholapur and Jeur. (b) N.A. (vi) No reasons given for low yield. (vii) *Tur* is grown as an inter crop along with *bajra*; but it is not included for the analysis.

## 5. RESULTS :

- (i) 702 lb./ac.  
 (ii) 156.2 lb./ac.  
 (iii) Main effect of N and interaction NP are significant. Main effect of P 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
P <sub>0</sub>	386	633	729	873	655
P <sub>1</sub>	541	709	869	770	722
P <sub>2</sub>	433	680	862	838	703
P <sub>3</sub>	593	689	701	923	727
Mean	488	678	790	851	702

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

=78.1 lb./ac.  
=39.0 lb./ac.

Crop :- Bajra (*Kharif*).

Ref :- Mh. 52(102).

Site :- Agri. Res. Stn., Chas.

Type :- 'M'.

Object :- To find out the optimum dose of N and P<sub>2</sub>O<sub>5</sub> for Bajra.

## 1. BASAL CONDITIONS:

(i) (a) Groundnut—*Bajra* and *Tur*. (b) Groundnut. (c) Nil. (ii) (a) Light *Kharif* soil. (b) N.A. (iii) 30.6.1952. (iv) (a) 1 ploughing and 2 harrowings. (b) N.A. (c) 3 lb./ac. (d) 18". (e) N.A. (v) Nil. (vi) Akola. (vii) Unirrigated. (viii) 2 interculturings. (ix) 7.94". (x) 15.10.1952.

## 2. TREATMENTS:

All combinations of (1) and (2)

(1) 4 levels of N: N<sub>0</sub>=0, N<sub>1</sub>=10, N<sub>2</sub>=20 and N<sub>3</sub>=30 lb./ac.(2) 4 levels of P<sub>2</sub>O<sub>5</sub>: P<sub>0</sub>=0, P<sub>1</sub>=10, P<sub>2</sub>=20 and P<sub>3</sub>=30 lb./ac.N applied as G.N.C. and P<sub>2</sub>O<sub>5</sub> as Super.

## 3. DESIGN:

(i) 4 × 4 Fact. in R.B.D. (ii) (a) 16. (b) N.A. (iii) 4. (iv) (a) 16' × 52' (3 rows of *bajra* and 1 row of *tur*). (b) 12' × 48'. (v) 2' around the net plot. (vi) Yes.

## 4. GENERAL:

(i) Below normal. (ii) Nil. (iii) 3 counts, 3 heights and grain yield. (iv) (a) 1951—1955. (b) No, duplicate plots are maintained. (c) N.A. (v) (a) Sholapur and Jeur. (b) N.A. (vi) No reason is given for low yield. (vii) *Tur* is grown as an intercrop along with *bajra*, but it is not included for analysis.

## 5. RESULTS:

(i) 151 lb./ac.

(ii) 94.04 lb./ac.

(iii) Only interaction NP 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
P <sub>0</sub>	254	93	189	112	162
P <sub>1</sub>	112	126	129	123	124
P <sub>2</sub>	251	88	101	183	156
P <sub>3</sub>	109	145	224	169	162
Mean	182	113	161	148	151

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

=23.51 lb./ac.  
=47.02 lb./ac.

Crop :- Bajra (*Kharif*).  
Site :- Agri. Res. Stn., Chas.

Ref :- Mh. 53(155).

Type :- 'M'.

Object :- To find out the optimum dose of N and  $P_2O_5$  for Bajra.

## 1. BASAL CONDITIONS :

- (i) (a) Groundnut—Bajra and Tur. (b) Groundnut. (c) Nil. (ii) (a) Light *Kharif* soil. (b) N.A. (iii) 3.7.1953.  
(iv) (a) 1 ploughing and 2 harrowings. (b) N.A. (c) 3 lb./ac. (d) 12". (e) N.A. (v) Nil. (vi) Akola.  
(vii) Unirrigated. (viii) 2 interculturings. (ix) 21.00". (x) 28.10.1953.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 4 levels of N:  $N_0=0$ ,  $N_1=10$ ,  $N_2=20$  and  $N_3=30$  lb./ac.(2) 4 levels of  $P_2O_5$ :  $P_0=0$ ,  $P_1=10$ ,  $P_2=20$  and  $P_3=30$  lb./ac.N applied as G.N.C. and  $P_2O_5$  as Super.

## 3. DESIGN :

- (i)  $4 \times 4$  Fact. in R.B.D. (ii) (a) 16. (b) N.A. (iii) 4. (iv) (a)  $52' \times 16'$ . (b)  $48' \times 12'$  (3 rows of bajra and 1 row of tur). (v) N.A. (vi) Yes.

## 4. GENERAL :

- (i) Below normal. (ii) Nil. (iii) 3 counts, 3 heights and grain yield. (iv) (a) 1951—1955. (b) No. (c) N.A.  
(v) (a) Sholapur and Jeur. (b) No reasons given for low yield. (vii) Tur is grown as an intercrop along with bajra, but it has not been included for analysis.

## 5. RESULTS :

(i) 268 lb./ac.

(ii) 65.34 lb./ac.

(iii) Main effects of N, P and interaction NP are significant.

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

	$N_0$	$N_1$	$N_2$	$N_3$	Mean
$P_0$	195	203	241	315	239
$P_1$	180	192	267	285	231
$P_2$	216	287	332	322	289
$P_3$	241	284	336	391	313
Mean	208	242	294	328	268

S.E. of marginal mean of N or P = 16.33 lb./ac.

S.E. of body of table = 32.67 lb./ac.

Crop :- Bajra (*Kharif*)  
Site :- Agri. Res. Stn., Jeur.

Ref. :- Mh. 51(105).

Type :- 'M'.

Object :- To study the N and  $P_2O_5$  requirements of Bajra.

## 1. BASAL CONDITIONS :

- (i) (a) Bajra—Groundnut. (b) Groundnut. (c) N.A. (ii) (a) Light tending to medium. (b) N.A. (iii) 12.7.1951. (iv) (a) 2 harrowings. (b) Drilled. (c) 4 lb./ac. (d) 12" apart. (e) N.A. (v) Nil. (vi) Akola. (vii) Unirrigated. (viii) 2 interculturings. (ix) N.A. (x) 7.11.1951.

**2. TREATMENTS :**

All combinations of (1) and (2)

(1) 4 levels of N :  $N_0=0$ ,  $N_1=10$ ,  $N_2=20$  and  $N_3=30$  lb./ac.

(2) 4 levels of  $P_2O_5$  :  $P_0=0$ ,  $P_1=10$ ,  $P_2=20$  and  $P_3=30$  lb./ac.

N as G.N.C. applied on 1.8.1951 and  $P_2O_5$  as Super applied on 22.7.1951.

**3. DESIGN :**

(i)  $4 \times 4$  Fact. in R.B.D. (ii) (a) 16. (b) N.A. (iii) 4. (iv) (a)  $38' \times 20'$ . (b)  $34' \times 16'$ . (v) 2 all round the net plot. (vi) Yes.

**4. GENERAL :**

(i) Normal. (ii) Slight attack of blister-beetles ; control measures were taken. (iii) Grain yield. (iv) (a) 1951—continued. (b) No. (c) N.A. (v) (a) Nil. (b) N.A. (vi) Nil. (vii) Greater slope of soil ranges from east to west i.e. from Repli. I to Repli. IV ; of these, the first two replications are situated in better soil as compared with the latter two. Hence plants in replication I and II have given more yield.

**5. RESULTS :**

(i) 344 lb./ac.

(ii) 100.0 lb./ac.

(iii) None of the effects is significant.

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

	$N_0$	$N_1$	$N_2$	$N_3$	Mean
$P_0$	358	298	272	341	317
$P_1$	240	285	344	348	304
$P_2$	293	427	362	401	371
$P_3$	428	353	346	401	382
Mean	330	341	331	373	344

S.E. of marginal mean of N or P

=25.0 lb./ac.

S.E. of body of table

=50.0 lb./ac.

Crop :-Bajra (*Kharif*).

Ref :-Mh. 53(47).

Site :-Agri. Res. Stn., Jeur.

Type :-'M'.

Object :-To study the N and  $P_2O_5$  requirements of *Bajra*.

**1. BASAL CONDITIONS :**

(i) (a) *Bajra*—Groundnut. (b) Groundnut. (c) Nil. (ii) (a) Light tending to medium. (b) N.A. (iii) 29.6.1953. (iv) (a) 2 harrowings. (b) Drilled. (c) 4 lb./ac. (d)  $12^\circ$ . (e) N.A. (v) Nil. (vi) Akola. (vii) Unirrigated. (viii) One interculturings. (ix)  $16.62^\circ$ . (x) 16.11.1953.

**2. TREATMENTS :**

All combinations of (1) and (2)

(1) 4 levels of N :  $N_0=0$ ,  $N_1=10$ ,  $N_2=20$  and  $N_3=30$  lb./ac.

(2) 4 levels of  $P_2O_5$  :  $P_0=0$ ,  $P_1=10$ ,  $P_2=20$  and  $P_3=30$  lb./ac.

N applied as G.N.C. and  $P_2O_5$  as Super.

**3. DESIGN :**

(i)  $4 \times 4$  Fact. in R.B.D. (ii) (a) 16. (b) N.A. (iii) 4. (iv) (a)  $38' \times 20'$ . (b)  $34' \times 16'$ . (v) 2' around the net plot. (vi) Yes.

## 4. GENERAL :

(i) Normal. (ii) Nil. (iii) Grain and fodder yield. (iv) (a) 1951—Continued (b) No. (c) N.A. (v) (a) Nil. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 299 lb./ac.  
 (ii) 88.88 lb./ac.  
 (iii) Main effect of P 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
P <sub>0</sub>	274	255	244	274	262
P <sub>1</sub>	263	397	274	306	310
P <sub>2</sub>	218	268	299	263	262
P <sub>3</sub>	309	459	354	331	363
Mean	266	345	293	293	299

S.E. of marginal mean of N or P = 22.22 lb./ac.

S.E. of body of table = 44.44 lb./ac.

Crop :- Bajra (*Kharif*):  
 Site :- Agri. Res. Stn., Kopergaon.

Ref :- Mh. 48(20).  
 Type :- 'M'.

Object :- To study the N and P<sub>2</sub>O<sub>5</sub> requirements of *Bajra*.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) Wheat. (c) Nil. (ii) (a) Medium black. (b) Refer soil analysis, Kopergaon. (iii) 3.7.1948. ✓  
 (iv) (a) N.A. (b) Drilled by a country seed drill. (c) 7 lb./ac. (d) Between rows-12" ; between plants irregular. (e) N.A. (v) N.A. (vi) Akola. (vii) Irrigated. (viii) Twice weeding and once interculturing. (ix) 33.20". (x) 3.10.1948.

## 2. TREATMENTS :

All combinations of (1) and (2)

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

(2) 4 levels of P<sub>2</sub>O<sub>5</sub>: P<sub>0</sub>=0, P<sub>1</sub>=20, P<sub>2</sub>=40 and P<sub>3</sub>=60 lb./ac.

P<sub>2</sub>O<sub>5</sub> as Super drilled at sowing and N as A/S broadcast at sowing.

## 3. DESIGN :

(i) 4×4 Fact. in R.B.D. (ii) (a) 16. (b) N.A. (iii) 4. (iv) (a) 40'×22'. (b) 30'×12'. (v) 5' around the net plot. (vi) Yes.

## 4. GENERAL :

(i) The growth was very vigorous from the beginning to the end. Tillering was very profuse. In some cases shooting of tops with an earhead for each shoot was observed. (ii) Nil. (iii) Grain yield. (iv) (a) 1948—1952. (b) No. (c) N.A. (v) (a) Niphad. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 17.9 lb./ac.  
 (ii) 3.4 lb./ac.  
 (iii) effects are 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
P <sub>0</sub>	1328	1550	1759	1906	1636
P <sub>1</sub>	1476	1931	1960	2024	1848
P <sub>2</sub>	1271	1751	1773	1539	1584
P <sub>3</sub>	1445	1641	1915	2237	1810
Mean	1380	1718	1852	1927	1719

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

=28.3 lb./ac.  
=56.7 lb./ac.

Crop :- Bajra (*Kharif*).

Ref :- Mh. 49(35).

Site :- Agri. Res. Stn., Kopergaon.

Type :- 'M'.

Object :- To study the N and P<sub>2</sub>O<sub>5</sub> requirements of *Bajra*.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) Wheat. (c) 2 bags/ac of G.N.C.+40 lb./ac. of A/S. (ii) (a) Medium black. (b) Refer soil analysis, Kopergaon. (iii) 17, 18.7.1949. (iv) (a) N.A. (b) Drilled by a country seed-drill. (c) 7 lb./ac. (d) Between rows-12" ; between plants-irregular. (e) N.A. (v) 5 C.L./ac. of F.Y.M. (vi) Akola. (vii) Irrigated. (viii) Weeding and hoeing twice. (ix) 17.69" (x) 15, 16.10.1949.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 4 levels of N : N<sub>0</sub>=0, N<sub>1</sub>=20, N<sub>2</sub>=40 and N<sub>3</sub>=60 lb./ac.(2) 4 levels of P<sub>2</sub>O<sub>5</sub> : P<sub>0</sub>=0, P<sub>1</sub>=20, P<sub>2</sub>=40 and P<sub>3</sub>=60 lb./ac.P<sub>2</sub>O<sub>5</sub> as Super drilled at sowing and N as A/S broadcast at sowing.

## 3. DESIGN :

(i) 4×4 Fact. in R.B.D. (ii) (a) 16. (b) N.A. (iii) 4. (iv) (a) 33'×30'. (b) 20'×18'. (v) 6 rows on either side, 6.5' along the length. (vi) Yes.

## 4. GENERAL :

(i) The germination was good. The crop was not healthy because of no rains up to mid. of August. (ii) Nil. (iii) Grain yield. (iv) (a) 1948-1952. (b) No. (c) N.A. (v) (a) Niphad. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 1389 lb/ac.

(ii) 346.4 lb./ac.

(iii) Only main 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>	N <sub>3</sub>	Mean
P <sub>0</sub>	1346	1470	1225	1374	1353
P <sub>1</sub>	1059	1350	1496	1571	1369
P <sub>2</sub>	1396	1529	1320	1879	1531
P <sub>3</sub>	934	1268	1442	1572	1304
Mean	1183	1404	1370	1599	1389

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

= 85.6 lb./ac.  
=173.2 lb./ac.



Crop :- Bajra (*Kharif*).

Ref :-Mh. 50(49).

Site :- Agri. Res. Stn., Kopergaon.

Type :-'M'.

Object :- To study the N and  $P_2O_5$  requirements of *Bajra*.

## 1. BASASL CONDITION :

(i) (a) N.A. (b) Gram. (c) Nil. (ii)(a) Medium black. (b) Refer soil analysis, Kopergaon. (iii) 19.7.1950.  
 (iv) (a) N.A. (b) Drilled by a country seed drill. (c) 7 lb./ac. (d) Between rows 12" and between plants irregular. (e) N.A. (v) 5 C.L./ac. of F.Y.M. (vi) Akola. (vii) Irrigated. (viii) Hoeing on 14.8.1950.  
 (ix) 21.27". (x) 13 to 16.10.1950.

## 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) 4 levels of  $P_2O_5$ :  $P_0=0$ ,  $P_1=20$ ,  $P_2=40$  and  $P_3=60$  lb./ac. $P_2O_5$  as Super drilled at sowing and N as A/S broadcast at sowing.

## 3. DESIGN :

(i) 4×4 Fact. in R.B.D. (ii) (a) 16. (b) N.A. (iii) 4. (iv) (a) 33'×30'. (b) 20'×18'. (v) 6 rows on either side, 6.5' along the length. (vi) Yes.

## 4. GENERAL :

(i) The germination of the crop was good. The average height of the crop was 6'. (ii) Nil. (iii) Grain yield. (iv) (a) 1948—1953. (b) Nil. (c) N.A. (v) (a) Niphad. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 1307 lb./ac.

(ii) 234.2 lb./ac.

(iii) Main effect of N is highly significant.

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

	$N_0$	$N_1$	$N_2$	$N_3$	Mean
$P_0$	127	1328	1415	1606	1369
$P_1$	955	1254	1428	1401	1260
$P_2$	1048	1122	1501	1423	1274
$P_3$	1131	1420	1194	1563	1327
Mean	1065	1281	1385	1498	1307

S.E. of marginal mean of N or P = 58.6 lb./ac.

S.E. of body of table = 117.1 lb./ac.

Crop :- Bajra (*Kharif*).

Ref :- Mh. 52(79).

Site :- Agri. Res. Stn., Kopergaon.

Type :-'M'.

Object :- To study the N and  $P_2O_5$  requirements of *Bajra*.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) *Jowar (Rabi)*. (c) 2 bags/ac. of G.N.C. (ii) (a) Medium black. (b) Refer soil analysis, Kopergaon. (iii) 16.7.1952. (iv) (a) N.A. (b) Drilled by country seed drill. (c) 7 lb./ac. (d) Between rows 12" and between plants irregular. (e) N.A. (v) 5 C.L./ac. of F.Y.M. (vi) Akola. (vii) Irrigated. (viii) Weeding, hoeing and thinning once. (ix) 11.73". (x) 4,5.10.1952.

## 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) 4 levels of  $P_2O_5$  :  $P_0=0$ ,  $P_1=20$ ,  $P_2=40$  and  $P_3=60$  lb /ac.

$P_2O_5$  as Super drilled at sowing and N as A/S broadcast at sowing.

## 3. DESIGN:

(i)  $4 \times 4$  Fact. in R.B.D. (ii) (a) 16. (b) N.A. (iii) 4. (iv) (a)  $33' \times 24'$ . (b)  $20' \times 18'$ . (v)  $6\frac{1}{2}'$  along the length and 3 rows on either side. (vi) Yes.

## 4. GENERAL :

(i) The germination was good. The stand of the crop was normal at the beginning. The growth was not satisfactory. (ii) Nil. (iii) Grain yield. (iv) (a) 1948-1952. (b) No. (c) N.A. (v) (a) Niphad. (b) N.A. (vi) Nil. (vii) Experiment failed in 1951.

## 5. RESULTS :

(i) 664 lb./ac.

(ii) 162.1 lb./ac.

(iii) Main effect of N alone is highly significant.

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

	$N_0$	$N_1$	$N_2$	$N_3$	Mean
$P_0$	461	684	721	845	678
$P_1$	493	660	734	833	680
$P_2$	446	581	745	774	637
$P_3$	494	648	754	748	661
Mean	474	643	739	800	664

S.E. of marginal mean of N or P = 40.0 lb./ac.

S.E. of body of table = 51.1 lb./ac.

Crop :- Bajra (*Kharif*).

Site :- Agri. Res. Stn., Nipahd.

Ref :- Mh. 49(39).

Type :- 'M'.

Object :—To study the effect of leguminous crop Gram raised with and without  $P_2O_5$  on succeeding cereal crop Bajra.

## 1. BASAL CONDITIONS :

(i) (a) Gram-Bajra. (b) Gram. (c) As per treatments. (ii) (a) Loamy. (b) Refer soil analysis, Niphad. (iii) 1.8.1949. (iv) (a) N.A. (b) Drilled with a 4 coultered drill. (c) 4 lb./ac. (d)  $10^\circ$ . (e) N.A. (v) 5 C.L./ac. of F.Y.M. (vi) N.A. (vii) Unirrigated. (viii) Interculturing once and weeding once. (ix) 24.19°. (x) 9.11.1949.

## 2. TREATMENTS :

- Control (no  $P_2O_5$ ).
- 50 lb./ac. of  $P_2O_5$  as Super to Gram in *Rabi*.
- 100 lb./ac. of  $P_2O_5$  as Super to Gram in *Rabi*.
- 150 lb./ac. of  $P_2O_5$  as Super to Gram in *Rabi*.
- Fallow in *Rabi*; manured with 5 C.L./ac. of F.Y.M. in *Kharif*.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 5. (iv) (a)  $40' \times 25'$ . (b)  $30' \times 15'$ . (v) 5' all round the net plot. (vi) Yes.

## 4. GENERAL :

(i) Not satisfactory. (ii) Nil. (iii) Grain and straw yield. (iv) (a) *Rabi* 1948 to *Kharif* 1954. (b) Yes. (c) N.A. (v) (a) No. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 256 lb./ac.  
 (ii) 187.3 lb./ac.  
 (iii) Treatments differ highly significantly.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	232
2.	277
3.	321
4.	339
5.	111
S.E./mean	=83.73 lb./ac.

Crop :- Bajra (*Kharif*).

Ref :- Mh. 50(54)/49(39).

Site :- Agri. Res. Stn., Nipbad.

Type :- 'M'.

Object : - To study the effect of leguminous crop Gram raised with and without  $P_2O_5$  on succeeding cerea crop *Bajra*.

## 1. BASAL CONDITIONS :

(i) (a) Gram-*Bajra*. (b) Gram. (c) As per treatments. (ii) (a) Loamy. (b) Refer soil analysis, Nipbad. (iii) 28.7.1950. (iv) (a) N.A. (b) Drilled with 4 coultured drill. (c) 4 lb./ac. (d) 10" between rows. (e) N.A. (v) 5 C.L./ac. of F.Y.M. (vi) N.A. (vii) Unirrigated. (viii) 1 weeding and 1 gap filling. (ix) 27.73". (x) 4.11.1950.

## 2. TREATMENTS :

- Control (no  $P_2O_5$ ).
- 50 lb./ac. of  $P_2O_5$  as Super to Gram in *Rabi*.
- 100 lb./ac. of  $P_2O_5$  as Super to Gram in *Rabi*.
- 150 lb./ac. of  $P_2O_5$  as Super to Gram in *Rabi*.
- Fallow in *Rabi* ; manured with 5 C.L./ac. of F.Y.M. in *Kharif*.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 5. (iv) (a) 40' x 25'. (b) 30' x 15'. (v) 5' all round the net plot. (vi) Yes.

## 4. GENERAL :

(i) Stunted growth for want of rains. (ii) Nil. (iii) Grain yield. (iv) (a) *Rabi* 1948 to *Kharif* 1954. (b) Yes. (c) N.A. (v) (a) No. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 277.8 lb./ac.  
 (ii) 100.1 lb./ac.  
 (iii) Treatments do not differ significantly.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	275
2.	293
3.	270
4.	258
5.	293
S.E./mean	=44.74 lb./ac.

Crop :- Bajra (*Kharif*).

Ref :- Mh. 51(56)/50(54)/49(39).

Site :- Agri. Res. Stn., Niphad.

Type :- 'M'.

Object :—To study the effect of leguminous crop gram grown with and without  $P_2O_5$  on the succeeding cereal crop.

## 1. BASAL CONDITIONS :

(i) (a) Gram—*Bajra*. (b) Gram. (c) As per treatments. (ii) (a) Loamy. (b) Refer soil analysis, Niphad. (iii) 18.7.1951. (iv) (a) N.A. (b) Drilling the seeds by 4 coultered drill. (c) 4 lb./ac. (d) 10' apart. (e) N.A. (v) 5 C.L./ac. of F.Y.M. (vi) N.A. (vii) Unirrigated. (viii) Gap filling on 23.7.1951. and interculturing on 25.8.1951. (ix) 27.46". (x) 20.10.1951.

## 2. TREATMENTS :

1. Control (no  $P_2O_5$ ).
2. 50 lb./ac. of  $P_2O_5$  as Super applied to Gram in *Rabi*.
3. 100 lb./ac. of  $P_2O_5$  as Super applied to Gram in *Rabi*.
4. 150 lb./ac. of  $P_2O_5$  as Super applied to Gram in *Rabi*.
5. Fallow in *Rabi* and sown in *Kharif*.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 5. (iv) (a) 40' x 25'. (b) 30' x 15'. (v) 5' all round the net plot. (vi) Yes.

## 4. GENERAL :

(i) Long break of rains affected the growth. (ii) Nil. (iii) Grain yield. (iv) (a) *Rabi* 1948 to *Kharif* 1954. (b) Yes. (c) N.A. (v) (a) No. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 280 lb./ac.  
 (ii) 51.10 lb./ac.  
 (iii) Treatments do not differ significantly.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	293
2.	268
3.	284
4.	281
5.	276
S.E./mean	=22.83 lb./ac.

Crop :- Bajra (*Kharif*).

Ref :- Mh. 52(86)/51(56)/50(54)/49(39).

Site :- Agri. Res. Stn., Niphad.

Type :- 'M'.

Object :—To study the effect of leguminous crop gram raised with and without  $P_2O_5$  on succeeding cereal crop *Bajra*.

## 1. BASAL CONDITIONS :

(i) (a) Gram—*Bajra*. (b) Gram. (c) As per treatments. (ii) (a) Loamy. (b) Refer soil analysis, Niphad. (iii) 22.7.1952. (iv) (a) N.A. (b) Sowing by drilling with 4 coultered drill. (c) 4 lb./ac. (d) 10' between rows. (e) N.A. (v) 5 C.L./ac. of F.Y.M. (vi) N.A. (vii) Unirrigated. (viii) Hoeing on 24.8.1952. (ix) 14.17". (x) 23.10.1952.

## 2. TREATMENTS :

1. Control (no  $P_2O_5$ ).
2. 50 lb./ac. of  $P_2O_5$  as Super to Gram crop in *Rabi*.
3. 100 lb./ac. of  $P_2O_5$  as Super to Gram crop in *Rabi*.
4. 150 lb./ac. of  $P_2O_5$  as Super to Gram crop in *Rabi*.
5. Fallow in *Rabi* and sown in *Kharif*.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 5. (iv) (a) 40'×25'. (b) 30'×15'. (v) 5' all round the net plot. (vi) Yes.

## 4. GENERAL :

(i) Growth very poor due to very low rains. (ii) Nil. (iii) Grain yield. (iv) (a) *Rabi* 1948 to *Kharif* 1954. (b) Yes. (c) N.A. (v) (a) No. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 274 lb./ac.  
 (ii) 91.37 lb./ac.  
 (iii) Treatments differ highly significantly.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	238
2.	283
3.	367
4.	257
5.	227
S.E./mean	=40.90 lb./ac.

Crop :- Bajra. (*Kharif*).

Ref :- Mh. 53(58)/52(86)/51(56)/50(54)/49(39).

Site :- Agri. Res. Stn., Niphad. Type :- 'M'.

Object :- To study the effect of leguminous crop gram grown with and without  $P_2O_5$  on the succeeding cereal crop *Bajra*.

## 1. BASAL CONDITIONS :

(i) (a) Gram—*Bajra*. (b) Gram. (c) As per treatments. (ii) (a) Loamy. (b) Refer soil analysis, Niphad. (iii) 10.7.1953. (iv) (a) N.A. (b) Drilling with 4 coultered drill (c) 5 lb./ac. (d) 10" between rows. (e) N.A. (v) 5 C.L./ac. of F.Y.M. (vi) 28—157. (vii) Unirrigated. (viii) 1 interculturing. (ix) 18.33". (x) 16.10.1953.

## 2. TREATMENTS :

- Control (no  $P_2O_5$ ).
- 50 lb./ac. of  $P_2O_5$  as Super to Gram in *Rabi*.
- 100 lb./ac. of  $P_2O_5$  as Super to Gram in *Rabi*.
- 150 lb./ac. of  $P_2O_5$  as Super to Gram in *Rabi*.
- Fallow in *Rabi* and sown in *Kharif*.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 5. (iv) (a) 40'×25'. (b) 30'×15'. (v) 5' all round the net plot. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Nil. (iii) Grain yield only. (iv) (a) *Rabi* 1948 to *Kharif* 1954. (b) Yes. (c) N.A. (v) (a) No. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 291 lb./ac.  
 (ii) 52.08 lb./ac.  
 (iii) Treatments do not differ significantly.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	231
2.	279
3.	316
4.	313
5.	315
S.E./mean	= 23.23 lb./ac.

Crop :- Bajra (*Kharif*).

Ref :- Mh. 48(24).

Site :- Agri. Res. Stn., Niphad.

Type :- 'M'.

Object :- To study the N and  $P_2O_5$  requirements of *Bajra* (without basal dose of F.Y.M.).

## 1. BASAL CONDITIONS :

(i) (a) No. (b) Wheat. (c) Nil. (ii) (a) Loamy. (b) Refer soil analysis, Niphad. (iii) 12 and 13.8.1948. (iv) (a) N.A. (b) Drilling by 4 coultered drill. (c) 4 lb./ac. (d) N.A. (e) N.A. (v) Nil. (vi) N.A. (vii) Unirrigated. (viii) Nil. (ix) 22.66". (x) 8.11.1948 and 9.11.1948.

## 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) 4 levels of  $P_2O_5$  :  $P_0=0$ ,  $P_1=20$ ,  $P_2=40$  and  $P_3=60$  lb./ac.N applied as G.N.C. and  $P_2O_5$  as Super.

## 3. DESIGN :

(i) 4x4 Fact. in R.B.D. (ii) (a) 16. (b) N.A. (iii) 4. (iv) (a) 40'x25'. (b) 30'x15'. (v) {5' around the net plot. (vi) Yes.

## 4. GENERAL :

(i) Not satisfactory. (ii) Nil. (iii) Grain yield. (iv) (a) 1948—1951. (b) No. (c) N.A. (v) (a) Kopergaon. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 391 lb./ac.

(ii) 78.4 lb./ac.

(iii) Main effect of N is highly significant, main effect of P is significant ; interaction NP is not significant.

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

	$N_0$	$N_1$	$N_2$	$N_3$	Mean
$P_0$	287	311	330	465	348
$P_1$	337	308	427	433	376
$P_2$	276	415	470	451	403
$P_3$	337	439	508	462	437
Mean	309	368	433	853	391

S.E. of marginal mean of N or P

=19.6 lb./ac.

S.E. of body of table

=39.2 lb./ac.

Crop :- Bajra (*Kharif*).

Ref :- Mh. 49(40).

Site :- Agri. Res. Stn., Niphad.

Type :- 'M'.

Object :- To study the N and  $P_2O_5$  requirements of *Bajra* (without basal dose of F.Y.M.).

## 1. BASAL CONDITIONS :

(i) (a) No. (b) Wheat. (c) Nil. (ii) (a) Loamy. (b) Refer soil analysis, Niphad. (iii) 29.7.1949. (iv) (a) N.A. (b) Drilled. (c) 4 lb./ac. (d) Between rows 10". (e) N.A. (v) Nil. (vi) N.A. (vii) Unirrigated. (viii) Interculturing on 4.9.1949 and weeding on 22 to 26.8.1949. (ix) 24.19". (x) 7,8.11.1949.

## 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) 4 levels of  $P_2O_5$  :  $P_0=0$ ,  $P_1=20$ ,  $P_2=40$  and  $P_3=60$  lb./ac.N applied as G.N.C. and  $P_2O_5$  as Super.

## 3. DESIGN:

(i) 4x4 Fact. in R.B.D. (ii) (a) 16. (b) N.A. (iii) 4. (iv) (a) 40'x25'. (b) 15'x30'. (v) 5' around the net plot. (vi) Yes.

## 4. GENERAL:

(i) Not satisfactory. (ii) Attack of blister beetle. (iii) Grain yield. (i') (a) 1948—1951. (b) No. (c) N.A. (v) (a) Kopergaon. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS:

(i) 336 lb./ac.  
 (ii) 72.48 lb./ac.  
 (iii) Main effect of N and P are highly significant and interaction NP 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
P <sub>0</sub>	36	259	316	310	243
P <sub>1</sub>	148	292	408	490	335
P <sub>2</sub>	138	371	460	603	393
P <sub>3</sub>	139	280	478	591	372
Mean	128	301	416	499	336

S.E. of marginal mean of N or P = 18.12 lb./ac.  
 S.E. of body of table = 36.24 lb./ac.

Crop :- Bajra (*Kharif*).

Ref. :- Mh. 50(55).

Site :- Agri. Res. Stn., Nipad.

Type :- 'M'.

Object :- To study the N and P<sub>2</sub>O<sub>5</sub> requirements of *Bajra* (without basal dose of F.Y.M.).

## 1. BASAL CONDITIONS:

(i) (a) No. (b) Wheat. (c) Nil. (ii) (a) Loamy. (b) Refer soil analysis, Nipad. (iii) 25 to 28.7.1950.  
 (iv) (a) N.A. (b) Drilled. (c) 4 lb./ac. (d) Between rows 10". (e) N.A. (v) Nil. (vi) N.A. (vii) Un-irrigated. (viii) 1 interculturing and 1 weeding. (ix) 27.7.50. (x) 30.11.1950.

## 2. TREATMENTS:

All combinations of (1) and (2)

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

(2) 4 levels of P<sub>2</sub>O<sub>5</sub>: P<sub>0</sub>=0, P<sub>1</sub>=20, P<sub>2</sub>=40 and P<sub>3</sub>=60 lb./ac.

N applied as G.N.C. and P<sub>2</sub>O<sub>5</sub> as Super.

## 3. DESIGN:

(i) 4x4 Fact. in R.B.D. (ii) (a) 16. (b) N.A. (iii) 4. (iv) (a) 40'x25'. (b) 30'x15'. (v) 5' around the net plot. (vi) Yes.

## 4. GENERAL:

(i) Normal. (ii) Nil. (iii) Grain yield. (iv) (a) 1948—1951. (b) No. (c) N.A. (v) (a) Kopergaon. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS:

(i) 520 lb./ac.  
 (ii) 103.5 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
P <sub>0</sub>	231	422	532	886	518
P <sub>1</sub>	154	479	649	861	536
P <sub>2</sub>	174	419	640	856	522
P <sub>3</sub>	138	349	637	888	503
Mean	174	417	614	873	520

S.E. of marginal mean of N or P =25.9 lb./ac.

S.E. of body of table =51.8 lb./ac.

Crop :- Bajra (*Kharif*).

Ref. :- Mh. 51(58).

Site :- Agri. Res. Stn., Niphad.

Type :- 'M'.

Object :- To study the N and P<sub>2</sub>O<sub>5</sub> requirements of *Bajra* (without basal dose of F.Y.M.).

## 1. BASAL CONDITIONS :

- (i) (a) No. (b) Wheat. (c) N.A. (ii) (a) Loamy. (b) Refer soil analysis, Niphad. (iii) 16, 17.7.1951.  
 (iv) (a) 4 ploughings. (b) Drilled. (c) 4 lb./ac. (d) Between rows—10°; between plants—irregular.  
 (e) N.A. (v) Nil. (vi) 28-15-1. (vii) Unirrigated. (viii) 1 Interculturing and 1 weeding. (ix) 27.46°.  
 (x) 5, 8.10.1951.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 4 levels of N : N<sub>0</sub>=0, N<sub>1</sub>=20, N<sub>2</sub>=40 and N<sub>3</sub>=60 lb./ac.(2) 4 levels of P<sub>2</sub>O<sub>5</sub> : P<sub>0</sub>=0, P<sub>1</sub>=20, P<sub>2</sub>=40 and P<sub>3</sub>=60 lb./ac.N applied as G.N.C. and P<sub>2</sub>O<sub>5</sub> as Super.

## 3. DESIGN :

- (i) 4×4 Fact. in R.B.D. (ii) (a) 16. (b) N.A. (iii) 4. (iv) (a) 40'×25'. (b) 30'×15'. (v) 5' around the net plot. (vi) Yes.

## 4. GENERAL :

- (i) Not satisfactory. (ii) Nil. (iii) Grain and straw yield. (iv) (a) 1948—1951. (b) No. (c) N.A. (v) (a) Kopergaon. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 313 lb./ac.

(ii) 73.02 lb./ac.

(iii) Main effect of N is highly significant, ; main effect of P is significant; interaction NP 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
P <sub>0</sub>	151	234	256	405	262
P <sub>1</sub>	184	260	361	375	295
P <sub>2</sub>	234	301	414	430	345
P <sub>3</sub>	246	318	448	381	348
Mean	204	278	370	398	313

S.E. of marginal mean of N or P

=18.30 lb./ac.

S.E. of body of table

=36.60 lb./ac.



Crop :- Bajra (*Kharif*).

Ref :- Mh. 48(25).

Site :- Agri. Res. Stn., Niphad.

Type :- 'M'.

Object :- To study the N and  $P_2O_5$  requirements of *Bajra* (with a basal dose of F.Y.M.).

## 1. BASAL CONDITIONS :

(i) (a) No. (b) Wheat. (c) Nil. (ii) (a) Loamy. (b) Refer soil analysis, Niphad. (iii) 10, 11.8.1948.  
 (iv) (a) N.A. (b) Drilling by 4 coultered drill. (c) 4 lb./ac. (d) Between rows 10". (e) N.A. (v) 5  
 C.L./ac. of F.Y.M. applied on 16.5.1948. (vi) N.A. (vii) Unirrigated. (viii) N.A. (ix) 22.66". (x)  
 4, 8.11.1948.

## 4. 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) 4 levels of  $P_2O_5$  :  $P_0=0$ ,  $P_1=20$ ,  $P_2=40$  and  $P_3=60$  lb./ac.N applied as G.N.C. and  $P_2O_5$  as Super.

## 3. DESIGN :

(i) 4×4 Fact. in R.B.D. (ii) (a) 16. (b) N.A. (iii) 4. (iv) (a) 40'×25'. (b) 30'×15'. (v) 5' around  
 the net plot. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) Nil. (iii) Grain yield. (iv) (a) 1948—1951. (b) No. (c) N.A. (v) (a) Kopergaon. (b)  
 N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 462 lb./ac.  
 (ii) 105.6 lb./ac.  
 (iii) Main effects of N and P are significant ; interaction NP is not significant.  
 (iv) Av. yield of grain in lb./ac.

	$N_0$	$N_1$	$N_2$	$N_3$	Mean
$P_0$	310	439	431	516	424
$P_1$	390	445	479	543	464
$P_2$	262	544	488	643	484
$P_3$	271	463	456	712	476
Mean	308	473	464	604	462

S.E. of marginal mean of N or P =26.4 lb./ac.

S.E. of body of table =52.8 lb./ac.

Crop :- Bajra (*Kharif*).

Ref :- Mh. 49(41).

Site :- Agri. Res. Stn., Niphad.

Type :- 'M'.

Object :- To study the N and  $P_2O_5$  requirements of *Bajra* (with a basal dose of F.Y.M.).

## 1. BASAL CONDITIONS :

(i) (a) No. (b) Wheat. (c) N.A. (ii) (a) Loamy. (b) Refer soil analysis, Niphad. (iii) 28, 29.7.1949  
 (iv) (a) N.A. (b) Drilling with 4 coultered drill. (c) 4 lb./ac. (d) Between rows 10". (e) N.A. (v)  
 5 C.L./ac. of F.Y.M. applied on 21.6.1949. (vi) N.A. (vii) Unirrigated. (viii) N.A. (ix) 24.19".  
 (x) 6, 7.11.1949.

**2. TREATMENTS :**

All combination 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) 4 levels of  $P_2O_5$  :  $P_0=0$ ,  $P_1=20$ ,  $P_2=40$  and  $P_3=60$  lb./ac.N applied as G.N.C. and  $P_2O_5$  as Super.**3. DESIGN :**(i)  $4 \times 4$  Fact. in R.B.D. (ii) (a) 16. (b) N.A. (iii) 4. (iv) (a)  $40' \times 25'$ . (b)  $30' \times 15'$ . (v) 5' around the net plot. (vi) Yes.**4. GENERAL :**

(i) Not satisfactory. (ii) Attack of blister beetle at the time of flowering. (iv) (a) 1948 to 1951. (b) No. (c) N.A. (v) (a) Kopergaon, (b) N.A. (vi) and (vii) Nil.

**5. RESULTS :**

(i) 417 lb./ac.

(ii) 113.3 lb./ac.

(iii) Main effects of N and P are significant ; interaction NP is not significant.

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

	$N_0$	$N_1$	$N_2$	$N_3$	Mean
$P_0$	236	303	395	534	367
$P_1$	253	284	439	552	382
$P_2$	209	328	532	729	450
$P_3$	245	401	558	682	472
Mean	236	329	481	624	417

S.E. of marginal mean of N or P

=28.3 lb./ac.

S.E. of body of table

=56.6 lb./ac.

Crop :- Bajra (*Kharif*).

Ref :- Mh. 50(56).

Site :- Agri. Res. Stn., Niphad.

Type :- 'M'.

Object :- To find out the N and  $P_2O_5$  requirements of *Bajra* (with a basal dose of F.Y.M.)**1. BASAL CONDITIONS :**(i) (a) No. (b) Wheat. (c) Nil. (ii) (a) Loamy. (b) Refer soil analysis, Niphad. (iii) 25 to 28.7.1950 (iv) (a) N.A. (b) Drilling the seed by four coultered drill. (c) 4 lb./ac. (d) between rows  $10''$ . (e) N.A. (v) 5 C.L./ac. of F.Y.M. (vi) N.A. (vii) Unirrigated. (viii) 1 interculturing and 1 weeding. (ix) 27.73". (x) 2, 3.11.1950.**2. TREATMENTS :**

All combination 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) 4 levels of  $P_2O_5$  :  $P_0=0$ ,  $P_1=20$ ,  $P_2=40$  and  $P_3=60$  lb./ac.N applied as G.N.C. and  $P_2O_5$  as Super.**3. DESIGN :**(i)  $4 \times 4$  Fact. in R.B.D. (ii) (a) 16. (b) N.A. (iii) 4. (iv) (a)  $40' \times 25'$ . (b)  $30' \times 15'$ . (v) 5' around the net plot. (vi) Yes.

## 4. GENERAL :

(i) Growth checked for want of rains. (ii) Nil. (iii) Grain yield. (iv) (a) 1948 to 1951. (b) No. (c) N.A. (v) (a) Kopergaon. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 572 lb./ac.  
 (ii) 125.4 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>	N <sub>3</sub>	Mean
P <sub>0</sub>	321	365	517	803	501
P <sub>1</sub>	272	492	652	912	582
P <sub>2</sub>	312	587	619	879	599
P <sub>3</sub>	346	546	590	945	607
Mean	313	497	594	885	572

S.E. of marginal mean of N or P = 31.34 lb./ac.

S.E. of the body of table = 62.68 lb./ac.

Crop :- Bajra (*Kharif*).  
 Site :- Agri. Res. Stn., Niphad.

Ref :- Mh. 51(59).  
 Type :- 'M'.

Object :- To study the N and P<sub>2</sub>O<sub>5</sub> requirements of *Bajra* (with a basal dose of F.Y.M.).

## 1. BASAL CONDITIONS :

(i) (a) No. (b) Linseed. (c) Nil. (ii) (a) Loamy. (b) Refer soil analysis, Niphad. (iii) 14, 15.7.1951. (iv) (a) N.A. (b) Drilled. (c) 4 lb./ac. (d) Between rows—10". (e) N.A. (v) 5 C.L./ac. of F.Y.M. (vi) N.A. (vii) Unirrigated. (viii) Interculturing on 24.8.1951 and weeding on 28.8.1951. (ix) 27.46". (x) 5, 8.10.1951.

## 2. TREATMENTS :

All combinations of (1) and (2)

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

(2) 4 levels of P<sub>2</sub>O<sub>5</sub> : P<sub>0</sub>=0, P<sub>1</sub>=20, P<sub>2</sub>=40 and P<sub>3</sub>=60 lb./ac.

N applied as G.N.C. and P<sub>2</sub>O<sub>5</sub> as Super.

## 3. DESIGN :

(i) 4×4 Fact. in R.B.D. (ii) (a) 16. (b) N.A. (iii) 4. (iv) (a) 40'×25'. (b) 30'×15'. (v) 5' around the net plot. (vi) Yes.

## 4. GENERAL :

(i) Satisfactory ; but treatments with higher dose of manure suffered for want of moisture. (ii) Nil. (iii) Grain and straw yield. (iv) (a) 1948—1951. (b) No. (c) N.A. (v) (a) Kopergaon. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 320 lb./ac.  
 (ii) 64.8 lb./ac.  
 (iii) Main effects of N and P are significant ; interaction NP 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
P <sub>0</sub>	183	236	236	364	255
P <sub>1</sub>	248	292	368	408	329
P <sub>2</sub>	204	358	381	413	339
P <sub>3</sub>	252	324	416	442	358
Mean	222	302	350	407	320

S.E. of marginal mean of N or P

=16.2 lb./ac.

S.E. of body of table

=32.4 lb./ac.

Crop :- Bajra (*Kharif*).

Ref :-Mh. 52(88).

Site :- Agri. Res. Stn., Niphad.

Type :- 'M'.

Object :-To study the N, P<sub>2</sub>O<sub>5</sub> and F.Y.M. requirements of *Bajra*.

## 1. BASAL CONDITIONS :

(i) (a) Gram—*Bajra*. (b) Gram. (c) Nil. (ii) (a) Loamy. (b) Refer soil analysis, Niphad. (iii) 30, 31.7.1952. (iv) (a) N.A. (b) Drilling with 4 coulters drill. (c) 4 lb./ac. (d) 10". (e) N.A. (v) Nil. (vi) N.A. (vii) Unirrigated. (viii) N.A. (ix) 14.17". (x) 16.10.1952.

## 2. TREATMENTS :

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

(1) 3 levels of N : N<sub>1</sub>=40, N<sub>2</sub>=60 and N<sub>3</sub>=80 lb./ac.(2) 2 levels of P<sub>2</sub>O<sub>5</sub> : P<sub>1</sub>=20 and P<sub>2</sub>=40 lb./ac.(3) 2 levels of F.Y.M. : F<sub>1</sub>=2.5 and F<sub>2</sub>=5 C.L./ac.N applied as A/S and G.N.C. in 1 : 1 ratio and P<sub>2</sub>O<sub>5</sub> as Super.

## 3. DESIGN :

(i) 3×2×2 Fact. in R.B.D. (ii) (a) 12. (b) N.A. (iii) 4. (iv) (a) 40'×25'. (b) 30'×15'. (v) 5' all round the net plot. (vi) Yes.

## 4. GENERAL :

(i) Normal. (ii) Nil. (iii) Grain yield. (iv) (a) 1952—1955. (b) No. (c) N.A. (v) (a) No. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 651 lb./ac.

(ii) 80.3 lb./ac.

(iii) Main effect of N alone is highly significant. Other effects are not significant.

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

	N <sub>1</sub>	N <sub>2</sub>	N <sub>3</sub>	Mean	F <sub>1</sub>	F <sub>2</sub>
P <sub>1</sub>	537	599	749	629	613	644
P <sub>2</sub>	595	699	725	673	656	690
Mean	566	649	737	651	635	667
F <sub>1</sub>	564	620	720	635		
F <sub>2</sub>	569	678	755	667		

S.E. of marginal mean of N

=20.0 lb./ac.

S.E. of marginal mean of P or F

=16.4 lb./ac.

S.E. of body of table N×P or N×F

=28.4 lb./ac.

S.E. of body of table P×F

=23.2 lb./ac.

Crop :- Bajra (*Kharif*).  
Site :- Agri. Res. Stn., Niphad..

Ref :- Mh. 53(57).  
Type :- 'M'.

Object :- To study the N, P<sub>2</sub>O<sub>5</sub> and F.Y.M. requirements of *Bajra*.

1. BASAL CONDITIONS :

(i) (a) Wheat—*Bajra*. (b) Wheat. (c) 5 C.L./ac. of F.Y.M. (ii) (a) Loamy. (b) Refer soil analysis, Niphad. (iii) 7.7.1953. (iv) (a) 3 harrowings. (b) N.A. (c) 4 lb./ac. (d) Between rows 10". (e) N.A. (v) Nil. (vi) N.A. (vii) Unirrigated. (viii) N.A. (ix) 18.33". (x) 16.10.1953.

2. TREATMENTS :

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

(1) 3 levels of N : N<sub>1</sub>=40, N<sub>2</sub>=60 and N<sub>3</sub>=80 lb./ac.

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

(3) 2 levels of F.Y.M. : F<sub>1</sub>=2.5 and F<sub>2</sub>=5 C.L./ac.

N applied as A/S and P<sub>2</sub>O<sub>5</sub> as Super.

3. DESIGN :

(i) 3×2×2 Fact. in R.B.D. (ii) (a) 12. (b) N.A. (iii) 4. (iv) (a) 40'×25'. (b) 30'×15'. (v) 5' all round the net plot. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Weight of the grain only. (iv) (a) 1952—1955. (b) No. (c) N.A. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 1215 lb./ac.

(ii) 175.2 lb./ac.

(iii) Main effects of N, P and F are significant. None of the interaction is significant.

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

	N <sub>1</sub>	N <sub>2</sub>	N <sub>3</sub>	Mean	F <sub>1</sub>	F <sub>2</sub>
P <sub>1</sub>	1004	1179	1296	1160	1103	127
P <sub>2</sub>	1206	1229	1374	1270	1209	1330
Mean	1105	1204	1335	1215	1156	1273
F <sub>1</sub>	1053	1162	1252			
F <sub>2</sub>	1156	1245	1418			

S.E. of marginal mean of N

=43.7 lb./ac.

S.E. of marginal mean of P or F

=35.7 lb./ac.

S.E. of body of table N×P or N×F

=61.9 lb./ac.

S.E. of body of table P×F

=50.6 lb./ac.

Crop :- Bajra (*Kharif*).  
Site :- Agri. Res. Stn., Poona.

Ref :- Mh. 53(75).  
Type :- 'M'.

Object :- To study the effect of different minor elements on the yield of *Bajra*.

1. BASAL CONDITIONS :

(i) (a) No. (b) Gram. (c) 5 C.L./ac. of F.Y.M. (ii) (a) Light yellow type of soil. (b) Refer soil analysis, Poona. (iii) 20.6.1953. (iv) (a) Ploughing by tractor, discing and harrowing. (b) to (e) N.A. (v) 5 C.L./ac. of F.Y.M. applied at the time of harrowing. (vi) Akola. (vii) Unirrigated. (viii) 2 interculturings. (ix) 13.64". (x) 3.10.1953.

**2. TREATMENTS :**

1. Control (no manure).
2. Borax at 20 lb./ac.
3. Copper Sulphate at 5 lb./ac.
4. Zinc Sulphate at 5 lb./ac.
5. Molybdenum Sulphate at  $\frac{1}{2}$  lb./ac.
6. Borax at 20 lb./ac + Copper Sulphate at 5 lb./ac.
7. Copper Sulphate at 5 lb./ac. + Zinc Sulphate at 5 lb./ac.
8. Zinc Sulphate at 5 lb./ac. + Molybdenum Sulphate at  $2\frac{1}{2}$  lb./ac.
9. Zinc Sulphate at  $2\frac{1}{2}$  lb./ac. + Borax at 20 lb./ac.

**3. DESIGN :**

- (i) R.B.D. (ii) (a) 9. (b) N.A. (iii) 4. (iv) (a) 40' x 20'. (b) 34' x 16'. (v) Two rows on either sides and 3' at either end of the plot. (vi) Yes.

**4. GENERAL :**

- (i) Good. (ii) No. (iii) Grain yield. (iv) (a) 1951—1953. (b) and (c) No. (v) (a) and (b) No. (vi) and (vii) Nil.

**5. RESULTS :**

- (i) 1285 lb./ac.  
(ii) 258.5 lb./ac.  
(iii) Treatments do not differ significantly.  
(iv) Av. yield of grain in lb./ac.

Treatment	Av. yield	Treatment	Av. yield
1	1340	6.	1307
2.	1389	7.	1114
3.	1280	8.	1399
4.	1148	9.	1360
5.	1230		
	S.E./mean		=129.3 lb./ac.

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

**Ref :- Mh. 51(69).**

**Site :- Agri. Res. Stn., Sholapur.**

**Type :- 'M'.**

**Object :-** To study the N and  $P_2O_5$  requirements of Bajra.

**1. BASAL CONDITIONS :**

- (i) (a) Jowar—Bajra—Groundnut. (b) Jowar. (c) Nil. (ii) (a) Light tending to medium black. (b) Refer soil analysis, Sholapur. (iii) 29.6.1951. (iv) (a) 2 harrowings. (b) N.A. (c) 13 lb./ac. (d) 12". (e) N.A. (v) Nil. (vi) Akola (medium). (vii) Unirrigated. (viii) 2 interculturings. (ix) 23.44". (x) 2.11.1951

**2. TREATMENTS ;**

All combinations of (1) and (2)

- (1) 4 levels of N :  $N_0=0$ ,  $N_1=10$ ,  $N_2=20$  and  $N_3=30$  lb./ac.  
(2) 4 levels of  $P_2O_5$  :  $P_0=0$ ,  $P_1=10$ ,  $P_2=20$  and  $P_3=30$  lb./ac.

**3. DESIGN :**

- (i) 4 x 4 Fact. in R.B.D. (ii) (a) 16. (b) N.A. (iii) 4. (iv) (a) 51.25' x 18'. (b) 43.25' x 12'. (v) 4' at either ends and 3 rows on either side. (vi) Yes.

**4. GENERAL :**

- (i) Normal. (ii) Nil. (iii) 3 heights, 2 counts and grain yield. (iv) (a) 1951—1955. (b) and (c) No. (v) (a) Chas and Jeur. (b) N.A. (vi) and (vii) Nil.

**5. RESULTS :**

- (i) 462 lb./ac.  
(ii) 123.5 lb./ac.  
(iii) Main effect of N alone 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
P <sub>0</sub>	309	354	469	453	396
P <sub>1</sub>	466	411	502	577	489
P <sub>2</sub>	365	423	537	507	458
P <sub>3</sub>	426	542	582	466	504
Mean	392	433	523	501	462

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

=30.9 lb./ac.  
=61.9 lb./ac.

Crop :- Bajra (*Kharif*).

Site :- Agri. Res. Stn., Sholapur.

Ref. :- Mh. 52(98).

Type :- 'M'.

Object :- To study the N and P<sub>2</sub>O<sub>5</sub> requirements of *Bajra*.

## 1. BASAL CONDITIONS :

(i) (a) Groundnut—*Bajra*. (b) Groundnut. (c) Nil. (ii) (a) Light tending to medium black. (b) Refer soil analysis, Sholapur. (iii) 22.6.1952. (iv) (a) 1 ploughing and 2 harrowings. (b) N.A. (c) 3 lb./ac. (d) 12". (e) N.A. (v) Nil. (vi) Akola (medium). (vii) Unirrigated. (viii) One interculturing. (ix) 17.49". (x) 23.10.1952.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 4 levels of N : N<sub>0</sub>=0, N<sub>1</sub>=10, N<sub>2</sub>=20 and N<sub>3</sub>=30 lb./ac.(2) 4 levels of P<sub>2</sub>O<sub>5</sub> : P<sub>0</sub>=0, P<sub>1</sub>=10, P<sub>2</sub>=20 and P<sub>3</sub>=30 lb./ac.

## 3. DESIGN :

(i) 4×4 Fact. in R.B.D. (ii) (a) 16. (b) N.A. (iii) 4. (iv) (a) 51.25'×18'. (b) 45.25'×12'. (v) 3' around the net plot. (vi) Yes.

## 4. GENERAL :

(i) Normal. (ii) Nil. (iii) 3 heights, count 2 counts and grain yield. (iv) (a) 1951—1955. (b) No. (c) N.A. (v) (a) Chas and Jeur. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 412 lb./ac.  
(ii) 110.0 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>	N <sub>3</sub>	Mean
P <sub>0</sub>	432	554	374	332	423
P <sub>1</sub>	520	411	289	391	403
P <sub>2</sub>	353	357	403	457	392
P <sub>3</sub>	420	411	470	419	430
Mean	431	433	384	400	412

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

=27.5 lb./ac.  
=55.0 lb./ac.

Crop :- Bajra (*Kharif*).  
Site :- Agri. Res. Stn., Sholapur.

Ref :- Mh. 53(150).  
Type :- 'M'.

Object :- To study the N and  $P_2O_5$  requirements of *Bajra*.

#### 1. BASAL CONDITIONS :

(i) (a) Groundnut-*Bajra*. (b) Groundnut. (c) Nil. (ii) (a) Light tending to medium. (b) Refer soil analysis, Sholapur (iii) 19.7.1953. (iv) (a) 2 harrowings. (b) N.A. (c) 3 lb./ac. (d) 12". (e) N.A. (v) Nil. (vi) Akola (medium). (vii) Unirrigated. (viii) one interculturing. (ix) 34.61". (x) 10.11.1953.

#### 2. TREATMENTS :

All combinations of (1) and (2)

- (1) 4 levels of N :  $N_0=0$ ,  $N_1=10$ ,  $N_2=20$  and  $N_3=30$  lb./ac.  
(2) 4 levels of  $P_2O_5$  :  $P_0=0$ ,  $P_1=10$ ,  $P_2=20$  and  $P_3=30$  lb./ac.

#### 3. DESIGN :

(i) 4x4 Fact. in R.B.D. (ii) (a) 16. (b) N.A. (iii) 4. (iv) (a) 51'x17'. (b) 48'x9'. (v) 4 rows on either side. 1½' at either end. (vi) Yes.

#### 4. GENERAL :

(i) Not satisfactory. (ii) Nil. (iii) 3 height, 2 counts and grain yield. (iv) (a) 1951 to 1955. (b) No. (c) N.A. (v) (a) Chas and Jeur. (b) N.A. (vi) The crop practically failed due to heavy rains during the flowering season. (vii) Nil.

#### 5. RESULTS :

- (i) 83 lb./ac.  
(ii) 840 lb./ac.  
(iii) All effects are significant.  
(iv) Av. yield of grain in lb./ac.

	$N_0$	$N_1$	$N_2$	$N_3$	Mean
$P_0$	16	25	57	117	54
$P_1$	38	57	117	66	69
$P_2$	60	66	139	155	105
$P_3$	82	73	104	152	103
Mean	49	55	104	123	83

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

=21.0 lb./ac.  
=42.0 lb./ac.

Crop :- Bajra (*Kharif*).  
Site :- Agri. Res. Stn., Sholapur.

Ref :- Mh. 52(371).  
Type :- 'M'.

Object :- To study the residual effect of rare elements of Boron and Manganese applied to previous Groundnut crop on *Bajra*.

#### 1. BASAL CONDITIONS :

(i) (a) Groundnut-*Bajra*. (b) Groundnut. (c) As per treatments. (ii) (a) Medium deep. (b) Refer soil analysis, Sholapur. (iii) 19.6.1952. (iv) (a) 2 harrowings. (b) Drilled. (c) 3 lb./ac. (d) 12" between rows. (e) N.A. (v) Nil. (vi) Akola. (vii) Unirrigated. (viii) 2 interculturings. (ix) 20.76". (x) 24.10.1952.



**2. TREATMENTS :**

All combinations of (1) and (2)

(1) 4 levels of Boron :  $B_0=0$ ,  $B_1=2$ ,  $B_2=4$  and  $B_3=6$  lb./ac.(2) 4 levels of Manganese :  $M_0=0$ ,  $M_1=3$ ,  $M_2=6$  and  $M_3=9$  lb./ac.Boron applied as Barox and Manganese as  $MnSO_4$  to previous crop.**3. DESIGN :**(i)  $4 \times 4$  Fact. in R.B.D. (ii) (a) 16. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 297 Sq. ft. (v) N.A. (vi) Yes.**4. GENERAL :**

(i) N.A. (ii) Nil. (iii) Grain yield. (iv) (a) 1952 to 1956. (b) Yes. (c) Nil. (v) (a) N.A. (b) N.A. (vi) and (vii) Nil.

**5. RESULTS :**

(i) 141 lb./ac.

(ii) 50.81 lb./ac.

(iii) Only main effect of B is highly significant.

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

	$B_0$	$B_1$	$B_2$	$B_3$	Mean
$M_0$	151	153	142	96	135
$M_1$	174	165	137	146	155
$M_2$	142	201	105	114	140
$M_3$	101	197	128	114	133
Mean	142	179	128	117	141

S.E. of marginal mean of B or M

= 12.70 lb./ac.

S.E. of body of table

= 25.40 lb./ac.

Crop :- Bajra (*Kharif*).

Ref :- Mh. 53(374).

Site :- Agri. Res. Stn., Sholapur.

Type :- 'M'.

Object :- To study the residual effect of Boron and Manganese applied on previous Groundnut crop, on Bajra.

**1. BASAL CONDITIONS :**(i) (a) Groundnut—*Bajra*. (b) Groundnut. (c) As per treatments. (ii) (a) Medium deep. (b) Refer soil analysis, Sholapur. (iii) 19.7.1953. (iv) (a) 2 harrowings. (b) Drilled. (c) N.A. (d) 12" between rows. (e) N.A. (v) Nil. (vi) Akola. (vii) Unirrigated. (viii) 2 interculturings. (ix) 35.86°. (x) 12.11.1953.**2. TREATMENTS :**

All combinations of (1) and (2)

(1) 4 levels of Boron :  $B_0=0$ ,  $B_1=2$ ,  $B_2=4$  and  $B_3=6$  lb./ac.(2) 4 levels of Manganese :  $M_0=0$ ,  $M_1=3$ ,  $M_2=6$  and  $M_3=9$  lb./ac.Boron applied as Borax and Manganese as  $MnSO_4$  to previous crop.**DESIGN :**(i)  $4 \times 4$  Fact. in R.B.D. (ii) (a) 16. (b) N.A. (iii) 6. (iv) (a) N.A. (b)  $33' \times 11'$ . (v) N.A. (vi) Yes.**4. GENERAL :**

(i) Crop practically failed due to excess of moisture in the soil. (ii) Nil. (iii) Grain yield. (iv) (a) 1952—1956. (b) Yes. (c) Nil. (v) (a) N.A. (b) N.A. (vi) Experiment almost vitiated. (vi) Nil.

## 5. RESULTS :

- (i) 21 lb./ac.  
 (ii) 2.88 lb./ac.  
 (iii) All effects are significant.  
 (iv) Av. yield of grain in lb./ac.

	B <sub>0</sub>	B <sub>1</sub>	B <sub>2</sub>	B <sub>3</sub>	Mean
M <sub>0</sub>	26	25	12	20	21
M <sub>1</sub>	19	20	25	17	20
M <sub>2</sub>	20	17	26	18	20
M <sub>3</sub>	24	32	18	15	22
Mean	22	23	20	18	21

S.E. of marginal mean of B or M = 0.59 lb./ac.

S.E. of body of table = 1.18 lb./ac.

Crop :- Bajra (*Kharif*).

Ref :- Mh. 50(157).

Site :- Agri. Res. Stn., Sholapur.

Type :- 'M'.

Object :- To study the effect of application of G.N.C. on *Bajra*.

## 1. BASAL CONDITIONS :

- (i) (a) No. (b) N.A. (c) N.A. (ii) (a) Medium deep. (b) Refer soil analysis, Sholapur. (iii) N.A. (iv) (a) 2 harrowings. (b) Drilled. (c) 3 lb./ac. (d) 12" between rows. (e) —. (v) Nil. (vi) Akola. (vii) Unirrigated. (viii) 2 interculturings. (ix) 24.04". (x) N.A.

## 2. TREATMENTS :

1. Control.
2. 12.5 lb./ac. of N as G.N.C.

## 3. DESIGN :

- (i) R.B.D. (ii) (a) 2. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 148.5' x 33'. (v) N.A. (vi) Yes.

## 4. GENERAL :

- (i) Normal. (ii) Nil. (iii) Grain yield. (iv) (a) No. (b) No. (c) Nil. (v) (a) N.A. (b) N.A. (vi) Nil. (vii) *Tur* is grown as an intercrop along with *bajra*; for *tur* crop the seed rate is 2 lb./ac. and is a local variety.

## 5. RESULTS :

Crop : *Bajra*.

- (i) 200 lb./ac.  
 (ii) 19.65 lb./ac.  
 (iii) Treatment differences are highly significant.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	180
2.	220
S.E./mean	= 9.82 lb./ac.

Crop : *Tur*.

- (i) 369 lb./ac.  
 (ii) 75.75 lb./ac.  
 (iii) Treatment differences are highly significant.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	274
2.	465
S.E./mean	= 37.87 lb./ac.

Crop :- Bajra (*Kharif*).  
Site :- Agri. Res. Stn., Niphad.

Ref :- Mh. 51(57).  
Type :- 'C'.

Object :- To find the suitable spacing and seed rate for *Bajra*.

1. BASAL CONDITIONS :

(i) (a) No. (b) Wheat. (c) N.A. (ii) (a) Loamy. (b) Refer soil analysis, Niphad. (iii) 18 to 23.7.1951. (iv) (a) 4 ploughings. (b) Drilled. (c) As per treatments. (d) As per treatments. (e) N.A. (v) 5 C.L./ac. of F.Y.M. (vi) N.A. (vii) Unirrigated. (viii) Nil. (ix) 27.46". (x) 25.10.1951.

2. TREATMENTS :

Main-plot treatments :

4 seed rates :  $R_1=4$ ,  $R_2=6$ ,  $R_3=8$  and  $R_4=10$  lb./ac.

Sub-plot treatments :

4 spacings :  $S_1=15''$ ,  $S_2=18''$ ,  $S_3=21''$  and  $S_4=24''$ .

3. DESIGN :

(i) Split-plot. (ii) (a) 4 main-plots/block ; 4 sub-plots/main-plot. (b) 268'×30'. (iii) 4. (iv) (a) 20'×30', 21'×30', 21'×30' and 22'×30' for 15'', 18'', 21'' and 24'' spacings respectively. (b) 15'×26', 15'×26', 14'×28' and 14'×28' for 15'', 18'', 21'' and 24'' spacing respectively. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Crop suffered due to long break in rains. (ii) Nil. (iii) Grain yield. (iv) (a) 1951 to 1954. (b) No. (c) N.A. (v) (a) No. (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 189 lb./ac.  
(ii) (a) 68.28 lb./ac.  
(b) 40.89 lb./ac.  
(iii) None of the effects is significant.  
(iv) Av. yield of grain in lb./ac.

	$R_1$	$R_2$	$R_3$	$R_4$	Mean
$S_1$	201	146	187	203	184
$S_2$	236	170	191	137	184
$S_3$	227	187	177	174	191
$S_4$	240	186	186	175	197
Mean	226	172	185	172	189

S.E. of difference of two

- |                                   |                |
|-----------------------------------|----------------|
| 1. R marginal means               | =24.14 lb./ac. |
| 2. S marginal means               | =14.44 lb./ac. |
| 3. S means at the same level of R | =28.91 lb./ac. |
| 4. R means at the same level of S | =34.75 lb./ac. |

Crop :- Bajra (*Kharif*).  
Site :- Agri. Res. Stn., Niphad.

Ref :- Mh. 52(87).  
Type :- 'C'.

Object :- To study the suitable seed rate and spacing for *Bajra*.

1. BASAL CONDITIONS :

(i) (a) No. (b) Wheat. (c) Nil. (ii) (a) Loamy. (b) Refer soil analysis, Niphad. (iii) 30.7.1952. (iv) (a) N.A. (b) Hand dibbling. (c) As per treatments. (d) As per treatments. (e) N.A. (v) 5 C.L./ac. of F.Y.M. (vi) 28-15-1 *Bajri*. (vii) Unirrigated. (viii) Hoeing on 23.8.1952 ; 15.9.1952. (ix) 14.17". (x) 25.10.1952.

## 2. TREATMENTS :

## Main-plot treatments :

4 seed rates :  $R_1=4$ ,  $R_2=6$ ,  $R_3=8$  and  $R_4=10$  lb./ac.

## Sub-plot treatments :

4 spacings :  $S_1=15''$ ,  $S_2=18''$ ,  $S_3=21''$  and  $S_4=24''$ .

## 3. DESIGN:

(i) Split-plot. (ii) (a) 4 main-plots/block ; 4 sub-plots/main-plot. (b)  $268' \times 30'$ . (iii) 4. (iv) (a)  $20' \times 30'$ ,  $21' \times 30'$ ,  $21' \times 30'$  and  $22' \times 30'$  for  $15''$ ,  $18''$ ,  $21''$  and  $24''$  spacings respectively. (b)  $15' \times 26'$ ,  $15' \times 26'$ ,  $14' \times 28'$ , and  $14' \times 28'$  for  $15''$ ,  $18''$ ,  $21''$  and  $24''$  spacings respectively. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) Stunted growth due to scarcity of rains. (ii) Nil. (iii) Grain and straw yield. (iv) (a) 1951 to 1954. (b) No. (c) N.A. (v) (a) No. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 250 lb./ac.

(ii) (a) 145.0 lb./ac.

(b) 49.04 lb./ac.

(iii) None of the effects is significant.

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

	$R_1$	$R_2$	$R_3$	$R_4$	Mean
$S_1$	244	272	223	270	252
$S_2$	173	309	194	285	240
$S_3$	227	269	220	234	238
$S_4$	224	285	283	290	271
Mean	217	284	230	270	250

## S.E. of difference of two

1. R marginal means

=51.2 lb./ac.

2. S marginal means

=17.3 lb./ac.

3. S means at the same level of R

=34.7 lb./ac.

4. R means at the same level of S

=59.4 lb./ac.

Crop :- Bajra (*Kharif*).

Ref :- Mh. 53(59).

Site :- Agri. Res. Stn., Niphad.

Type :- 'C'.

Object :- To study the suitable spacing and seed rate for *Bajra*.

## 1. BASAL CONDITIONS :

(i) (a) No. (b) Gram. (c) 5 C.L./ac. of F.Y.M. (ii) (a) Loamy. (b) Refer soil analysis, Niphad. (iii) 7.7.1953. (iv) (a) 3 harrowings. (b) N.A. (c) and (d) As per treatments. (e) N.A. (v) N.A. (vi) N.A. (vii) Unirrigated. (viii) Interculturing on 23 and 24.7.1953. (ix) 18.33". (x) 22.11.1953.

## 2. TREATMENTS :

## Main-plot treatments :

4 seed rates :  $R_1=4$ ,  $R_2=6$ ,  $R_3=8$  and  $R_4=10$  lb./ac.

## Sub-plot treatments :

4 spacings :  $S_1=15''$ ,  $S_2=18''$ ,  $S_3=21''$  and  $S_4=24''$  lb./ac.

## 3. DESIGN :

(i) Split-plot. (ii) (a) 4 main-plots/block ; 4 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a)  $20' \times 30'$ ,  $21' \times 30'$ ,  $21' \times 30'$  and  $22' \times 30'$  for  $15''$ ,  $18''$ ,  $21''$  and  $24''$  spacings respectively. (b)  $15' \times 26'$ ,  $15' \times 26'$ ,  $14' \times 28'$  and  $14' \times 28'$  for  $15''$ ,  $18''$ ,  $21''$  and  $24''$  spacings respectively. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) Normal. (ii) Nil. (iii) Grain yield. (iv) (a) 1951—1954. (b) No. (c) N.A. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 299 lb./ac.  
 (ii) (a) 116.2 lb./ac.  
 (b) 50.3 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
S <sub>1</sub>	409	269	244	281	301
S <sub>2</sub>	325	293	280	265	291
S <sub>3</sub>	375	288	264	243	292
S <sub>4</sub>	359	279	302	297	309
Mean	367	282	272	271	299

## S.E. of difference of two

1. R marginal means = 41.3 lb./ac.
2. S marginal means = 17.8 lb./ac.
3. S means at the same level of R = 35.6 lb./ac.
4. R means at the same level of S = 51.3 lb./ac.

Crop :- Bajra (*Khariif*).

Ref :- Mh. 51(179).

Site :- Agri. College Farm, Poona.

Type :- 'C'.

Object :—To study how far the legumes in rotation with cereals keep up the fertility of land and increase the yield of cereals.

## 1. BASAL CONDITIONS :

(i) (a) Bajra—Sesamum, *Tur*, Soyabean. (b) Sesamum, *Tur* and Soyabean. (c) Nil (ii) (a) Medium black. (b) Refer soi analysis, Poona. (iii) 24.7.1951. (iv) (a) N.A. (b) Drilled. (c) 8 lb./ac. (d) and (e) N.A. (v) Nil. (vi) N.A. (vii) Irrigated. (viii) Interculturing on 15.8.1951 and 28.8.1951. (ix) 26.62". (x) 13.10.1951.

## 2. TREATMENTS :

1. Bajra after Bajra.
2. Bajra after Soyabean.
3. Bajra after Sesamum.
4. Bajra - *Tur* after Bajra—*Tur*.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 9. (iv) (a) 132' × 9'. (b) 124' × 7'. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) Normal. (ii) Serious attack of birds on Bajra when the grains were in milky stage and affected the yield to a great extent. (iii) Grain yield. (iv) (a) 1945—N.A. (b) Yes. (c) N.A. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 649 lb./ac.  
 (ii) 277.2 lb./ac.  
 (iii) Treatments do not differ significantly.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	610
2.	706
3.	672
4.	610
S.E./mean	= 92.4 lb./ac.

Crop :- Bajra (*Khari*).

Ref :- Mh. 52(209)/51(179).

Site :- Agri. College Farm, Poona.

Type :- 'C'.

Object :- To study how far the legumes in rotation with cereals keep up the fertility of land and increase the yield of cereals in rotation.

## 1. BASAL CONDITIONS :

- (i) (a) Bajra—Sesamum, Tur and Soyabean. (b) Sesamum, Soyabean and Tur. (c) Nil. (ii) (a) Medium black. (b) Refer soil analysis, Poona. (iii) 4-5.7.1952. (iv) (a) N.A. (b) Drilled. (c) 8 lb./ac. (d) Between rows—12", between plants—irregular. (v) Nil. (vi) N.A. (vii) Irrigated. (viii) Interculturing on 6.8.1952. (ix) 22.03". (x) 5.10.1952.

## 2. TREATMENTS :

1. Bajra after Bajra.
2. Bajra after Soyabean.
3. Bajra after Sesamum.
4. Bajra—Tur after Bajra—Tur.

## 3. DESIGN :

- (i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 9. (iv) (a) 132'×9'. (b) 124'×7'. (v) N.A. (vi) Yes.

## 4. GENERAL :

- (i) N.A. (ii) Nil. (iii) Grain yield. (iv) (a) 1945—N.A. (b) Yes. (c) N.A. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 443 lb./ac.  
 (ii) 181.1 lb./ac.  
 (iii) Treatments do not differ significantly.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	537
2.	414
3.	381
4.	448
S.E./mean	=60.4 lb./ac.

Crop :- Bajra (*Kharif*).  
Site :- Agri. College Farm, Poona.

Ref :- Mh. 53(324).  
Type :- 'C'.

Object :- To study how far the legumes in rotation as well as mixture in the cereal crops help to keep up the fertility of land and increase the yield of cereal in rotation.

1. BASAL CONDITIONS :

(i) (a) As per treatments. (b) As per rotation. (c) Nil. (ii) (a) Medium black. (b) Refer soil analysis, Poona. (iii) 27, 28.6.1953. (iv) (a) 2 discings and 1 harrowing. (b) to (e) N.A. (v) Nil. (vi) N.A. (vii) Unirrigated. (viii) 2 interculturings and 1 weeding. (ix) 10 85°. (x) Bajra 22.9.1953, Soyabean 10.11.1953, Sesamum 21.10.1953, Groundnut 3.10.1953 and *Vur* 3.2.1954.

2. TREATMENTS :

1. Bajra after Bajra. 2 plots/block.
2. Bajra after Soyabean.
3. Bajra after Sesamum.
4. Bajra and *Tur* mixed.
5. Bajra after Groundnut.

3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 6. (iv) (a) 132'×9'. (b) 124'×7'. (v) One row on either side along the length, 4' along breadth. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Attack of mildew on Bajra and Tika disease of Groundnut. (iii) Grain yield. (iv) (a) 1930—N.A. (b) As per rotation. (c) Nil. (v) (a) N.A. (b) Nil. (vi) and (vii) Nil.

5. RESULTS :

(i) 266.0 lb./ac.  
(ii) 122.4 lb./ac.  
(iii) Treatment differences are not significant.  
(iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	214.3
2.	364.6
3.	242.5
4.	301.1
5.	259.3
S.E./mean for tr. 2,3 and 5	=61.2 lb./ac.
S.E./mean for tr. 1	=43.3 lb./ac.

Crop :- Bajra (*Kharif*).  
Site :- Agri. Res. Stn., Sholapur.

Ref :- Mh. 48(101)  
Type :- 'C'.

Object :- To find out optimum spacing cum sowing date for Bajra.

1. BASAL CONDITIONS :

(i) (a) No. (b) N.A. (c) N.A. (ii) (a) Medium deep. (b) Refer soil analysis, Sholapur. (iii) As per treatments. (iv) (a) 2 harrowings. (b) Drilled. (c) 3 lb./ac. (d) As per treatments. (e) N.A. (v) Nil. (vi) Akola. (vii) Unirrigated. (viii) One interculturing and one hoeing. (ix) 39.18°. (x) N.A.

2. TREATMENTS :

All combinations of (1) and (2)

- (1) 7 sowing dates :  $D_1=14$  to 18.6.1948,  $D_2=19$  to 22.6.1948,  $D_3=23$  to 26.6.1948,  $D_4=27.6.1948$  to 1.7.1948,  $D_5=2$  to 6.7.1948,  $D_6=7$  to 11.7.1948 and  $D_7=12$  to 16.7.1948.
- (2) 2 spacings between rows :  $S_1=12''$  and  $S_2=15''$ .

## 3. DESIGN :

(i) 7×2 Fact. in R.B.D. (ii) (a) 14. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 36'×20'. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) Nil. (iii) Grain and fodder yield. (iv) (a) 1948—N.A. (b) No. (c) Nil. (v) (a) N.A. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 148 lb./ac.  
 (ii) 59.29 lb./ac.  
 (iii) Main effect of D 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>	D <sub>5</sub>	D <sub>6</sub>	D <sub>7</sub>	Mean
S <sub>1</sub>	205	136	150	112	168	136	72	140
S <sub>2</sub>	191	97	194	84	189	180	156	156
Mean	198	116	172	98	178	158	114	148

S.E. of marginal mean of D =20.97 lb./ac.

S.E. of marginal mean of S =11.28 lb./ac.

S.E. of body of table =29.64 lb./ac.

Crop :- Nagli (*Kharif*).

Ref :- Mh. 48(3).

Site :- Agri. Res. Strn., Hatkhamba.

Type :- 'M'.

Object :-To study the N and P requirements of Nagli.

## 1. BASAL CONDITIONS :

(i) (a) Nagli after Nagli. (b) Nagli. (c) N.A. (ii) (a) Warkas low lying land. (b) N.A. (iii) 8.6.1948/16 to 19.8.1948. (iv) (a) and (b) N.A. (c) 8 lb./ac. (d) 6'×6". (e) 1. (v) 5 C.L./ac. of F.Y.M. (vi) E. 31 (mid-late). (vii) Unirrigated. (viii) Interculturing in 2nd week of September 1948. (ix) 161.63". (x) 1 to 4.11.1948.

## 2. TREATMENTS :

All combinations of (1) and (2)

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

(2) 4 levels of P<sub>2</sub>O<sub>5</sub> as B.M. : P<sub>0</sub>=0, P<sub>1</sub>=20, P<sub>2</sub>=40 and P<sub>3</sub>=60 lb./ac.

## 3. DESIGN :

(i) 4×4 Fact. in R.B.D. (ii) (a) 16. (b) N.A. (iii) 4. (iv) (a) 17'×13'. (b) 12'×8'. (v) 2.5' around. (vi) Yes.

## 4. GENERAL :

(i) Fairly good. (ii) Nil. (iii) Grain and straw yield. (iv) (a) 1948 to 1956. From 1952 residual effects studied. (b) Yes. (c) N.A. (v) (a) and (b) Nil. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 1144 lb./ac.  
 (ii) 308.0 lb./ac.  
 (iii) Main effect of P 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
P <sub>0</sub>	709	815	794	1191	877
P <sub>1</sub>	957	1099	1361	1042	1115
P <sub>2</sub>	1170	1517	1035	1078	1200
P <sub>3</sub>	1219	1141	1581	1588	1382
Mean	1014	1143	1193	1225	1144

S.E. of marginal mean of P or N

= 77.0 lb./ac.

S.E. of body of table

=154.0 lb./ac.

Crop :- Nagli (*Kharif*).  
Site :- Agri. Res. Stn., Hatkhamba.

Ref :- Mh. 49(4)/48(3).  
Type :- 'M'.

Object :- To study the N and P requirements of Nagli.

## 1. BASAL CONDITIONS :

(i) (a) Nagli after Nagli. (b) Nagli. (c) As per treatments. (ii) (a) Warkas low lying land. Laterite soil. (b) N.A. (iii) 30.5.1949/26 to 28.6.1949. (iv) (a) 6 ploughings. (b) N.A. (c) 8 lb./ac. (d) 6" x 6". (e) 1. (v) N.A. (vi) E-31 (mid-late). (vii) Unirrigated. (viii) 1 interculturing. (ix) 151.96%. (x) November 1949.

## 2. TREATMENTS:

All combinations of (1) and (2)

(1) 4 levels of N as G.N.C. : N<sub>0</sub>=0, N<sub>1</sub>=20, N<sub>2</sub>=40 and N<sub>3</sub>=60 lb./ac.(2) 4 levels of P<sub>2</sub>O<sub>5</sub> as B.M. : P<sub>0</sub>=0, P<sub>1</sub>=20, P<sub>2</sub>=40 and P<sub>3</sub>=60 lb./ac.

## 3. DESIGN :

(i) 4x4 Fact. in R.B.D. (ii) (a) 16. (b) N.A. (iii) 4. (iv) (a) 18' x 14'. (b) 12' x 8'. (v) 3' around. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Nil. (iii) Grain yield. (iv) (a) 1948 to 1956. (b) Yes. (c) N.A. (v) (a) Igatpuri. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 896 lb./ac.

(ii) 210.1 lb./ac.

(iii) Main effects of N and P are significant. Interaction NP 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
P <sub>0</sub>	521	695	865	815	724
P <sub>1</sub>	698	865	1149	1035	937
P <sub>2</sub>	773	1056	957	1042	957
P <sub>3</sub>	759	872	1173	1063	967
Mean	688	872	1036	989	896

S.E. of any marginal mean

= 52.5 lb./ac.

S.E. of body of table

=105.1 lb./ac.

Crop :- Nagli (Kharif).  
Site :- Agri. Res. Stn., Hatkhamba.

Ref :- Mh. 50(5)/49(4)/48(3).  
Type :- 'M'.

Object :- To study the effect of N and P on Nagli.

1. BASAL CONDITIONS :

(i) (a) Nagli after Nagli. (b) Nagli. (c) As per treatments. (ii) (a) Laterite soil. (b) N.A. (iii) 3.6.1950/21 to 29.7.1950. (iv) (a) N.A. (b) Transplanting. (c) —. (d) 6"×6". (e) 1. (v) Nil. (vi) E-31(mid-late). (vii) Unirrigated. (viii) 1 interculturing. (ix) 141.80°. (x) 2 to 4.11.1950.

2. TREATMENTS :

All combinations of (1) and (2)

(1) 4 levels of N as G.N.C. :  $N_0=0$ ,  $N_1=20$ ,  $N_2=40$  and  $N_3=60$  lb./ac.

(2) 4 levels of  $P_2O_5$  as B.M. :  $P_0=0$ ,  $P_1=20$ ,  $P_2=40$  and  $P_3=60$  lb./ac.

3. DESIGN :

(i) 4×4 Fact. in R.B.D. (ii) (a) 16. (b) N.A. (iii) 4. (iv) (a) 18'×14'. (b) 12'×8'. (v) 3' around. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Grain yield. (iv) (a) 1948 to 1956. (b) Yes. (c) N.A. (v) (a) Igatpuri. (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 1203 lb./ac.

(ii) 263.8 lb./ac.

(iii) The main effects of N and P are significant while interaction NP is not significant.

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

	$N_0$	$N_1$	$N_2$	$N_3$	Mean
$P_0$	581	694	1106	1198	895
$P_1$	865	1028	1503	1574	1243
$P_2$	915	1461	1468	1574	1355
$P_3$	780	1163	1744	1581	1317
Mean	785	1087	1455	1482	1203

S.E. of any marginal mean = 66.0 lb./ac.

S.E. of body of table = 131.9 lb./ac.

Crop :- Nagli.  
Site :- Agri. Res. Stn., Hatkhamba.

Ref :- Mh. 51(5)/50(5)/49(4)/48(3).  
Type :- 'M'.

Object :- To study the effect of N and P on Nagli.

1. BASAL CONDITIONS :

(i) (a) Nagli after Nagli. (b) Nagli. (c) As per treatments. (ii) (a) Warkas low-lying land. (b) N.A. (iii) 5.6.1951./27, 29.7.1951. (iv) (a) N.A. (b) Transplanting. (c) —. (d) 6"×6". (e) 1. (v) Nil. (vi) E. 31. (mid-late) (vii) Unirrigated. (viii) Weeding. (ix) 130.30°. (x) 2.11.1951.

2. TREATMENTS :

All combinations of (1) and (2)

(1) 4 levels of N as G.N.C. :  $N_0=0$ ,  $N_1=20$ ,  $N_2=40$  and  $N_3=60$  lb./ac.

(2) 4 levels of  $P_2O_5$  as B.M. :  $P_0=0$ ,  $P_1=20$ ,  $P_2=40$  and  $P_3=60$  lb./ac.

## 3. DESIGN :

(i) 4×4 Fact. in R.B.D. (ii) (a) 16. (b) N.A. (iii) 4. (iv) (a) 18'×14'. (b) 12'×8'. (v) 3' around. (vi) Yes.

## 4. GENERAL :

(i) Fairly good. (ii) Nil. (iii) Grain yield. (iv) (a) 1948 to 1956. (b) Yes. (c) N.A. (v) (a) Igatpuri. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 1036 lb./ac.  
 (ii) 284.0 lb./ac.  
 (iii) Main effects of N and P are significant, interaction NP 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
P <sub>0</sub>	485	734	929	1127	819
P <sub>1</sub>	638	932	1429	1297	1074
P <sub>2</sub>	903	1039	1255	1450	1162
P <sub>3</sub>	581	961	1407	1411	1090
Mean	652	917	1255	1321	1036

S.E. of any marginal mean = 71.0 lb./ac.  
 S.E. of body of table = 142.0 lb./ac.

Crop :- Nagli.

Ref :- Mh. 52(20)/51(5)/50(5)/49(4)/48(3).

Site :- Agri. Res. Stn., Hatkhamba.

Type :- 'M'.

Object :- To observe the residual effect of N and P applied during 1948 to 1951.

## 1. BASAL CONDITIONS :

(i) (a) Nagli after Nagli. (b) Nagli. (c) As per treatments. (ii) (a) Warkas low lying land. (b) N.A. (iii) 4.6.1952/25, 26.7.1952. (iv) (a) N.A. (b) Transplanting. (c) —. (d) 6'×6'. (e) N.A. (v) Nil. (vi) E. 31. (mid-late). (vii) Unirrigated. (viii) 1 hand weeding. (ix) 109.73°. (x) 1.11.1952.

## 2. TREATMENTS :

All combinations of (1) and (2)

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

(2) 4 levels of P<sub>2</sub>O<sub>5</sub> as B.M. : P<sub>0</sub>=0, P<sub>1</sub>=20, P<sub>2</sub>=40 and P<sub>3</sub>=60 lb./ac.

Treatments applied during the years 1948 to 1951.

## 3. DESIGN :

(i) 4×4 Fact. in R.B.D. (ii) (a) 16. (b) N.A. (iii) 4. (iv) (a) 18'×14'. (b) 12'×8'. (v) 3' around. (vi) Yes.

## 4. GENERAL :

(i) Fairly good. Heavy rains at the time of flowering. (ii) Nil. (iii) Grain yield. (iv) (a) 1948 to 1956 (b) Yes. (c) N.A. (v) (a) Igatpuri. (b) N.A. (vi) Nil. (vii) Residual effect from 1952 onwards studied.

## 5. RESULTS :

- (i) 539 lb./ac.  
 (ii) 151.2 lb./ac.  
 (iii) Main effect of N and interaction NP are 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
P <sub>0</sub>	298	447	482	603	458
P <sub>1</sub>	411	518	752	617	575
P <sub>2</sub>	666	574	539	475	564
P <sub>3</sub>	454	546	759	468	557
Mean	457	521	633	541	539

S.E. of any marginal mean = 37.8 lb./ac.  
 S.E. of body of table = 75.6 lb./ac.

Crop :- Nagli.

Ref :- Mh. 53(108)/52(20)/51(5)/50(5)/49(4)/48(3).

Site :- Agri. Res. Stn., Hatkhamba.

Type :- 'M'.

Object :- To observe the residual effect of N, applied on Nagli during 1948—1951.

## 1. BASAL CONDITIONS :

(i) (a) Nagli after Nagli. (b) Nagli. (c) Nil. (ii) (a) Warkas low lying land. (b) N.A. (iii) 15.6.1953/25, 26.7.1953. (iv) (a), (b) N.A. (c) 8 lb./ac. (d) 6"×6". (e) 1. (v) N.A. (vi) E. 31. (mid-late). (vii) Unirrigated. (viii) 1 weeding. (ix) 165.47". (x) 10.11.1953.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 4 levels of N as G.N.C. : N<sub>0</sub>=0, N<sub>1</sub>=20, N<sub>2</sub>=40 and N<sub>3</sub>=60 lb./ac.(2) 4 levels of P<sub>2</sub>O<sub>5</sub> as B.M. : P<sub>0</sub>=0, P<sub>1</sub>=20, P<sub>2</sub>=40 and P<sub>3</sub>=60 lb./ac.

Treatments applied during the years 1948 to 1951.

## 3. DESIGN :

(i) 4×4 Fact. in R.B.D. (ii) (a) 16. (b) N.A. (iii) 4. (iv) (a) 18'×14'. (b) 12'×8'. (v) 3' around. (vi) Yes.

## 4. GENERAL :

(i) General stand poor due to continuous washing of the soil. *Hespt* at flowering was 1' 4". (ii) Nil. (iii) Grain and straw yield. (iv) (a) 1948 to 1956. (b) Yes. (c) N.A. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 696 lb./ac.

(ii) 384.8 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
P <sub>0</sub>	575	645	667	745	658
P <sub>1</sub>	609	688	816	772	721
P <sub>2</sub>	682	667	732	724	701
P <sub>3</sub>	682	638	894	609	706
Mean	637	659	777	712	696

S.E. of any marginal mean = 96.2 lb./ac.  
 S.E. of body of table = 192.4 lb./ac.

Crop :- Nagli.

Ref :- Mh. 53(107).

Site :- Agri. Res. Stn., Hatkhamba.

Type :- 'M'.

Object :- To find out the optimum dose of N and P in combination with F.Y.M. for Nagli crop.

## 1. BASAL CONDITIONS :

- (i) (a) Nagli after Nagli. (b) *Wari* for replication I. and fallow for remaining 3 replications. (c) Nil. (ii) (a) Warkas low lying land, poor in fertility. (b) N.A. (iii) 4.8.1953. (iv) (a) and (b) N.A. (c) 8 lb./ac. (d) 6' x 6'. (e) 1. (v) Nil. (vi) E. 31 (mid-late). (vii) Unirrigated. (viii) 1 weeding. (ix) 165.47%. (x) 10.11.1953.

## 2. TREATMENTS :

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

(1) 4 levels of N :  $N_1=40$ ,  $N_2=60$ ,  $N_3=80$  and  $N_4=100$  lb./ac.(2) 2 levels of  $P_2O_5$  :  $P_1=20$  and  $P_2=40$ .(3) 2 levels of F.Y.M. :  $F_0=0$  and  $F_1=3$  C.L./ac. $P_2O_5$  as B.M. while N applied as a mixture of A/S and G.N.C. in 1 : 1 ratio.

## 3. DESIGN :

- (i) 4 x 2 x 2 Fact. in R.B.D. (ii) (a) 16. (b) 48' x 40'. (iii) 4. (iv) (a) 12' x 10'. (b) 10' x 8'. (v) 1' around. (vi) Yes.

## 4. GENERAL :

- (i) Good. (ii) Nil. (iii) Grain and straw yield. (iv) (a) 1953 to 1955. (b) and (c) No. (v) (a) Igatpuri. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 1055 lb./ac.  
(ii) 165.0 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	$F_0$	$F_1$
$P_1$	1112	984	979	1070	1036	960	1111
$P_2$	1009	1044	1197	1048	1074	1104	1043
Mean	1060	1014	1088	1059	1055		
$F_0$	1048	984	1119	980	1032		
$F_1$	1073	1044	1057	1137	1077		

S E. of marginal mean of F or P = 29.2 lb./ac.  
S.E. of marginal mean of N = 41.2 lb./ac.  
S.E. of body of table N x P or N x F = 58.3 lb./ac.  
S.E. of body of table P x F = 41.2 lb./ac.

Crop :- Nagli (*Khari*).

Ref :- Mh. 52(64).

Site :- Agri. Res. Stn., Igatpuri.

Type :- 'M'.

Object :- To find out the manurial requirements of Nagli (combined with the basic dose of F.Y.M.).

## BASAL CONDITIONS :

- (i) (a) Nil. (b) Nagli. (c) N.A. (ii) (a) Verkar soil Shallow, reddish in colour. (b) N.A. (iii) 8.6.1952/18, 19.7.1952 and 6.7.8.1952. (iv) (a) N.A. (b) Transplanting. (c) —. (d) N.A. (e) N.A. (v) Nil. (vi) Igatpuri 47 (A. 16) Local. (vii) Unirrigated. (viii) Interculturing on 19.9.1952. (ix) 127.91%. (x) 8 and 16.11.1952.

**2. TREATMENTS:**

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

- (1) 4 levels of N as A/S :  $N_1=40$ ,  $N_2=60$ ,  $N_3=80$  and  $N_4=100$  lb./ac.  
 (2) 2 levels of  $P_2O_5$  as Super :  $P_1=20$  and  $P_2=40$  lb./ac.  
 (3) 2 levels of F.Y.M. :  $F_0=0$  and  $F_1=3$  C.L./ac.

**3. DESIGN :**

- (i)  $4 \times 2 \times 2$  Fact. in R.B.D. (ii) (a) 16. (b) N.A. (iii) 4. (iv) (a)  $11' \times 11'$ . (b)  $9' \times 9'$ . (v) 1' around. (vi) Yes.

**4. GENERAL:**

- (i) N.A. (ii) Nil. (iii) Grain yield. (iv) (a) 1952 to 1954. (b) Yes. (c) N.A. (v) (a) Hatkhamba. (b) N.A. (vi) Nil. (vii) Variety used is high yielding. Expt. failed in 1953.

**5. RESULTS :**

- (i) 1120 lb./ac.  
 (ii) 279.2 lb./ac.  
 (iii) Main effects of N and P are significant, other effects are not significant.  
 (iv) Av. yield of grain in lb./ac.

	$N_1$	$N_2$	$N_3$	$N_4$	Mean	$F_0$	$F_1$
$P_0$	945	997	1106	1071	1030	1068	991
$P_1$	954	1150	1220	1514	1209	1208	1211
Mean	949	1074	1163	1292	1120		
$F_0$	924	1104	1241	1285	1138		
$F_1$	974	1044	1086	1300	1101		

S.E. of marginal mean of N = 69.8 lb./ac.  
 S.E. of marginal mean of F or P = 49.3 lb./ac.  
 S.E. of body of table  $N \times P$  or  $N \times F$  = 98.3 lb./ac.  
 S.E. of body of table  $F \times P$  = 69.8 lb./ac.

Crop :- Nagli (*Kharif*).

Site :- Agri. Res. Stn., Hatkhamba.

Ref :- Mh. 48(90).

Type :- 'C'.

Object :- To eliminate the fallow period in cultivation of Nagli.

**1. BASAL CONDITIONS :**

- (i) (a) to (c) As per treatments. (ii) (a) Warkas low - lying land. (b) N.A. (iii) 8.6.1948/29.7.48 to 1.8.48. (iv) (a) N.A. (b) Transplanting. (c) —. (d)  $6' \times 6'$ . (e) N.A. (v) Nil. (vi) A-16 (late). (vii) Un-irrigated. (viii) 1 weeding. (ix) 161.63". (x) 9 to 11.11.1948.

**2. TREATMENTS :**

Details of the 5 rotations (12 plots maintained each year) :—

- Nagli manured with F.Y.M. at 3000 lb./ac. followed by *Wari* in the 2nd year and *Kodra* in the 3rd year and fallow for next three years. (Nf-*Wari*-*Kodra*-Fallow-Fallow-Fallow).
- Every year Nagli manured with F.Y.M. 3000 lb./ac. (Nf every year).
- Every year Nagli manured with 15 lb./ac. of N as G.N.C. (Ng every year).
- Nagli every year with F.Y.M. 3000 lb./ac. in alternate years (Nf-N).
- Nagli every year with G.N.C. applied at 15 lb./ac. of N in alternate years (Ng-N).

**3. DESIGN:**

- (i) R.B.D. (ii) (a) 12. (b) N.A. (iii) 6. (iv) (a)  $18' \times 14'$ . (b)  $12' \times 8'$ . (v) 3' around. (vi) Yes.

## 4. GENERAL :

(i) Normal. (ii) Nil. (iii) Grain yield. (iv) (a) 1948 to 1960. (b) Yes. (as per rotations). (c) Nil. (v) (a) Igatpuri. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 502 lb./ac.  
 (ii) 150.4 lb./ac.  
 (iii) Treatments do not differ significantly.  
 (iv) Av. yield of grain in lb./ac.

Rotation No.	1	2	3	4	5		
Crop.	Nf	Nf	Ng	Nf	N	Ng	N
Av. yield	448	619	515	554	492	448	439
	S.E./mean		=61.42 lb./ac.				
	<i>Wari</i>		.581 lb./ac.				
	<i>Kodra</i>		793 lb./ac.				

Crop :- Nagli (*Khari*).

Ref :- Mh. 49(117),48(90).

Site :- Agri. Res. Stn., Hatkhamba.

Type :- 'C'.

Object :—To eliminate the fallow period in the cultivation of Nagli.

## 1. BASAL CONDITIONS :

(i) (a) to (c) As per treatments. (ii) (a) Warkas low lying land. (b) N.A. (iii) 30.5.1949/22 to 24.7.1949. (iv) (a) N.A. (b) Transplanting. (c) —. (d) 6'×6'. (e) N.A. (v) Nil. (vi) A-16 (late). (vii) Un-irrigated. (viii) N.A. (ix) 151.96°. (x) 1st and 2nd week of November, 1949.

## 2. TREATMENTS :

Details of the 5 rotations (12 plots maintained each year) :—

1. Nagli manured with F.Y.M. at 3000 lb./ac. followed by *Wari* in the 2nd year, *kodra* in the 3rd year and fallow for next three years. (Nf-*wari*-*kodra*-Fallow-Fallow-Fallow).
2. Every year Nagli manured with F.Y.M. 3000 lb./ac. (Nf every year).
3. Every year Nagli manured with 15 lb./ac. of N as G.N.C (Ng every year).
4. Nagli every year with F.Y.M. 3000 lb./ac. in alternate years (Nf—N).
5. Nagli every year with G.N.C. applied at 15 lb./ac. of N in alternate years (Ng—N).

## 3. DESIGN :

(i) R B D. (ii) (a) 12. (b) N.A. (iii) 6. (iv) (a) 18'×14'. (b) 12'×8'. (v) 3' around. (vi) As per rotations.

## 4. GENERAL :

(i) Normal. (ii) Nil. (iii) Grain yield. (iv) (a) 1948 to 1960. (b) Yes (as per rotations). (c) Nil. (v) (a) Igatpuri. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 441 lb./ac.  
 (ii) 119.9 lb./ac.  
 (iii) Treatments do not differ significantly.  
 (iv) Av. yield of grain in lb./ac.

Rotation No.	1	2	3	4	5		
Crop	Nf	Nf	Ng	N	Nf	N	Ng
Previous crop	F	Nf	Ng	Nf	N	Ng	N
Av. yield	496	507	351	456	507	338	431
	S.E./mean		= 48.9 lb./ac.				
	<i>Wari</i>		=345 lb./ac.				
	<i>Kodra</i>		=690 lb./ac.				

Crop :- Nagli (*Kharif*).

Ref :- Mh. 50(139)/49(117)/48(90).

Site :- Agri. Res. Stn., Hatkhamba.

Type :- 'C'.

Object :- To determine the fallow period in the cultivation of Nagli.

## 1. BASAL CONDITIONS :

(i) (a) to (c) As per treatments. (ii) (a) Laterite soil. (b) N.A. (iii) 3.6.1950/27th and 28.7.1950. (iv) (a) N.A. (b) Transplanting. (c) —. (d) 6"×6". (e) 1. (v) Nil. (vi) A-16 (late). (vii) Unirrigated. (viii) 1 weeding. (ix) 142". (x) + to 11.11.1950.

## 2. TREATMENTS :

Details of the 5 rotations (12 plots maintained each year) :—

1. Nagli manured with F.Y.M. at 3000 lb./ac. followed by *Wari* in the 2nd year and *Kodra* in the 3rd year and fallow for next three years (Nf—*Wari*—*Kodra*—Fallow—Fallow—Fallow).
2. Every year Nagli manured with F.Y.M. at 3000 lb./ac. (Nf every year).
3. Every year Nagli manured with 15 lb./ac. of N as G.N.C. (Ng every year).
4. Nagli every year with F.Y.M. at 3000 lb./ac. in alternate years (Nf—N).
5. Nagli every year with G.N.C. applied at 15 lb./ac. of N in alternate years (Ng—N).

## 3. DESIGN :

(i) R.B.D. (ii) (a) 12. (b) N.A. (iii) 6. (iv) (a) 18'×14'. (b) 12'×8'. (v) 3' around. (vi) Yes (as per rotation).

## 4. GENERAL :

(i) Satisfactory. (ii) In 2 replications Agiva disease observed. (iii) Grain yield. (iv) (a) 1948 to 1960. (b) Yes, as per rotations. (c) Nil. (v) (a) Igatpuri. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 727 lb./ac.  
 (ii) 109.4 lb./ac.  
 (iii) Treatments differ significantly.  
 (iv) Av. yield of grain in lb./ac.

Rotation No.	1	2	3	4		5	
Crop	Nf	Nf	Ng	Nf	N	Ng	N
Previous crop	F	Nf	Ng	N	Nf	N	Ng
Av. yield	870	740	697	754	664	704	664

S.E./mean = 44.7 lb./ac.

*Wari* and *Kodra* yields N.A.Crop :- Nagli (*Kharif*).

Ref :- Mh. 51(200)/50(139)/49(117)/48(90).

Site :- Agri. Res. Stn., Hatkhamba.

Type :- 'C'.

Object :- To eliminate the fallow period in the cultivation of Nagli.

## 1. BASAL CONDITIONS :

(i) (a) to (c) As per treatments. (ii) (a) Laterite soil. (b) N.A. (iii) 5.6.1951/28.7.1951 to 1.8.1951. (iv) (a) 3 ploughings. (b) Transplanting. (c) —. (d) 6"×6". (e) 1. (v) Nil. (vi) A-16 (late). (vii) Unirrigated. (viii) 3 hand weedings. (ix) 131.87". (x) 30, 31.10.1951.

## 2. TREATMENTS :

Details of the 5 rotations (12 plots maintained each year) :—

1. Nagli manured with F.Y.M. at 3000 lb./ac. followed by *Wari* in the 2nd year and *Kodra* in the 3rd year and fallow for next three years. (Nf—*Wari*—*Kodra*—Fallow—Fallow—Fallow).
2. Every year Nagli manured with F.Y.M. at 3000 lb./ac. (Nf every year).
3. Every year Nagli manured with 15 lb./ac. of N as G.N.C. (Ng every year).
4. Nagli every year with F.Y.M. at 3000 lb./ac. in alternate years. (Nf—N).
5. Nagli every year with G.N.C. applied at 15 lb./ac. of N in alternate years. (Ng—N).



## 3. DESIGN :

(i) R.B.D. (ii) (a) 12. (b) N.A. (iii) 6. (iv) (a) 18'×14'. (b) 12'×8'. (v) 3' around. (vi) Yes. (as per rotation).

## 4. GENERAL :

(i) Satisfactory. (ii) 2 replications were attacked by Agiya disease. (iii) Grain yield. (iv) (a) 1948 to 1960. (b) Yes, as per rotation. (c) Nil. (v) (a) Igatpuri. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 495 lb./ac.  
 (ii) 214.0 lb./ac.  
 (iii) Treatments do not differ significantly.  
 (iv) Av. yield of grain in lb./ac.

Rotation No.	1	2	3	4	5		
Crop	Nf	Nf	Ng	N	Nf	N	Ng
Previous crop	F	Nf	Ng	Nf	N	Ng	N
Av. yield	659	577	449	440	558	378	404

S.E./mean = 87.4 lb./ac.

Wari and Kodra yields N.A.

Crop :- Nagli (*Kharif*).

Ref :- Mh. 52(295)/51(200)/50(139)/49(117)/48(90).

Site :- Agri. Res. Stn., Hatkhambha.

Type :- 'C'.

Object :- To eliminate the fallow period in the cultivation of Nagli.

## 1. BASAL CONDITIONS :

(i) (a) to (c) As per treatments. (ii) (a) Laterite soil. (b) N.A. (iii) 4.6.1952/26 to 28.7.1952. (iv) (a) 3 ploughings. (b) Transplanting. (c) 8 lb./ac. (d) 6"×6". (e) 1. (v) Nil. (vi) A-16 (late). (vii) Unirrigated. (viii) 2 weedings. (ix) 110.60°. (x) 2.11.1952.

## 2. TREATMENTS :

Details of the 5 rotations. (12 plots maintained each year) :-

1. Nagli manured with F.Y.M. at 3000 lb./ac. followed by *Wari* in the 2nd year and *Kodra* in the 3rd year and fallow for next three years. (Nf—*Wari*—*Kodra*—Fallow—Fallow—Fallow).
2. Every year Nagli manured with F.Y.M. at 3000 lb./ac. (Nf every year).
3. Every year Nagli manured with 15 lb./ac. of N as G.N.C. (Ng every year).
4. Nagli every year with F.Y.M. at 3000 lb./ac. in alternate years. (Nf—N).
5. Nagli every year with G.N.C. applied at 15 lb./ac. of N in alternate years. (Ng—N).

## 3. DESIGN :

(i) R.B.D. (ii) (a) 12. (b) N.A. (iii) 6. (iv) (a) 18'×14'. (b) 12'×8'. (v) 3' around. (vi) Yes. (as per rotation).

## 4. GENERAL :

(i) Satisfactory. (ii) Nil. (iii) Grain yield. (iv) (a) 1948 to 1960. (b) Yes, as per rotation. (c) Nil. (v) (a) Igatpuri. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 526 lb./ac.  
 (ii) 144.8 lb./ac.  
 (iii) Treatments differ highly significantly.  
 (iv) Av. yield of grain in lb./ac.

Rotation No.	1	2	3	4	5		
Crop	Nf	Nf	Ng	Nf	N	Ng	N
Previous crop	F	Nf	Ng	N	Nf	N	Ng
Av. yield	680	652	430	630	529	359	435

S.E./mean = 59.1 lb./ac.

Wari and Kodra yields N.A.

Crop :- Nagli. Ref :- Mh. 53(322)/52(295)/51(200)/50(139)/49(117)/48(90).

Site :- Agri. Res. Stn., Hatkhamba.

Type :- 'C'.

Object :- To eliminate the fallow period in the cultivation of Nagli.

### 1. BASAL CONDITIONS :

(i) (a) to (c) As per treatments. (ii) (a) Laterite soil. (b) N.A. (iii) 15.6.1953/7,8.8.1953. (iv) (a) 4 ploughings. (b) Transplanting. (c) 8 lb./ac. (d) 6"×6". (e) 1. (v) Nil. (vi) A-16. (late) (vii) Unirrigated. (viii) 1 weeding. (ix) N.A. (x) 16.10.1953.

### 2. TREATMENTS :

Details of the 5 rotations (12 plots maintained every year) : -

1. Nagli manured with F.Y.M. at 3000 lb./ac. followed by *Wari* in the 2nd year and *Kodra* in the 3rd year and fallow for next three years (Nf—*Wari*—*Kodra*—Fallow—Fallow—Fallow).
2. Every year Nagli manured with F.Y.M. at 3000 lb./ac. Nf every year
3. Every year Nagli manured with 15 lb./ac. of N as G.N.C. (Ng every year)
4. Nagli every year with F.Y.M. at 3000 lb./ac. in alternate years. (Nf—N)
5. Nagli every year with G.N.C. applied at 15 lb./ac. of N in alternate years. (Ng—N)

### 3. DESIGN :

(i) R B D. (ii) (a) 12. (b) N.A. (iii) 6. (iv) (a) 18'×14'. (b) 12'×8'. (v) 3' around. (vi) Yes.

### 4. GENERAL :

(i) Satisfactory. (ii) Nil. (iii) Grain yield. (iv) (a) 1948 to 1960. (b) Yes, as per rotations. (c) Nil. (v) (a) Igatpuri. (b) N.A. (vi) and (vii) Nil

### 5. RESULTS :

- (i) 437 lb./ac.  
 (ii) 138.6 lb./ac.  
 (iii) Treatments differ significantly.  
 (iv) Av. yield of grain in lb./ac.

Rotation No.	1	2	3	4	5		
Crop	Nf	Nf	Ng	N	Nf	N	Ng
Pre ious Crop	F	Nf	Ng	Nf	N	Ng	N
Av. yield	488	587	346	450	525	308	359

S.E./mean = 56.6 lb./ac.  
*Wari* and *Kodra* yields N.A.

Crop :- Nagli (*Kharif*).

Site :- Agri. Res. Stn., Igatpuri.

Ref :- Mh. 48 (89).

Type :- 'C'.

Object :- To eliminate the fallow period in the cultivation of Nagli.

### 1. BASAL CONDITIONS :

(i) (a) to (c) As per treatments. (ii) (a) Shallow and coarse soil. (b) N.A. (iii) 3.6.1949 to 11.7.1949. (iv) (a) 2 ploughings. (b) Transplanting. (c), (d) and (e) N.A. (v) Nil. (vi) Nagli A-16 (Ratnagiri Strain). (vii) Unirrigated. (viii) 1 interculturing. (ix) 115.6" (x) 6, 7.11.1949.

### 2. TREATMENTS :

Details of the 5 rotations (12 plots maintained every year).

1. Nagli manured with 3000 lb./ac. of F.Y.M. followed by *Wari* in the 2nd year and *Udid* in the 3rd year and fallow for next three years. (Nf—*Wari*—*Udid*—Fallow—Fallow—Fallow).
2. Every year Nagli manured with 3000 lb./ac. of F.Y.M. (Nf every year).
3. Every year Nagli manured with 15 lb./ac. of N as G.N.C. (Ng every year).
4. Nagli every year with F.Y.M. at 3000 lb./ac. applied in alternate year. (Nf—N).
5. Nagli every year with 15 lb./ac. of N as G.N.C. applied in alternate years. (Ng—N)

### 3. DESIGN :

(i) R.B.D. (ii) (a) 12. (b) N.A. (iii) 6. (iv) (a) 17'×13'. (b) 13'×9'. (v) 2' around. (vi) Yes.

## 4. GENERAL :

- (i) Satisfactory. (ii) Nil. (iii) Grain yield. (iv) (a) 1948 to 1957. (b) Yes, as per rotations. (c) Nil.  
 (v) (a) Hatkhamba. (b) N.A. (vi) and (vii) Nil.

## 5 RESULTS :

- (i) 1369 lb./ac.  
 (ii) 337.7 lb./ac.  
 (iii) Treatments do not differ significantly.  
 (iv) Av. yield of grain in lb./ac.

Rotation No.	1	2	3	4	5
Crop	Nf	Nf	Ng	Nf	N
Av. yield	1384	1287	1306	1376	1264

S.E./mean = 137.9 lb./ac.

Wari at Udid yields N.A.

Crop :- Nagli (*Kharif*).

Ref :- Mh. 49(116)/48(89).

Site :- Agri. Res. Stn., Igatpuri.

Type :- 'C'.

Object :- To eliminate the fallow period in the cultivation of Nagli.

## 1. BASAL CONDITIONS :

- (i) (a) to (c) As per treatments. (ii) (a) Shallow and Coarse soil. (b) N.A. (iii) N.A. (iv) (a) to (e) N.A.  
 (v) Nil. (vi) Nagli A-16 (Ratnagiri Strain.) (vii) Unirrigated. (viii) N.A. (ix) 125.6". (x) N.A.

## 2. TREATMENTS :

Details of the 5 rotations (12 plots maintained every year).

- Nagli manured with 3,000 lb./ac. of F.Y.M. followed by *Wari* in 2nd year and *Udid* in the 3rd year and fallow for the next three years (Nf-*Wari*-*Udid*-Fallow-Fallow-Fallow)
- Every year Nagli manured with 3,000 lb./ac. of F.Y.M. (Nf every year).
- Every year Nagli manured with 15 lb./ac. of N as G.N.C. (Ng every year).
- Nagli every year with F.Y.M. at 3,000 lb./ac. applied in alternate years (Nf—N).
- Nagli every year with 15 lb./ac. of N as G.N.C. applied in alternate year (Ng—N).

## 3. DESIGN :

- (i) R.B.D. (ii) (a) 12. (b) N.A. (iii) 6. (iv) (a) 17'×13'. (b) 13'×9'. (v) 2' around. (vi) Yes.

## 4. GENERAL :

- (i) Satisfactory. (ii) Nil. (iii) Grain yield. (iv) (a) 1948 to 1957. (b) Yes, as per rotations. (c) Nil.  
 (v) (a) Hatkhamba. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 1027 lb./ac.  
 (ii) 207.4 lb./ac.  
 (iii) Treatments do not differ significantly.  
 (iv) Av. yield of grain in lb./ac.

Rotation No.	1	2	3	4	5
Crop.	Nf	Nf	Ng	N	N
Previous crop	F	Nf	Ng	Nf	Ng
Av. yield	960	926	983	995	1047

S.E./mean = 84.7 lb./ac.

*Wari* (W) 1031 lb./ac.

*Udid* (U) 199 lb./ac.

Crop :- Nagli (*Kharif*)

Ref :- Mh. 50(138)/49(116)/48(89).

Site :- Agri. Res. Stn., Igatpuri.

Type :- 'C'.

Object :—To eliminate the fallow period in the cultivation of Nagli.

## 1. BASAL CONDITIONS :

(i) (a) to (c) As per treatments. (ii) (a) Sandy. (b) N.A. (iii) 3.6.1950/10.7.1950. (iv) (a) Hill millets for 2 or 3 seasons. (b) Transplanting. (c) —. (d) and (e) N.A. (v) Nil. (vi) Red Nagli 47 (late). (vii) Unirrigated. (viii) Hand weeding 3rd week of August 1950. (ix) 147.3%. (x) 25.11.1950.

## 2. TREATMENTS :

Details of the 5 rotations (12 plots maintained every year).

1. Nagli manured with 3,000 lb./ac. of F.Y.M. followed by *Wari* in 2nd year and *Udid* in the 3rd year and fallow for next three years (Nf-*Wari*-*Udid*-Fallow-Fallow-Fallow).
2. Every year Nagli manured with 3,000 lb./ac. of F.Y.M. (Nf every year).
3. Every year Nagli manured with 15 lb./ac. of Nas G.N.C. (Ng every year).
4. Nagli every year with F.Y.M. at 3,000 lb./ac. of applied in alternate years (Nf—N).
5. Nagli every year with 15 lb./ac. of N as G.N.C. applied in alternate years (Ng—N).

## 3. DESIGN :

(i) R.B.D. (ii) (a) 12. (b) N.A. (iii) 6. (iv) (a) 17' × 13'. (b) 13' × 9'. (v) 2' around. (vi) Yes.

## 4. GENERAL :

(i) Poor due to heavy rains. (ii) Nil. (iii) Grain yield. (iv) (a) 1948 to 1957. (b) Yes, as per rotations. (c) Nil (v) (a) N.A. (b) —. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 922 lb./ac.  
 (ii) 268.0 lb./ac.  
 (iii) Treatments do not differ significantly.  
 (iv) Av. yield of grain in lb./ac.

Rotation No.	1	2	3	4		5	
Crop.	Nf	Nf	Ng	Nf	N	Ng	N
Previous crop.	F	Ng	Ng	N	Nf	N	Ng
Av. yield	894	864	961	949	859	854	1073

S.E./mean = 109.6 lb./ac.  
*Udid* = 534 lb./ac.  
*Wari* = 467 lb./ac.

Crop :- Nagli (*Kharif*).

Ref :- Mh. 51(199)/50(138)/49(166)/48(89).

Site :- Agri. Res. Stn., Igatpuri.

Type :- 'C'.

Object :—To eliminate the fallow period in the cultivation of Nagli.

## 1. BASAL CONDITIONS

(i) (a) to (c) As per treatments. (ii) (a) Shallow and coarse soil. (b) N.A. (iii) 4.6.1951/30.6.1951 to 3.7.1951. (iv) (a) 2 ploughings. (b) Transplanting. (c) 5 lb./ac. (d) 6' × 6'. (e) N.A. (v) Nil. (vi) Nagli, Igatpuri—47. (vii) Unirrigated. (viii) 1 weeding. (ix) 116.8%. (x) 13.11.1951.

## 2. TREATMENTS :

Details of the 5 rotations (12 plots maintained every year).

1. Nagli manured with 3,000 lb./ac. of F.Y.M. followed by *Wari* in 2nd year and *Udid* in the 3rd year and fallow for next three years (Nf-*Wari*-*Udid*-Fallow-Fallow-Fallow).
2. Every year Nagli manured with 3,000 lb./ac. of F.Y.M. (Nf every year).
3. Every year Nagli manured with 15 lb./ac. of N as G.N.C. (Ng every year).
4. Nagli every year with F.Y.M. at 3,000 lb./ac. applied in alternate years (Nf—N).
5. Nagli every year with 15 lb./ac. of N as G.N.C. applied in alternate years (Ng—N).

## 3. DESIGN :

(i) R.B.D. (ii) (a) 12. (b) N.A. (iii) 6. (iv) (a) 17'×13'. (b) 13'×9'. (v) 2' around. (vi) Yes.

## 4. GENERAL :

(i) Satisfactory. (ii) Attack of field rats on some of the plots badly affected the yield. (iii) Grain yield. (iv) (a) 1948 to 1957. (b) Yes, as per rotation. (c) Nil. (v) (a) Hatkhamba. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 752 lb./ac.  
 (ii) 66.09 lb./ac.  
 (iii) Treatments do not differ significantly.  
 (iv) Av. yield of grain in lb./ac.

Rotation No.	1	2	3	4	5
Crop.	Nf	Nf	Ng	N	Ng
Previous crop	F	Nf	Ng	Nf	N
Av. yield	736	692	638	705	797

S.E./mean=40.05 lb./ac.

Wari and Udid yields N.A.

Crop :- Nagli (*Kharif*). Ref :- Mh. 52(294)/51(199)/50(138)/49(116)/48(89).

Site :- Agri. Res. Stn., Igatpuri.

Type :- 'C'.

Object :- To eliminate the fallow period in the cultivation of Nagli.

## 1. BASAL CONDITIONS :

(i) a) to (c) As per treatments. (ii) (a) Coarse and shallow soil. (b) N.A. (iii) 8.6.1952/10 to 16.7.1952. (iv) (a) 2 ploughings. (b) Transplanting. (c) 5 lb./ac. (d) 6'×6". (e) N.A. (v) Nil. (vi) Nagli, Igatpuri—47. (vii) Unirrigated. (viii) 2 interculturings. (ix) 127.9". (x) 28.11.1952.

## 2. TREATMENTS :

Details of the 5 rotations (12 plots maintained every year).

1. Nagli manured with 3,000 lb./ac. of F.Y.M. followed by *Wari* in 2nd year and *Udid* in the 3rd year and fallow for next three years (Nf-*Wari-Udid-Fallow-Fallow-Fallow*).
2. Every year Nagli manured with 3,000 lb./ac. of F.Y.M. (Nf every year).
3. Every year Nagli manured with 15 lb./ac. of N as G.N.C. (Ng every year).
4. Nagli every year with F.Y.M. at 3,000 lb./ac. applied alternate years (Nf-N).
5. Nagli every year with 15 lb./ac. of N as G.N.C. applied in alternate years. (Ng-N).

## 3. DESIGN :

(i) R.B.D. (ii) (a) 12. (b) N.A. (iii) 6. (iv) (a) 17'×13'. (b) 13'×9'. (v) 2' around. (vi) Yes.

## 4. GENERAL :

(i) Normal. (ii) Nil. (iii) Grain yield. (iv) (a) 1948 to 1957. (b) Yes, as per rotations. (c) Nil. (v) (a) Hatkhamba. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 572 lb./ac.  
 (ii) 189.1 lb./ac.  
 (iii) Treatments do not differ significantly.  
 (iv) Av. yield of grain in lb./ac.

Rotation No.	1	2	3	4	5
Crop.	Nf	Nf	Ng	Nf	N
Previous crop	F	Nf	Ng	N	Nf
Av. yield	645	489	556	627	444

S.E./mean 77.2 lb./ac.

Wari and Udid yields N.A.

Crop :- Nagli (*Kharif*). Ref :- Mh. 53(1)/52(294)/51(199)/50(138)/49(116)/48(89).

Site :- Agri. Res. Stn., Igatpuri.

Type :- 'C'.

Object :- To eliminate the fallow period in the cultivation of Nagli.

### 1. BASAL CONDITIONS :

(i) (a) to (c) As per treatments. (ii) (a) Shallow, reddish in colour and poor in fertility. (b) N.A. (iii) 14.6.1953/11 to 14.8.1953. (iv) (a) 2 ploughings in *kharif* season. (b) Transplanting. (c) 5 lb./ac. (d) and (e) N.A. (v) N.A. (vi) Nagli-47 (late). (vii) Unirrigated. (viii) Weeding. (ix) 123.6". (x) 27.11.1953.

### 2. TREATMENTS :

Details of the 5 rotations (12 plots maintained every year).

1. Nagli manured with 3,000 lb./ac. of F.Y.M. followed by *Wari* in 2nd year and *Udid* in the 3rd year and fallow for next three years. (Nf—*Wari*—*Udid*—Fallow—Fallow—Fallow).
2. Every year Nagli manured with 3,000 lb./ac. of F.Y.M. (Nf every year).
3. Every year Nagli manured with 15 lb./ac. of N as G.N.C. (Ng every year).
3. Nagli every year with F.Y.M. at 3,000 lb./ac. applied in alternate years. (Ng—N).
4. Nagli every year with 15 lb./ac. of N as G.N.C. applied in alternate years. (Ng—N).

### 3. DESIGN :

(i) R.B.D. (ii) (a) 12. (b) N.A. (iii) 6. (iv) (a) 17'×13'. (b) 13'×9'. (v) 2' around. (vi) Yes.

### 4. GENERAL :

(i) Growth was poor in general due to weak seedlings. (ii) Crop affected by field rats at the time of harvest. (iii) General height, no. of tillers, date of flowering and grain yield. (iv) (a) 1948 to 1957. (b) Yes, as per rotations. (c) N.A. (v) (a) Hatkhamba. (b) N.A. (vi) and (vii) Nil.

### 5. RESULTS :

- (i) 615 lb./ac.  
 (ii) 152.6 lb./ac.  
 (iii) Treatment differences are significant.  
 (iv) Av. yield of grain in lb./ac.

Rotation No	1	2	3	4	5		
Crop	Nf	Nf	Ng	N	Nf	N	Ng
Previous crop	F	Nf	Ng	Nf	N	Ng	N
Av. yield	745	637	563	595	531	505	733

S.E./mean 62.3 lb./ac.  
*Wari* and *Udid* yields—N.A.

Crop :- Gram (*Rabi*).

Ref :- Mh. 51(207).

Site :- Agri. Res. Stn., Chas.

Type :- 'M'.

Object :- To study the effect of different doses of Zn SO<sub>4</sub> on Gram.

### 1. BASAL CONDITIONS :

(i) (a) N.A. (b) Gram. (c) Nil. (ii) (a) Medium black. (b) N.A. (iii) N.A. (iv) (a) 1 ploughing and 1 harrowing. (b) to (e) N.A. (v) Nil. (vi) Medium. (vii) Unirrigated. (viii) 3 interculturings. (ix) 6.10". (x) 26.1.1952.

### 2. TREATMENTS :

1. Control.
2. 10 lb./ac. of ZnSO<sub>4</sub>.
3. 20 lb./ac. of ZnSO<sub>4</sub>.

### 3. DESIGN :

(i) R.B.D. (ii) (a) 3. (b) N.A. (iii) 8. (iv) (a) 15'×24'. (b) 13'×21'. (v) 1'×1.5' around the plot. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) Nil. (iii) Grain yield. (iv) (a) 1951—1952. (b) No. (c) No. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 468 lb./ac.  
 (ii) 115.3 lb./ac.  
 (iii) Treatments do not differ significantly.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	413
2.	515
3.	477
S.E./mean	= 40.78 lb./ac.

Crop :- Gram (*Rabi*).

Ref. :- Mh. 48(19).

Site :- Agri. Res. Stn., Kopergaon.

Type :- 'M'.

Object :- To study the effect of Gram grown with and without  $P_2O_5$  on succeeding cereal crop Paddy.

## 1. BASAL CONDITIONS :

(i) (a) Gram—Paddy. (b) Paddy. (c) Nil. (ii) (a) Medium black. (b) Refer soil analysis, Kopergaon. (iii) 25.10.1948. (iv) (a) 1 ploughing and 3 harrowings. (b) Drilling. (c) 40 lb./ac. (d) Between rows 12". (e) N.A. (v) N.A. (vi) *Chafa*. (vii) Unirrigated. (viii) Gap filling on 2.11.1948, hoeing on 10.12.1948 and weeding on 1.2.1949. (ix) Nil. (x) 7.3.1949.

## 2. TREATMENTS :

- No manure.
- 50 lb./ac. of  $P_2O_5$  applied to Gram.
- 100 lb./ac. of  $P_2O_5$  applied to Gram.
- 150 lb./ac. of  $P_2O_5$  applied to Gram.
- Fallow.  
 $P_2O_5$  as Super applied behind the plough.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 5. (iv) (a) 56' x 26'. (b) 46' x 12'. (v) 5' x 7'. (vi) Yes.

## 4. GENERAL :

(i) Germination and stand of the crop was satisfactory. (ii) Nil. (iii) Grain yield. (iv) (a) *Rabi* 1948 to *Kharif* 1955. (b) Yes. (c) N.A. (v) (a) Karjat, Kosbad and Vadgaon. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 842 lb./ac.  
 (ii) 235.5 lb./ac.  
 (iii) The treatments do not differ significantly.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	713
2.	837
3.	911
4.	910
5.	—
S.E./mean	= 105.3 lb./ac.

Crop :-Gram (*Rabi*).

Ref. :-Mh. 49(34).

Site :-Agri. Res. Stn., Kopergaon.

Type :-'M'.

Object :-To study the effect of Gram grown with and without  $P_2O_5$  on succeeding cereal crop Paddy.

## 1. BASAL CONDITIONS :

(i) (a) Gram—Paddy. (b) Paddy. (c) Nil. (ii) (a) Medium black. (b) Refer soil analysis, Kopergaon. (iii) 29.10.1949. (iv) (a) 7 ploughings and 3 harrowings. (b) Drilling. (c) 40 lb./ac. (d) Between rows —12" and between plants—irregular. (e) N.A. (v) Nil. (vi) *Chafa*. (vii) Irrigated. (viii) Weeding on 25.12.1949. (ix) Nil. (x) 18.2.1950.

## 2. TREATMENTS :

1. No manure.
  2. 50 lb./ac. of  $P_2O_5$  applied to Gram.
  3. 100 lb./ac. of  $P_2O_5$  applied to Gram.
  4. 150 lb./ac. of  $P_2O_5$  applied to Gram.
  5. Fallow.
- $P_2O_5$  as Super drilled at sowing.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 5. (iv) (a) 57'×24'. (b) 46'×12'. (v) 5½'×6'. (vi) Yes.

## 4. GENERAL :

(i) The germination and stand was good. The crop was affected by severe cold in February. (ii) Nil. (iii). Grain yield. (iv) (a) *Rabi* 1948—*Kharif* 1955. (b) Yes. (c) N.A. (v) (a) Karjat, Kosbad and Vadgaon (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 980 lb./ac.  
 (ii) 105.9 lb./ac.  
 (iii) The treatments differ significantly.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	885
2.	985
3.	1118
4.	932
5.	—
S.E./mean	=47.4 lb./ac.

Crop :-Gram (*Rabi*).

Ref.:-Mh. 50(48).

Site :- Agri. Res. Stn., Kopergaon.

Type :-'M'.

Object :-To study the effect of Gram grown with and without  $P_2O_5$  on succeeding cereal crop Paddy.

## 1. BASAL CONDITIONS :

(i) (a) Gram—Paddy. (b) Paddy. (c) Nil. (ii) (a) Medium black. (b) Refer soil analysis, Kopergaon. (iii) 7.10.1950. (iv) (a) N.A. (b) Drilling. (c) 40 lb./ac. (d) Between rows 12" and between plants irregular. (e) N.A. (v) N.A. (vi) *Chafa*. (vii) Irrigated. (viii) Nil. (ix) Nil. (x) 10.2.1951.

## 2. TREATMENTS :

1. No manure.
  2. 50 lb./ac. of  $P_2O_5$  applied to Gram.
  3. 100 lb./ac. of  $P_2O_5$  applied to Gram.
  4. 150 lb./ac. of  $P_2O_5$  applied to Gram.
  5. Fallow.
- $P_2O_5$  as Super applied behind the plough at sowing.



## 3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 5. (iv) (a) 57'×24'. (b) 46'×12'. (v) 5½'×6'. (vi) Yes.

## 4. GENERAL :

(i) Germination and stand was good. (ii) Nil. (iii) Grain yield. (iv) (a) *Rabi* 1948 to *Kharif* 1955. (b) Yes. (c) N.A. (v) (a) Karjat, Kosbad and Vadgaon. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 905 lb./ac.  
 (ii) 138.3 lb./ac.  
 (iii) Treatments differ significantly.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	703
2.	1001
3.	920
4.	996
5.	—
S.E./mean	= 61.8 lb./ac.

Crop :- Gram (*Rabi*).

Site :- Agri. Res. Stn., Kopergaon.

Ref :- Mh. 51(51).

Type :- 'M'.

Object :—To study the effect of Gram grown with and without  $P_2O_5$  on a succeeding cereal crop Paddy.

## 1. BASAL CONDITIONS :

(i) (a) Gram—Paddy. (b) Paddy. (c) Nil. (ii) (a) Medium black. (b) Refer soil analysis, Kopergaon. (iii) 7.11.1951. (iv) (a) 3 ploughings and 3 harrowings. (b) Drilling. (c) 40 lb./ac. (d) Between rows 12" and between plants irregular. (e) N.A. (v) Nil. (vi) *Chafa*. (vii) Irrigated. (viii) N.A. (ix) Nil. (x) 9.3.1952.

## 2. TREATMENTS :

1. No manure.  
 2. 50 lb./ac. of  $P_2O_5$  applied to gram.  
 3. 100 lb./ac. of  $P_2O_5$  applied to gram.  
 4. 150 lb./ac. of  $P_2O_5$  applied to gram.  
 5. Fallow.  
 $P_2O_5$  as Super applied behind the plough.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 5. (iv) (a) 57'×24'. (b) 46'×12'. (v) 5½'×6'. (vi) Yes.

## 4. GENERAL :

(i) The germination and stand were good but few gaps were observed. (ii) Slight insect attack. (iii) Grain yield. (iv) (a) *Rabi* 1948 to *Kharif* 1955. (b) Yes. (c) N.A. (v) (a) Karjat, Kosbad and Vadgaon. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 867 lb./ac.  
 (ii) 53.5 lb./ac.  
 (iii) Treatments differ highly significantly.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	826
2.	790
3.	918
4.	933
5.	—
S.E./mean	= 23.9 lb./ac.

Crop :- Gram (*Rabi*).

Ref :- Mh. 52(78).

Site :- Agri. Res. Stn., Kopergaon.

Type :- 'M'.

Object :- To study the effect of Gram grown with and without  $P_2O_5$  on a succeeding cereal crop Paddy.

1. BASAL CONDITIONS :

(i) (a) Gram—Paddy. (b) Paddy. (c) Nil. (ii) (a) Medium black. (b) Refer soil analysis, Kopergaon. (iii) 2.10.1952. (iv) (a) 4 ploughings and 2 harrowings. (b) Drilling. (c) 40 lb./ac. (d) Between rows—12", between plants—irregular. (e) N.A. (v) N.A. (vi) *Chafa*. (vii) Irrigated. (viii) Weeding on 2.12.1952 and gap filling on 24.11.1952. (ix) Nil. (x) 27 to 29.1.1953.

2. TREATMENTS :

1. No manure.
  2. 50 lb./ac. of  $P_2O_5$  applied to gram.
  3. 100 lb./ac. of  $P_2O_5$  applied to gram.
  4. 150 lb./ac. of  $P_2O_5$  applied to gram.
  5. Fallow.
- $P_2O_5$  as Super drilled at sowing.

3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 5. (iv) (a) 57'×24'. (b) 46'×12'. (v) 5½'×6'. (vi) Yes.

4. GENERAL :

(i) The growth of the crop was rather uneven and gaps were observed. (ii) Nil. (iii) Grain yield. (iv) (a) *Rabi* 1948—*Kharif* 1955. (b) Yes. (c) N.A. (v) (a) Karjat, Kosbad and Vadgaon. (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

- (i) 858 lb./ac.
- (ii) 312.5 lb./ac.
- (iii) Treatments differ significantly.
- (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	693
2.	930
3.	831
4.	981
5.	—
S.E./mean	=139.7 lb./ac.

Crop :- Gram (*Rabi*).

Ref :- Mh. 53(36).

Site :- Agri. Res. Stn., Kopergaon.

Type :- 'M'.

Object :- To study the effect of Gram grown with and without  $P_2O_5$  on the succeeding cereal crop Paddy.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Jowar*. (c) Nil. (ii) (a) Medium black. (b) Refer soil analysis, Kopergaon. (iii) 24.10.1953. (iv) (a) to (e) N.A. (v) Nil. (vi) *Chafa*. (vii) Irrigated. (viii) Hoeing 4 times and weeding 2 times. (ix) 4.17". (x) 23.2.1954.

2. TREATMENTS :

1. No manure.
  2. 50 lb./ac. of  $P_2O_5$  applied to gram.
  3. 100 lb./ac. of  $P_2O_5$  applied to gram.
  4. 150 lb./ac. of  $P_2O_5$  applied to gram.
  5. Fallow.
- $P_2O_5$  as Super applied behind the plough.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 5. (iv) (a) 57'×24'. (b) 46'×12'. (v) 6'×5.5'. (vi) Yea.

## 4. GENERAL :

(i) Satisfactory. (ii) Nil. (iii) Germination date, flowering date, height, branching and grain yield. (iv) (a) Rabi 1948—Kharif 1955. (b) Yes. (c) N.A. (v) (a) N.A. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 1140 lb./ac.  
 (ii) 165.7 lb./ac.  
 (iii) Treatments differ significantly.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	811
2.	1219
3.	1187
4.	1344
5.	—
S.E./mean	= 74.17 lb./ac.

Crop :- Gram (*Rabi*).  
 Site :- Agri. Res. Stn., Mohol.

Ref :- Mh. 48(36).  
 Type :- 'M'.

Object :—To study the effect of Gram grown with and without  $P_2O_5$  on the succeeding cereal crop *Jowar*.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) Gram. (c) Nil. (ii) (a) Light black. (b) Refer soil analysis, Mohol. (iii) 20.10.1948.  
 (iv) (a) N.A. (b) N.A. (c) 4 lb./ac. (d) 12" apart. (e) N.A. (v) Nil. (vi) *Chafa*. (vii) Unirrigated.  
 (viii) One interculturing. (ix) 5.38". (x) 28.1.1949.

## 2. TREATMENTS :

- Gram grown with out  $P_2O_5$ .
- Gram grown with 50 lb./ac. of  $P_2O_5$  as Super.
- Gram grown with 100 lb./ac. of  $P_2O_5$  as Super.
- Gram grown with 150 lb./ac. of  $P_2O_5$  as Super.
- Fallow.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 5. (iv) (a) 42'×30'. (b) 30'×18'. (v) 6' around the plot. (vi) Yes.

## 4. GENERAL :

(i) Normal. (ii) Nil. (iii) Grain yield. (iv) (a) 1948 to 1954. (b) No. (c) N.A. (v) (a) Nil. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 440 lb./ac.  
 (ii) 138.0 lb./ac.  
 (iii) Treatments do not differ significantly.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	371
2.	455
3.	505
4.	430
5.	—
S.E./mean	= 61.70 lb./ac.

Crop :- Gram (*Rabi*).

Ref :- Mh. 49(62).

Site :- Agri. Res. Stn., Mohol.

Type :- 'M'.

Object :- To study the effect of Gram grown with and without  $P_2O_5$  on the succeeding cereal crop *Jowar*.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) *Jowar*. (c) 5 C.L./ac. of compost. (ii) (a) Medium black. (b) Refer soil analysis, Mohol. (iii) 13.10.1949. (iv) (a) N.A. (b) N.A. (c) 4 lb./ac. (d) 12" apart. (e) N.A. (v) Nil. (vi) *Chafa*. (vii) Unirrigated. (viii) 6 intercultures. (ix) 1.14". (x) 17.1.1950.

## 2. TREATMENTS :

1. Gram grown without  $P_2O_5$ .
2. Gram grown with 50 lb./ac. of  $P_2O_5$  as Super.
3. Gram grown with 100 lb./ac. of  $P_2O_5$  as Super.
4. Gram grown with 150 lb./ac. of  $P_2O_5$  as Super.
5. Fallow.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 5. (iv) (a) 42' × 30'. (b) 30' × 18'. (v) 6' around the plot. (vi) Yes

## 4. GENERAL :

(i) Normal. (ii) Nil. (iii) Grain yield. (iv) (a) 1948 to 1954. (b) No. (c) N.A. (v) (a) Nil. (b) N.A. (vi) Nil. (vii) Rain fall was not well distributed ; the grain size and yield was badly affected due to insufficient cold weather.

## 5. RESULTS :

- (i) 797 lb./ac.  
 (ii) 48.41 lb./ac.  
 (iii) Treatments do not differ significantly.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	748
2.	832
3.	857
4.	752
5.	—
S.E./mean	= 21.64 lb./ac.

Crop :- Gram (*Rabi*).

Ref :- Mh. 50(8).

Site :- Agri. Res. Stn., Mohol.

Type :- 'M'.

Object :- To study the effect of Gram grown with and without  $P_2O_5$  on the succeeding cereal crop *Jowar*.

## 1. BASAL CONDITIONS :

(i) No. (b) and (c) Nil. (ii) (a) Medium black. (b) Refer soil analysis, Mohol. (iii) 19.10.1951. (iv) (a) Ploughing once in 3 years and 4 harrowings. (b) Seeds drilled. (c) 40 lb./ac. (d) 12" spacing between rows. (e) N.A. (v) F.Y.M. at 5 C.L./ac. to be given once in 3 years. (vi) *Chafa*. (vii) Unirrigated. (viii) Interculturing 4 times. (ix) 9.91". (x) 2.2.1952.

## 2. TREATMENTS :

1. Gram grown without  $P_2O_5$ .
2. Gram grown with 50 lb./ac. of  $P_2O_5$  as Super.
3. Gram grown with 100 lb./ac. of  $P_2O_5$  as Super.
4. Gram grown with 150 lb./ac. of  $P_2O_5$  as Super.
5. Fallow.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) 150' × 42'. (iii) 5. (iv) (a) 30' × 42'. (b) 18' × 30'. (v) 6' all round the plot. (vi) Yes.

## 4. GENERAL :

(i) Stunted growth. (ii) Nil. (iii) Grain yield. (iv) (a) 1948-1954. (b) No. (c) N.A. (v) (a) Nil. (b) N.A. (vi) Nil. (vii) Rainfall was not well distributed. After the sowing of Gram no rain was received which affected the growth of the crop very badly, though its germination was quite satisfactory.

## 5. RESULTS :

- (i) 779 lb./ac.  
 (ii) 136.3 lb./ac.  
 (iii) Treatment do not differ significantly.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	731
2.	839
3.	722
4.	823
5.	—
S.E./mean	=60.90 lb./ac.

Crop :- Gram (*Rabi*).

Site :- Agri. Res. Stn., Mohol.

Ref :- Mh. 51(10).

Type :- 'M'.

Object :- To study the effect of Gram grown with and without  $P_2O_5$  on succeeding cereal crop *Jowar*.

## 1. BASAL CONDITIONS :

(i) (a) No. (b) *Jowar*. (c) Nil. (ii) (a) Medium black. (b) Refer soil analysis, Mohol. (iii) 14.10.1951. (iv) (a) Ploughing once in 3 years and 4 times harrowings. (b) Seeds drilled. (c) 40 lb./ac. (d) 12" spacing between rows. (e) N.A. (v) F.Y.M. at 5 C.L./ac. to be given once in 3 years. (vi) *Chafa*. (vii) Unirrigated. (viii) 3 intercultures. (ix) 7.49". (x) 24.1.1952.

## 2. TREATMENTS :

1. Gram grown without  $P_2O_5$ .
2. Gram grown with 50 lb./ac. of  $P_2O_5$  as Super.
3. Gram grown with 100 lb./ac. of  $P_2O_5$  as Super.
4. Gram grown with 150 lb./ac. of  $P_2O_5$  as Super.
5. Fallow.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) 150' x 42'. (iii) 5. (iv) (a) 30' x 42'. (b) 18' x 30'. (v) 6' all round the net plot. (vi) Yes.

## 4. GENERAL :

(i) Normal. (ii) Nil. (iii) Grain yield. (iv) (a) 1948-1954. (b) No. (c) N.A. (v) (a) Nil. (b) N.A. (vi) Nil. (vii) There were no rains during the crop period.

## 5. RESULTS :

- (i) 475 lb./ac.  
 (ii) 34.69 lb./ac.  
 (iii) Treatments differ highly significantly.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	435
2.	442
3.	504
4.	517
5.	—
S.E./mean	=15.51 lb./ac.

Crop :- Gram (*Rabi*).  
Site :- Agri. Res. Stn., Mohol.

Ref :- Mh. 52(23).  
Type :- 'M'.

Object :—To study the effect of Gram grown with and without  $P_2O_5$  on the succeeding cereal crop *Jowar*.

1. BASAL CONDITIONS :

- (i) (a) Gram—*Jowar*. (b) *Jowar*. (c) Nil. (ii) (a) Medium black. (b) Refer soil analysis, Mohol. (iii) 3.10.1952. (iv) (a) 5 harrowings and ploughing once in 3 years. (b) Seeds drilled. (c) 40 lb./ac. (d) 12" spacings between rows. (e) N.A. (v) F.Y.M. at 5 C.L./ac to be given once in 3 years. (vi) *Chafa*. (vii) Unirrigated. (viii) 2 intercultures and weedings. (ix) 5.03". (x) 2.1.1953.

2. TREATMENTS :

1. Gram grown without  $P_2O_5$ .
2. Gram grown with 50 lb./ac. of  $P_2O_5$  as Super.
3. Gram grown with 100 lb./ac. of  $P_2O_5$  as Super.
4. Gram grown with 150 lb./ac. of  $P_2O_5$  as Super.
5. Fallow.

3. DESIGN :

- (i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 5. (iv) (a) 42'×27'. (b) 30'×15'. (v) 6' all round the net plot. (vi) Yes.

4. GENERAL :

- (i) Normal. (ii) Nil. (iii) Grain yield. (iv) (a) 1948—1954. (b) No. (c) N.A. (v) (a) Nil. (b) N.A. (vi) Nil. (vii) There were irregular and little rains. Sowing was delayed due to late rains.

5. RESULTS :

- (i) 190 lb./ac.  
(ii) 91.96 lb./ac.  
(iii) Treatments do not differ significantly.  
(iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	235
2.	162
3.	165
4.	200
5.	—
S.E./mean	=41.14 lb./ac.

Crop :- Gram (*Rabi*).  
Site :- Agri. Res. Stn., Mohol.

Ref :- Mh. 53(207).  
Type :- 'M'.

Object :—To study the effect of Gram grown with and without  $P_2O_5$  on the succeeding cereal crop *Jowar*.

1. BASAL CONDITIONS :

- (i) (a) Gram—*Jowar*. (b) *Jowar*. (c) Nil. (ii) (a) Medium black. (b) Refer soil analysis, Mohol (iii) 18.10.1953. (iv) (a) N.A. (b) Seeds drilled. (c) 30 lb./ac. with 4 coultered drill. (d) 12" apart. (e) N.A. (v) Nil. (vi) *Chafa*. (vii) Unirrigated. (viii) Bullock hoeing on 27.11.1953 and 8.12.1953 and 2 Bullock intercultures. (ix) 8.89". (x) 1st and 25th Feb. 1954.

2. TREATMENTS :

1. Gram grown without  $P_2O_5$ .
  2. Gram grown with 50 lb./ac. of  $P_2O_5$  as Super.
  3. Gram grown with 100 lb./ac. of  $P_2O_5$  as Super.
  4. Gram grown with 150 lb./ac. of  $P_2O_5$  as Super.
  5. Fallow.
- $P_2O_5$  applied as super on 18.10.53.

3. DESIGN :

- (i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 5. (iv) (a) 42'×30'. (b) 30'×18'. (v) 6' all round. (vi) Yes.

## 4. GENERAL :

- (i) Good. (ii) Nil. (iii) Grain yield. (iv) (a) 1948—1954. (b) No. (c) N.A. (v) (a) No. (b) N.A. (vi) Nil. (vii) Due to non availability of suitable plot, 3 replications were accommodated in one patch and 2 replications in another patch of land leaving some gully like and uneven portion of the plot in between the two.

## 5. RESULTS :

- (i) 543 lb./ac.  
 (ii) 79.71 lb./ac.  
 (iii) Treatments do not differ significantly.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	485
2.	533
3.	580
4.	573
5.	—
S.E./mean	= 35.63 lb./ac.

Crop :- Gram (*Rabi*).

Ref. :- Mh. 49(127).

Site :- Agri. Res. Stn., Mohol.

Type :- 'M'.

Object :- To study the effect of Gram grown with and without  $P_2O_5$  on the succeeding cereal crop Wheat.

## 1. BASAL CONDITIONS :

- (i) (a) Gram-Jowar (b) Jowar. (c) Nil. (ii) (a) Medium black. (b) Refer soil analysis, Mohol. (iii) N.A. (iv) (a) 4 harrowings. (b) Drilling. (c) 30 lb./ac. (d) 12" between rows. (e) N.A. (v) Nil. (vi) *Chafu*. (vii) Unirrigated. (viii) Nil. (ix) 1.14". (x) N.A.

## 2. TREATMENTS :

- Gram grown with 50 lb./ac. of  $P_2O_5$  as Super.
- Gram grown with 100 lb./ac. of  $P_2O_5$  as Super.
- Gram grown with 150 lb./ac. of  $P_2O_5$  as Super.
- Gram grown without  $P_2O_5$ .

## 3. DESIGN :

- (i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 5. (iv) (a) N.A. (b)  $\frac{1}{2}$  guntha. (v) N.A. (vi) Yes.

## 4. GENERAL :

- (i) N.A. (ii) Nil. (iii) Grain yield. (iv) (a) 1949 to 1954. (b) No. (c) Nil. (v) (a) N.A. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 554 lb./ac.  
 (ii) 92.72 lb./ac.  
 (iii) Treatments do not differ significantly.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	526
2.	554
3.	579
4.	555
S.E./mean	= 41.45 lb./ac.

Crop :- Gram (*Rabi*).

Ref :- Mh. 50(6).

Site :- Agri. Res. Stn., Mohol.

Type :- 'M'.

Object :—To study the effect of Gram grown with and without  $P_2O_5$  on the succeeding cereal crop Wheat.

## 1. BASAL CONDITIONS :

(i) (a) No. (b) *Jowar*. (c) N.A. (ii) (a) Medium black. (b) Refer soil analysis, Mohol. (iii) 18.10.1950.  
 (iv) (a) N.A. (b) Seeds drilled. (c) 40 lb./ac. (d) 12" apart. (e) N.A. (v) F.Y.M. at 5 C.L./ac. to be given once in 3 years. (vi) *Chafa*. (vii) Unirrigated. (viii) 4 intercultures. (ix) 9.91". (x) 1.2.1951.

## 2. TREATMENTS :

1. Gram grown without  $P_2O_5$ .
2. Gram grown with 50 lb./ac. of  $P_2O_5$  as Super.
3. Gram grown with 100 lb./ac. of  $P_2O_5$  as Super.
4. Gram grown with 150 lb./ac. of  $P_2O_5$  as Super.
5. Fallow.

 $P_2O_5$  was applied at the time of sowing.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) 38' × 115'. (iv) (a) 38' × 23'. (b) 30' × 15'. (v) 4' around the plot. (vi) Yes.

## 4. GENERAL :

(i) Stunted growth. (ii) Nil. (iii) Grain yield. (iv) (a) 1949 to 1954. (b) No. (c) N.A. (v) (a) No. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS ;

- (i) 579 lb./ac.  
 (ii) 105.5 lb./ac.  
 (iii) Treatments do not differ significantly.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	506
2.	578
3.	578
4.	653
5.	—
S.E./mean	=47.18 lb./ac.

Crop :- Gram (*Rabi*).

Ref :- Mh. 51(14).

Site :- Agri. Res. Stn., Mohol.

Type :- 'M'.

Object :—To study the effect of Gram grown with and without  $P_2O_5$  on the succeeding cereal crop Wheat.

## 1. BASAL CONDITIONS :

(i) (a) No. (b) *Jowar*. (c) No. (ii) (a) Medium black. (b) Refer soil analysis, Mohol. (iii) 14.10.1951.  
 (iv) (a) Harrowed 4 times. (b) Seeds drilled. (c) 40 lb./ac. (d) 12" apart. (e) N.A. (v) Nil. (vi) *Chafa*.  
 (vii) Unirrigated. (viii) 3 intercultures. (ix) 7.49". (x) 24.1.1951.

## 2. TREATMENTS :

1. Gram grown without  $P_2O_5$ .
2. Gram grown with 50 lb./ac. of  $P_2O_5$ .
3. Gram grown with 100 lb./ac. of  $P_2O_5$ .
4. Gram grown with 150 lb./ac. of  $P_2O_5$ .
5. Fallow.

 $P_2O_5$  applied as Bone meal.



## 3. DESIGN :

- (i) R.B.D. (ii) (a) 5. (b) 115'×38'. (iii) 5. (iv) (a) 23'×38'. (b) 15'×30'. (v) 4' around the plot. (vi) Yes.

## 4. GENERAL :

- (i) Normal. (ii) Nil. (iii) Grain yield. (iv) (a) 1949—1954. (b) No. (c) N.A. (v) (a) No. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 413 lb./ac.  
 (ii) 64.86 lb./ac.  
 (iii) Treatments differ significantly.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	319
2.	425
3.	453
4.	455
5.	—
S.E./mean	= 29.2 lb./ac.

Crop :- Gram (*Rabi*).

Ref :- Mh. 52(112).

Site :- Agri. Res. Stn., Mohol.

Type :- 'M'.

Object :—To study the effect of Gram grown with and without  $P_2O_5$  on the succeeding cereal crop Wheat.

## 1. BASAL CONDITIONS :

- (i) (a) No. (b) *Jowar*. (c) Nil. (ii) (a) Medium black. (b) Refer soil analysis, Mohol. (iii) 3.10.1952. (iv) (a) 5 harrowings. (b) N.A. (c) 30 lb./ac. (d) 12". (e) N.A. (v) 5 C.L./ac. of F.Y.M. to be given once in 3 years. (vi) *Chafa*. (vii) Unirrigated (viii) 2 interculturings and weedings. (ix) 5.03". (x) 2.1.1953.

## 2. TREATMENTS :

- Gram grown without  $P_2O_5$
- Gram grown with  $P_2O_5$  at 50 lb./ac.
- Gram grown with  $P_2O_5$  at 100 lb./ac.
- Gram grown with  $P_2O_5$  at 150 lb./ac.
- Fallow.

$P_2O_5$  is applied to gram (*Rabi*) this year and its residual effect is studied on Wheat (*Rabi*) next year.

## 3. DESIGN :

- (i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 5. (iv) (a) N.A. (b) 30'×15'. (v) 4' all round the net plot. (vi) Yes.

## 4. GENERAL :

- (i) Normal. (ii) Nil. (iii) Grain yield. (iv) (a) 1949—1954. (b) No. (c) N.A. (v) (a) No. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 157 lb./ac.  
 (ii) 75.38 lb./ac.  
 (iii) Treatments do not differ significantly.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	182
2.	155
3.	105
4.	186
5.	—
S.E./mean	= 33.76 lb./ac.

Crop :-Gram (*Rabi*).  
Site :-Agri. Res. Stn., Mohol.

Ref :-Mh. 53(208).  
Type :-'M'.

Object : -To study the effect of Gram grown with and without  $P_2O_5$  on succeeding cereal crop Wheat.

1. BASAL CONDITIONS :

(i) (a) No. (b) *Jowar*. (c) N.A. (ii) (a) Medium black. (b) Refer soil analysis, Mohol. (iii) 17.10.1953. (iv) (a) N.A. (b) Seeds drilled. (c) 30 lb./ac. with a 4 coultered drill. (d) 12". (e) N.A. (v) Nil. (vi) *Chafa*. (vii) Unirrigated. (viii) Bullock hoeing on 26.11.1953 and 8.12.1953 and 2 intercultures by bullocks. (ix) 8.89". (x) 26 and 27.2.1954.

2. TREATMENTS :

1. Gram grown without  $P_2O_5$ .
  2. Gram grown with 50 lb./ac. of  $P_2O_5$ .
  3. Gram grown with 100 lb./ac. of  $P_2O_5$ .
  4. Gram grown with 150 lb./ac. of  $P_2O_5$ .
  5. Fallow.
- $P_2O_5$  as Super applied on 17.10.1953.

3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 5. (iv) (a) 38'×23'. (b) 30'×15'. (v) 4' all round the plot. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Grain yield. (iv) (a) 1949—1954. (b) No. (c) N.A. (v) (a) No. (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

- (i) 672 lb./ac.
- (ii) 134.8 lb./ac.
- (iii) Treatments do not differ significantly.
- (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	547
2.	687
3.	766
4.	687
5.	—
S.E /mean	=60.26 lb./ac.

Crop :-Gram (*Rabi*).  
Site :-Agri. Res. Stn., Niphad.

Ref :-Mh. 48(23).  
Type :-'M'.

Object :—To study the effect of Gram grown with and without  $P_2O_5$  on the succeeding *Bajra* crop.

1. BASAL CONDITIONS :

(i) (a) No. (b) Wheat. (c) Nil. (ii) (a) Loamy medium. (b) Refer soil analysis, Niphad. (iii) 12.10.1948. (iv) (a) N.A. (b) Sowing with 3 coultered drill. (c) 30 lb./ac. (d) 10" spacing between rows. (e) N.A. (v) Nil. (vi) *Chafa*. (vii) Unirrigated. (viii) N.A. (ix) 3.89". (x) N.A.

2. TREATMENTS :

1. Gram grown without  $P_2O_5$ .
  2. Gram grown with 50 lb./ac. of  $P_2O_5$ .
  3. Gram grown with 100 lb./ac. of  $P_2O_5$ .
  4. Gram grown with 150 lb./ac. of  $P_2O_5$ .
  5. Fallow.
- $P_2O_5$  applied as Super.

## 3. DESIGN :

- (i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 5. (iv) (a) 40' x 25'. (b) 30' x 15'. (v) 5' all round the plot. (vi) Yes.

## 4. GENERAL :

- (i) N.A. (ii) Nil. (iii) Grain yield. (iv) (a) *Rabi* 1948—*Kharif* 1944. (b) Yes. (c) N.A. (v) (a) No. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 1137 lb./ac.  
 (ii) 142.9 lb./ac.  
 (iii) Treatments differ highly significantly.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	777
2.	1133
3.	1320
4.	1316
5.	—
S.E./mean	=63.9 lb./ac.

Crop :- Gram (*Rabi*).

Ref :- Mh. 49(38)/48(23).

Site :- Agri. Res. Stn., Niphad.

Type :- 'M'.

Object :- To study the effect of Gram grown with and without  $P_2O_5$  on succeeding *Bajra* crop.

## 1. BASAL CONDITIONS :

- (i) (a) Gram—*Bajra*. (b) *Bajra*. (c) Nil. (ii) (a) Loamy medium. (b) Refer soil analysis, Niphad. (iii) 5.10.1949. (iv) (a) No ploughing. (b) Drilling. (c) 40 lb./ac. (d) Spacing between rows—10" and between plants irregular. (e) N.A. (v) Nil. (vi) *Chafa*. (vii) Unirrigated. (viii) Nil. (ix) 2.36". (x) 17.1.1950.

## 2. TREATMENTS :

- Gram grown without  $P_2O_5$ .
  - Gram grown with 50 lb./ac. of  $P_2O_5$ .
  - Gram grown with 100 lb./ac. of  $P_2O_5$ .
  - Gram grown with 150 lb./ac. of  $P_2O_5$ .
  - Fallow.
- $P_2O_5$  as Super broadcast on 31st Aug. 1949.

## 3. DESIGN :

- (i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 5. (iv) (a) 40' x 25'. (b) 30' x 15'. (v) 5' all round the plot. (vi) Yes.

## 4. GENERAL :

- (i) The general condition of the crop was below normal though there was no seasonal abnormality. (ii) Nil. (iii) Grain yield. (iv) (a) *Rabi* 1948 to *Kharif* 1954. (b) Yes. (c) N.A. (v) (a) No. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS:

- (i) 464 lb./ac.  
 (ii) 86.62 lb./ac.  
 (iii) Treatments do not differ significantly.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	442
2.	408
3.	433
4.	572
5.	—
S.E./mean	= 38.72 lb./ac.

Crop :- Gram (*Rabi*).

Ref :- Mh. 50(53)/49(38)/48(23).

Site :- Agri. Res. Stn., Niphad.

Type :- 'M'.

Object :—To study the effect of Gram grown with and without  $P_2O_5$  on succeeding cereal crop *Bajra*.

## 1. BASAL CONDITIONS :

- (i) (a) Gram—*Bajra*. (b) *Bajra*. (c) Nil. (ii) (a) Loamy medium. (b) Refer soil analysis, Niphad. (iii) 12.10.1950. (iv) (a) N.A. (b) Drilling with 4 coultered drill. (c) 30 lb./ac. (d) Between rows 10". (e) N.A. (v) Nil. (vi) *Chafa*. (vii) Unirrigated. (viii) Gap filling on 20.10.1950. (ix) Nil. (x) 28.1.1951.

## 2. TREATMENTS :

1. Gram grown without  $P_2O_5$ .
2. Gram grown with 50 lb./ac. of  $P_2O_5$ .
3. Gram grown with 100 lb./ac. of  $P_2O_5$ .
4. Gram grown with 150 lb./ac. of  $P_2O_5$ .
5. Fallow.

 $P_2O_5$  applied as Super.

## 3. DESIGN :

- (i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 5. (iv) (a) 40'×25'. (b) 30'×15'. (v) 5' all round the plot. (vi) Yes.

## 4. GENERAL :

- (i) Stand was slightly uneven and there were gaps. (ii) Nil. (iii) Grain yield. (iv) (a) *Rabi* 1948—*Kharif* 1954. (b) Yes. (c) N.A. (v) (a) No. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 378 lb./ac.  
 (ii) 55.1 lb./ac.  
 (iii) Treatments do not differ significantly.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	358
2.	357
3.	396
4.	401
5.	—
S.E./mean	=24.6 lb./ac.

Crop :- Gram (*Rabi*).

Ref :- Mh. 51(55)/50(53)/49(38)/48(23).

Site :- Agri. Res. Stn., Niphad.

Type :- 'M'.

Object :—To study the effect of Gram grown with and without  $P_2O_5$  on the succeeding cereal crop *Bajra*.

## 1. BASAL CONDITIONS :

- (i) (a) No. (b) Wheat. (c) Nil. (ii) (a) Loamy. (b) Refer soil analysis, Niphad. (iii) 10.10.1951. (iv) (a) N.A. (b) Drilling by 3 coultered (c) 40 lb./ac. (d) Spacing 10" between rows. (e) N.A. (v) Nil. (vi) *Chafa*. (vii) Unirrigated. (viii) Gap filling. (ix) 1". (x) 20.1.1952.

## 2. TREATMENTS :

1. Gram grown without  $P_2O_5$ .
2. Gram grown with 50 lb./ac. of  $P_2O_5$ .
3. Gram grown with 100 lb./ac. of  $P_2O_5$ .
4. Gram grown with 150 lb./ac. of  $P_2O_5$ .
5. Fallow.

 $P_2O_5$  applied as Super.

## 3. DESIGN :

- (i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 5. (iv) (a) 40'×25'. (b) 30'×15'. (v) 5' all round the plot. (vi) Yes.

## 4. GENERAL :

(i) Normal. (ii) Nil. (iii) Grain yield. (iv) (a) *Rabi* 1948—*Kharif* 1954. (b) Yes. (c) N.A. (v) (a) No. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 469 lb./ac.  
 (ii) 185.4 lb./ac.  
 (iii) Treatments differ significantly.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	341
2.	492
3.	485
4.	557
5.	—
S.E./mean	= 82.2 lb./ac.

Crop :- Gram (*Rabi*).

Ref :- Mh. 52(85)/51(55)/50(53)/49(38)/48(23).

Site :- Agri. Res. Stn., Niphad.

Type :- 'M'.

Object :- To study the effect of Gram grown with and without  $P_2O_5$  on the succeeding cereal crop *Bajra*.

## 1. BASAL CONDITIONS :

(i) (a) Gram—*Bajra*. (b) *Bajra* and *Tur*. (c) 5 C.L./ac. of F.Y.M. (ii) (a) Loamy medium. (b) Refer soil analysis, Niphad. (iii) 11.10.1952. (iv) (a) N.A. (b) Drilling. (c) 40 lb./ac. (d) 10°. (e) N.A. (v) Nil. (vi) *Chafa*. (vii) Irrigated. (viii) Nil. (ix) Nil. (x) 16.1.1953.

## 2. TREATMENTS :

- Gram grown without  $P_2O_5$ .
  - Gram grown with 50 lb./ac. of  $P_2O_5$ .
  - Gram grown with 100 lb./ac. of  $P_2O_5$ .
  - Gram grown with 150 lb./ac. of  $P_2O_5$ .
  - Fallow.
- $P_2O_5$  applied as Super.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 5. (iv) (a) 40'×25'. (b) 30'×15'. (v) 5'all round the plot. (vi) Yes.

## 4. GENERAL :

(i) Not good. (ii) Slight attack of borer at flower setting. (iii) Grain yield. (iv) (a) *Rabi* 1948—*Kharif* 1954. (b) Yes. (c) N.A. (v) (a) No. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 471 lb./ac.  
 (ii) 43.3 lb./ac.  
 (iii) Treatments do not differ significantly.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	453
2.	484
3.	473
4.	473
5.	—
S.E./mean	= 19.4 lb./ac.

Crop :- Gram (*Rabi*). Ref. :- Mh. 53(142)/52(85)/51(55)/50(53)/49(38)/48(23).

Site :- Agri. Res. Stn., Niphad.

Type :- 'M'.

Object :- To study the effect of Gram grown with and without  $P_2O_5$  on succeeding cereal crop *Bajra*.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) N.A. (c) N.A. (ii) (a) Loamy medium. (b) Refer soil analysis, Niphad. (iii) 25.9.1953.  
(iv) (a) N.A. (b) Drilling with 3 coultered drill. (c) 40 lb./ac. (d) 10". (e) N.A. (v) Nil. (vi) *Chafa*.  
(vii) Unirrigated. (viii) Nil. (ix) 4.65". (x) 30.12.1953.

2. TREATMENTS :

1. Gram grown without  $P_2O_5$ .  
2. Gram grown with 50 lb./ac. of  $P_2O_5$ .  
3. Gram grown with 100 lb./ac. of  $P_2O_5$ .  
4. Gram grown with 150 lb./ac. of  $P_2O_5$ .  
5. Fallow.

$P_2O_5$  applied as Super.

3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 5. (iv) (a) 40' x 25'. (b) 30' x 15'. (v) 5' around the plot.  
(vi) Yes.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) Grain yield. (iv) (a) *Rabi* 1948—*Kharif* 1954. (b) Yes. (c) N.A. (v) (a) No.  
(b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 566 lb./ac.  
(ii) 45.50 lb./ac.  
(iii) Treatments differ significantly.  
(iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	531
2.	557
3.	550
4.	624
5.	—
S.E./mean	=20.4 lb./ac.

Crop :- Gram (*Rabi*).

Site :- Agri. Res. Stn., Sholapur.

Ref :- Mh. 51(221).

Type :- 'M'.

Object :- To study the effect of  $ZnSO_4$  on Gram.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) N.A. (c) N.A. (ii) (a) Medium deep. (b) Refer soil analysis, Sholapur. (iii) 10.10.1951.  
(iv) (a) 2 harrowings. (b) Drilling. (c) 40 lb./ac. (d) Rows 12" apart. (e) —. (v) Nil. (vi) *Chafa*.  
(vii) Unirrigated. (viii) 1 weeding. (ix) Nil. (x) 12.1.1952.

2. TREATMENTS :

1. Control.  
2. 10 lb./ac. of  $ZnSO_4$ .  
3. 20 lb./ac. of  $ZnSO_4$ .

3. DESIGN :

(i) R.B.D. (ii) (a) 3. (b) N.A. (iii) 8. (iv) (a) 32' x 20'. (b) 26' x 14'. (v) 3' all round. (vi) Yes.

## 4. GENERAL :

(i) Normal. (ii) Nil. (iii) Grain and fodder yield. (iv) (a) 1951 to 1954. (b) No. (c) Nil. (v) (a) N.A. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 249 lb./ac.  
 (ii) 35.6 lb./ac.  
 (iii) Treatments do not differ significantly.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	253
2.	266
3.	228
S.E./mean	=12.6 lb./ac.

Crop :-Gram (*Rabi*).

Site :-Agri. Res. Stn., Sholapur.

Ref :-Mh. 52(368).

Type :-'M'.

Object :-To study the effect of  $ZnSO_4$  on Gram.

## 1. BASAL CONDITIONS :

(i) (a) Gram—*Jowar*. (b) and (c) N.A. (ii) (a) Medium black. (b) Refer soil analysis, Sholapur. (iii) 10.10.1952 (iv) (a) 1 harrowing. (b) Drilling. (c) 49 lb./ac. (d) Rows 12" apart. (e) N.A. (v) Nil. (vi) *Chafa*. (vii) Unirrigated. (viii) 1 weeding. (ix) Nil.. (x) 22.1.1953.

## 2. TREATMENTS :

1. Control.  
 2. 10 lb./ac. of  $ZnSO_4$  applied on 10.10.1952.  
 3. 20 lb./ac. of  $ZnSO_4$  applied on 10.10.1952.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 3. (b) N.A. (iii) 3. (iv) (a) 32'×20'. (b) 26'×14'. (v) 3' all round. (vi) Yes.

## 4. GENERAL :

(i) Normal growth. (ii) Nil. (iii) Grain yield. (iv) (a) 1951 to 1954. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 389 lb./ac.  
 (ii) 55.53 lb./ac.  
 (iii) Treatments do not differ significantly.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	384
2.	420
3.	363
S.E /mean	=19.64 lb./ac.

Crop :-Gram (*Rabi*).

Site :-Agri. Res. Stn., Sholapur.

Ref :-Mh. 53(373).

Type :-'M'.

Object :-To study the effect of  $ZnSO_4$  on Gram.

## 1. BASAL CONDITIONS :

(i) (a) Gram—*Jowar*. (b) *Jowar*. (c) N.A. (ii) (a) Medium black. (b) Refer soil analysis, Sholapur. (iii) 16.10.1953. (iv) (a) Nil. (b) Drilling. (c) 40 lb./ac. (d) 12" between rows. (e) N.A. (v) Nil. (vi) *Chafa*. (vii) Unirrigated. (viii) 2 weedings. (ix) Nil. (x) 2.2.1954.

## 2. TREATMENTS:

1. Control.
2. 10 lb./ac. of  $ZnSO_4$  applied on 16.10.1953.
3. 20 lb./ac. of  $ZnSO_4$  applied on 16.10.1953.

## 3. DESIGN:

- (i) R.B.D. (ii) (a) 3. (b) N.A. (iv) (a) 20'×32'. (b) 14'×26'. (v) 3' all round. (vi) Yes.

## 4. GENERAL :

- (i) Normal. (ii) Nil. (iii) Grain and fodder yield. (iv) (a) 1951 to 1954. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 417 lb./ac.  
 (ii) 61.6 lb./ac.  
 (iii) Treatments do not differ significantly.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	417
2.	426
3.	409
S.E./mean	=21.8 lb./ac.

Crop :- Gram (*Rabi*).

Ref :- Mh. 52(372).

Site :- Agri. Res. Stn., Sholapur.

Type :- 'M'.

Object :—To study the effect of Boron and Manganese alone and in combination on Gram.

## 1. BASAL CONDITIONS :

- (i) (a) Gram—*Jowar*. (b) *Jowar*. (c) Nil. (ii) (a) Medium deep. (b) Refer soil analysis, Sholapur. (iii) 10.10.1952. (iv) (a) Nil. (b) Drilling. (c) 40 lb./ac. (d) 12" between rows. (e) N.A. (v) Nil. (vi) *Chafa*. (vii) Unirrigated. (viii) 2 weedings. (ix) 2.76". (x) 21.1.1953.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 4 levels of Boron :  $B_0=0$ ,  $B_1=2$ ,  $B_2=4$  and  $B_3=6$  lb./ac.

(2) 4 levels of Manganese :  $M_0=0$ ,  $M_1=2$ ,  $M_2=4$  and  $M_3=6$  lb./ac.

Boron as Borax and Manganese as Mn. Sulphate applied on 10.10.1952.

## 3. DESIGN :

- (i) 4×4 Fact. in R.B.D. (ii) (a) 16. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 20'×18'. (v) N.A. (vi) Yes.

## 4. GENERAL :

- (i) Normal. (ii) Nil. (iii) Grain yield. (iv) (a) No. (b) No. (c) Nil. (v) (a) No. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 308 lb./ac.  
 (ii) 84.70 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>	B <sub>2</sub>	B <sub>3</sub>	Mean
M <sub>0</sub>	295	317	322	310	311
M <sub>1</sub>	285	340	308	335	317
M <sub>2</sub>	280	276	315	295	291
M <sub>3</sub>	348	231	340	342	315
Mean	302	291	321	320	308

S.E. of any marginal mean = 21.17 lb./ac.

S.E. of body of table = 42.35 lb./ac.

Crop :- Gram (*Rabi*).

Ref :- Mh. 53(276).

Site :- Govt. Seed and Demonstration Farm, Sindewahi. Type :- 'M'.

Object :- To study the effect of application of lime to the Gram crop.

## 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Sandy loam. (b) N.A. (iii) N.A. (iv) (a) to (c) N.A. (v) N.A. (vi) Gram-Adt. V. (vii) Unirrigated. (viii) N.A. (ix) 6Nil (x) N.A.

## 2. TREATMENTS :

1. Control (no lime).
2. 200 lb./ac. of lime.
3. 400 lb./ac. of lime.
4. 600 lb./ac. of lime.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 3. (iv) (a) N.A. (b) 1/80 ac. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) N.A. (iii) Grain yield. (iv) (a) 1953—1956. (b) and (c) N.A. (v) (a) and (b) N.A. (vi) Nil. (vii) Control is not replicated, treatment 2, 3 and 4 are based on three replications each.

## 5. RESULTS :

- (i) 596 lb./ac.
- (ii) 103.3 lb./ac.
- (iii) Treatments do not differ significantly.
- (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	560
2.	626
3.	573
4.	626

S.E./mean (for treatment 2, 3 and 4) = 57.9 lb./ac.

Crop :- Gram (*Rabi*).  
Site :- Agri. Res. Stn., Vadgaon.

Ref :- Mh. 49(97).  
Type :- 'M'.

Object :—To study the effect of  $P_2O_5$  on Gram and its residual effect on Paddy.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) Paddy. (c) Nil. (ii) (a) Medium black. (b) N.A. (iii) N.A. (iv) (a) and (b) N.A. (c) 40 lb./ac. (d)  $9' \times 9'$ . (e) N.A. (v) N.A. (vi) N.A. (vii) Unirrigated. (viii) N.A. (ix)  $3.34'$  (x) N.A.

2. TREATMENTS :

1. Control (no  $P_2O_5$ ).
2. 50 lb./ac. of  $P_2O_5$  as Super in the plough furrows.
3. 100 lb./ac. of  $P_2O_5$  as Super in the plough furrows.
4. 150 lb./ac. of  $P_2O_5$  as Super in the plough furrows.
5. Fallow in *Rabi* and sown in *Kharif*.

3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 5. (iv) (a)  $22' \times 16'$ . (b)  $15' \times 9'$ . (v)  $3\frac{1}{2}'$  all round. (vi) Yes.

4. GENERAL :

(i) N.A. (ii) N.A. (iii) Grain yield. (iv) (a) 1948 (*rabi*) to 1953 (*kharif*). (b) N.A. (c) N.A. (v) (a) N.A. (b) N.A. (vi) No reason is given for low yield. (vii) Experiment failed in 1948.

5. RESULTS :

- (i) 323 lb./ac.  
(ii) 66.6 lb./ac.  
(iii) Treatments do not differ significantly.  
(iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	314
2.	321
3.	291
4.	365
5.	—
S.E./mean	= 29.8 lb./ac.

Crop :- Gram (*Rabi*).  
Site :- Agri. Res. Stn., Vadgaon.

Ref :- Mh. 50(122).  
Type :- 'M'.

Object :—To study the direct effect of  $P_2O_5$  on Gram and its residual effect on Paddy.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Medium black. (b) N.A. (iii) 15.11.1950 for 3 replications and 27.11.1950 for 2 replications. (iv) (a) N.A. (b) N.A. (c) 40 lb./ac. (d)  $9' \times 9'$ . (e) N.A. (v) N.A. (vi) N.A. (vii) Unirrigated. (viii) Nil. (ix)  $5.71'$ . (x) 26.2.1951.

2. TREATMENTS :

1. Control (no  $P_2O_5$ ).
2. 50 lb./ac. of  $P_2O_5$  as Super in the plough furrow.
3. 100 lb./ac. of  $P_2O_5$  as Super in the plough furrow.
4. 150 lb./ac. of  $P_2O_5$  as Super in the plough furrow.
5. Fallow in *Rabi* and sown in *Kharif*.

3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 5. (iv) (a)  $22' \times 16'$ . (b)  $18' \times 12'$ . (v)  $2'$  all round. (vi) Yes.

## 4. GENERAL :

(i) The earlier sown crop was good. In other plots, it was below normal in vigour and growth. No differential response was observed from the appearance of the gram. (ii) Nil. (iii) Grain yield. (iv) (a) 1948 (*Rabi*) to 1953 (*Kharif*). (b) N.A. (c) N.A. (v) (a) N.A. (b) N.A. (vi) Nil. (vii) Sowing was delayed in 2 replications. Bunds of 2' width are put round the plots.

## 5. RESULTS :

- (i) 358 lb./ac.  
 (ii) 91.36 lb./ac.  
 (iii) Treatments do not differ significantly.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	349
2.	364
3.	324
4.	394
5.	—
S.E./mean	=40.8 lb./ac.

Crop :- Gram (*Rabi*).

Site :- Agri. Res. Stn., Vadgaon.

Ref :- Mh. 51(165).

Type :- 'M'.

Object :- To study the direct effect of  $P_2O_5$  on Gram and its residual effect on Paddy.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) Paddy. (c) Nil. (ii) (a) Medium black. (b) N.A. (iii) 2.12.1951. (iv) (a) and (b) N.A. (c) 60 lb./ac. (d) and (e) N.A. (v) N.A. (vi) N.A. (vii) Unirrigated. (viii) Weeding 15.1.1952. (ix) 10.00". (x) 5.3.1952.

## 2. TREATMENTS

- Control (no  $P_2O_5$ ).
- 50 lb./ac. of  $P_2O_5$  as Super in the plough furrows.
- 100 lb./ac. of  $P_2O_5$  as Super in the plough furrows.
- 150 lb./ac. of  $P_2O_5$  as Super in the plough furrows.
- Fallow in *rabi* and Paddy in *kharif*.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 5. (iv) (a) 22'×16'. (b) 18'×12'. (v) 2' around. (vi) Yes.

## 4. GENERAL :

(i) Below normal due to cloudy weather and heavy rainfall. It had to be resown. (ii) Nil. (iii) Grain yield. (iv) (a) 1948 (*Rabi*) to 1953 (*Kharif*). (b) and (c) N.A. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 274 lb./ac.  
 (ii) 73.17 lb./ac.  
 (iii) Treatments do not differ significantly.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	285
2.	270
3.	244
4.	296
5.	—
S.E./mean	= 32.71 lb./ac.

Crop :- Gram (*Rabi*).  
Site :- Agri. Res. Stn., Mohol.

Ref :- Mh. 48(51).  
Type :- 'C'.

Object :- To study the effect of nipping on Gram yield.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Jowar*. (c) Nil. (ii) (a) Medium black. (b) Refer soil analysis, Mohol. (iii) 3.10.1948. (iv) (a) 4 harrowings. (b) Drilling. (c) N.A. (d) 12". (e) N.A. (v) 5 C.L./ac. of F.Y.M. spread with hand at the time of second harrowing. (vi) Gram-*Chafa*. (vii) Unirrigated. (viii) 2 intercultures (ix) 5.38". (x) 28.1.1949.

2. TREATMENTS :

1. Nipping at the time of flowering.
2. No nipping.

3. DESIGN :

(i) R.B.D. (ii) (a) 2. (b) N.A. (iii) 10. (iv) (a) N.A. (b) 1/40 ac. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) Grain yield. (iv) (a) 1947 to 1948. (b) No. (c) N.A. (v) (a) N.A. (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

- (i) 626 lb./ac.
- (ii) 34.91 lb./ac.
- (iii) Treatments do not differ significantly.
- (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	622
2.	629
S.E./mean	= 11.04 lb./ac.

Crop :- Gram (*Rabi*).  
Site :- Agri. Res. Stn., Mohol.

Ref :- Mh.49(75).  
Type :- 'C'.

Object :- To study the effect of nipping on Gram yield.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Jowar*. (c) Nil. (ii) (a) Medium black. (b) Refer soil analysis, Mohol. (iii) 11.10.1949. (iv) (a) 4 harrowings. (b) Drilling. (c) N.A. (d) 12". (e) N.A. (v) 5 C.L./ac. of F.Y.M. applied at the time of second harrowing. (vi) Gram-*Chafa*. (vii) Unirrigated. (viii) 2 intercultures. (ix) 1.14". (x) 15.1.1950.

2. TREATMENTS :

1. Nipping at the time of flowering.
2. No nipping.

3. DESIGN :

(i) R.B.D. (ii) (a) 2. (b) N.A. (iii) 10. (iv) (a) N.A. (b) 30'x9'. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) Grain yield. (iv) (a) 1947 to 1948. (b) No. (c) N.A. (v) (a) N.A. (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

- (i) 184 lb./ac.
- (ii) 12.50 lb./ac.
- (iii) Treatments do not differ significantly.

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

Treatment	Av. yield
1.	184
2.	184
S.E./mean	=3.95 lb./ac.

Crop :- Gram (*Rabi*).

Site :- Agri. Res. Stn., Mohol.

Ref. :- Mh. 48(50).

Type :- 'C'.

Object :- To ascertain the optimum seed rate for Gram.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Jowar*. (c) Nil. (ii) (a) Medium black. (b) Refer soil analysis, Mohol. (iii) 3.10.1948. (iv) (a) 4 harrowings. (b) Drilling. (c) As per treatments. (d) 12". (e) N.A. (v) Nil. (vi) Gram-*Chafa*. (vii) Unirrigated. (viii) 2 intercultures. (ix) 5.38". (x) 28.11.1949.

2. TREATMENTS :

3 seed rates :  $R_1=20$ ,  $R_2=30$  and  $R_3=40$  lb./ac.

3. DESIGN :

(i) R.B.D. (ii) (a) 3. (b) N.A. (iii) 6. (iv) (a) N.A. (b) 1/80 th ac. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) Grain yield. (iv) (a) 1947 to 1948. (b) No. (c) N.A. (v) (a) N.A. (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 671 lb./ac.  
 (ii) 69.94 lb./ac.  
 (iii) Treatments do not differ significantly.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
$R_1$	690
$R_2$	689
$R_3$	634
S.E./mean	=28.56 lb./ac.

Crop :- Gram (*Rabi*).

Site :- Agri. Res. Stn., Mohol.

Ref :- Mh. 49(76).

Type :- 'C'.

Object :- To ascertain the optimum seedrate for Gram.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Jowar*. (c) 5 C.L./ac. of F.Y.M. (ii) (a) Medium black. (b) Refer soil analysis, Mohol. (iii) 12.10.1949. (iv) (a) 4 harrowings. (b) Drilling. (c) As per treatments. (d) 12". (e) N.A. (v) Nil. (vi) Gram - *Chafa*. (vii) Unirrigated. (viii) 2 intercultures. (ix) 1.14". (x) 17.1.1950.

2. TREATMENTS :

3 seedrates :  $R_1=20$ ,  $R_2=30$  and  $R_3=40$  lb./ac.

3. DESIGN :

(i) R.B.D. (ii) 3. (b) N.A. (iii) 8. (iv) (a) N.A. (b) 1/80 th ac. (v) N.A. (vi) Yes.

## 4. GENERAL :

- (i) Normal. (ii) Nil. (iii) Grain yield. (iv) (a) 1947 to 1949. (b) No. (c) N.A. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 681 lb./ac.  
 (ii) 66.50 lb./ac.  
 (iii) Treatments do not differ significantly.  
 (iv) Av. yield of grain in lb /ac.

Treatment	Av. yield
1.	667
2.	652
3.	723
S.E./mean	=23.5 lb./ac.

Crop :- Gram (*Rabi*).

Ref :- Mh. 53(35).

Site :- Agri. Res. Stn., Kopergaon.

Type :- 'D'.

Object :- To control the *Penicum Isachme* (*Shipi*) by pre-emergence treatment of (Netagrone) 2-4-D.

## 1. BASAL CONDITIONS :

- (i) (a) Nil. (b) N.A. (c) Nil. (ii) (a) 'H' Type (b) Refer soil analysis, Kopergaon. (iii) 10.12.1953.  
 (iv) (a) One ploughing and harrowing. (b) to (e) N.A. (v) Nil. (vi) Gram—*Chafa* (early). (vii) Irrigated. (viii) 1 weeding. (ix) 4.17". (x) 29.3.1954.

## 2. TREATMENTS :

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

- (1) 3 concentrations of Netagrone 2-4-D :  $C_1=0.2$ ,  $C_2=0.1$  and  $C_3=0.05\%$ .

- (2) 3 intervals of spraying :  $M_1$ =Unweeded and sprayed with Netagrone—4 weeks after sowing,  
 $M_2$ =Weeded and sprayed with Netagrone—4 weeks after sowing  
 and  $M_3$ =Weeded scron with Gram, sprayed with Netagrone—after sowing.

## 3. DESIGN :

- (i) R.B.D. (ii) (a) 10. (b) N.A. (iii) 2. (iv) (a) 50 × 20'. (b) 42' × 12'. (v) 4' all round. (vi) Yes.

## 4. GENERAL :

- (i) Fair. (ii) Nil. (iii) Germination date, flowering date, height, no. of tillers etc. (iv) (a) 1951 to 1955.  
 (b) No. (c) N.A. (v) (a) and (b) N.A. (vi) Nil. (vii) Due to late receipt of chemicals the sowing of the Gram was delayed. Hence the crop growth was somewhat different than the normal which ultimately affected the yield to a considerable extent.

## 5. RESULTS :

- (i) 363 lb./ac.  
 (ii) 92.48 lb./ac.  
 (iii) None of the effects is significant.  
 (iv) Av. yield of grain in lb./ac.

Control = 405 lb./ac.

	$C_1$	$C_2$	$C_3$	Mean
$M_1$	305	340	416	354
$M_2$	427	359	337	374
$M_3$	356	335	346	346
Mean	363	345	366	

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

=37.76 lb./ac.  
 =64.82 lb./ac.

Crop :- Gram (*Rabi*).

Ref :- Mh. 52(307).

Site :- Agri. Res. Stn., Kopergaon.

Type :- 'D'.

Object :- To control the *Penicum Isachme (shipi)* by pre-emergence treatment (Netagrone 2-4-D).

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Jowar* for fodder. (c) 2 bags/ac. of G.N.C. (ii) (a) A type soil. (b) Refer soil analysis, Kopergaon. (iii) 16.11.1959. (iv) (a) 4 ploughings and 2 harrowings. (b) Drilling. (c) 40 lb./ac. (d) 12" between rows. (e) —. (v) Nil. (vi) *Chafa-Gram*. (vii) Irrigated. (viii) As per treatments. (ix) 11.73". (x) 20.3.1953.

## 2. TREATMENTS :

1. Spraying of Netagrone 6 weeks prior to sowing and not to be weeded.
2. No spraying and no weeding.
3. No spraying but one weeding.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 3. (b) N.A. (iii) 4. (iv) (a) 76' × 44'. (b) 70' × 38'. (v) 3' all round. (vi) Yes.

## 4. GENERAL :

(i) Normal. (ii) Nil. (iii) Grain yield. (iv) (a) 1951—N.A. (b) and (c) No. (v) (a) and (b) Nil. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 621 lb./ac.  
 (ii) 56.73 lb./ac.  
 (iii) Treatments differ highly significantly.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	480
2.	685
3.	699
S.E./mean	= 28.37 lb./ac.

✓ Crop :- Gram (*Rabi*).

Ref :- Mh. 52(135).

Site :- Govt. Exptl. Farm, Nagpur.

Type :- 'D'.

Object :- To study the effect of "*pacillas radidicola*" used for inoculaing soil and gram seed on the ultimate yield of Gram.

## 1. BASAL CONDITIONS :

(i) (a) No particular. (b) and (c) N.A. (ii) (a) Black cotton. (b) Refer soil analysis, Nagpur. (iii) 13.10.1952. (iv) (a) to (e) N.A. (v) Nil. (vi) Gram-No. 28. (vii) Unirrigated. (viii) N.A. (ix) 1.78". (x) 19.2.1953.

## 2. TREATMENTS :

1. Control.
2. Seeds inoculated.
3. Soil inoculated.
4. Soil inoculated and last year's gram seeds grown in the area.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 4. (iv) (a) 20' × 11'. (b) 15' × 9'. (v) 1' all round. (vi) Yes.

## 4. GENERAL :

(i) Normal. (ii) Nil. (iii) Grain yield. (iv) (a) 1951—N.A. (b) No. (c) No. (v) (a) Nil. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 934 lb./ac.  
 (ii) 309.1 lb./ac.  
 (iii) Treatments do not differ significantly.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	882
2.	933
3.	908
4.	1013
S.E./mean	= 154.5 lb./ac.

Crop :- Chinamug (*Kharif*).

Ref. :- Mh. 49(29).

Site :- Agri. Res. Stn., Jalagaon.

Type :- 'M'.

Object :- To study the effects of leguminous crop grown with and without  $P_2O_5$  on succeeding cereal crop Wheat.

## 1. BASAL CONDITIONS :

- (i) (a) Nil. (b) *Jowar*. (c) Nil. (ii) (a) Deep black cotton type having a depth of 10 to 13 feet. (b) Refer soil analysis, Jalagaon. (iii) 2.7.1949. (iv) (a) 4 to 5 harrowings. (b) Drilling. (c) 8 lb./ac. (d) 18". (e) N.A. (v) Nil. (vi) N.A. (vii) Unirrigated. (viii) 2 weedings and 2 hoeings. (ix) 44.17". (x) 4.9.1949.

## 2. TREATMENTS :

- Control (no  $P_2O_5$  applied).
- 50 lb./ac. of  $P_2O_5$  as Super.
- 100 lb./ac. of  $P_2O_5$  as Super.
- 150 lb./ac. of  $P_2O_5$  as Super.
- Fallow in *Kharif* and sown in *Rabi*.

## 3. DESIGN :

- (i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 5. (iv) (a) 42' x 19'.6". (b) 30' x 13'.6". (v) 6' x 3'. (vi) Yes.

## 4. GENERAL :

- (i) The growth of the crop was healthy throughout the season. More vegetative growth of the crop was observed due to excessive rain fall. (ii) Nil. (iii) Grain yield. (iv) (a) *Kharif* 1949 to *Rabi* 1954. (b) No. (c) N.A. (v) (a) Mohol and Niphad. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 795 lb./ac.  
 (ii) 72.4 lb./ac.  
 (iii) Treatment differences are highly significant.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	715
2.	747
3.	819
4.	900
5.	Fallow
S.E./mean	= 32.41 lb./ac.



Crop :- Chinamug (*Kharif*).  
Site :- Agri. Res. Stn., Jalagaon.

Ref :- Mh. 50(40).  
Type :- 'M'.

Object :- To study the effects of leguminous crop grown with and without  $P_2O_5$  on succeeding cereal crop Wheat.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Jowar*. (c) Nil. (ii) (a) Deep black cotton type having a depth of 10' to 13'. (b) Refer soil analysis, Jalagaon. (iii) 7.7.1950. (iv) (a) N.A. (b) Drilling. (c) 8 lb./ac. (d) 18". (e) N.A. (v) Nil. (vi) N.A. (vii) Unirrigated. (viii) 1 weeding on 8.8.1950 and 2 hoeings. (ix) 21.73". (x) 8.9.1950.

2. TREATMENTS :

1. Control (no manure).
2. 50 lb./ac. of  $P_2O_5$  as Super.
3. 100 lb./ac. of  $P_2O_5$  as Super.
4. 150 lb./ac. of  $P_2O_5$  as Super.
5. Fallow in *Kharif* and sown in *Rabi*.  
 $P_2O_5$  drilled with the seeds of the leguminous crop.

3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 5. (iv) (a) 42' x 19'.6". (b) 30' x 13.6". (v) 6' x 3'. (vi) Yes.

4. GENERAL :

(i) N.A. (ii) Nil. (iii) Grain yield. (iv) (a) *Kharif* 1949 to *Rabi* 1954. (b) No. (c) N.A. (v) (a) Mohol and Niphad. (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

- (i) 289 lb./ac.  
(ii) 83.9 lb./ac.  
(iii) Treatments do not differ significantly.  
(iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	325
2.	226
3.	309
4.	298
5.	—
S.E./mean	=37.5 lb./ac.

Crop :- Chinamug (*Kharif*).  
Site :- Agri. Res. Stn., Jalagaon.

Ref :- Mh. 51(44).  
Type :- 'M'.

Object :- To study the effect of leguminous crop grown with and without  $P_2O_5$  on succeeding cereal crop Wheat.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Cotton. (c) 7.5 C.L./ac. of F.Y.M. + 100 lb./ac. of A/S. (ii) (a) Deep black cotton type having a depth of 10' to 13'. (b) Refer soil analysis, Jalagaon. (iii) 13.7.1951. (iv) (a) N.A. (b) Drilling. (c) 8 lb./ac. (d) 18" between rows. (e) N.A. (v) Nil. (vi) N.A. (vii) Unirrigated. (viii) 1 weeding and 2 hoeings. (ix) 20.14". (x) 14.9.1951.

2. TREATMENTS :

1. Control (no manure).
2. 50 lb./ac. of  $P_2O_5$  as Super.
3. 100 lb./ac. of  $P_2O_5$  as Super.
4. 150 lb./ac. of  $P_2O_5$  as Super.
5. fallow in *Kharif* and sown in *Rabi*.  
 $P_2O_5$  drilled with seeds of leguminous crop.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 5. (iv) (a) 42'×19'-6". (b) 30'×13'-6". (v) 6'×3'. (vi) Yes.

## 4. GENERAL :

(i) Break of rains when the crop was flowering, hence some bad effect upon the growth. (ii) Nil. (iii) Grain yield. (iv) (a) *Kharif* 1949 to *Rabi* 1954. (b) No. (c) N.A. (v) (a) Mohol and Niphad. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 283 lb./ac.  
 (ii) 64.4 lb./ac.  
 (iii) Treatments do not differ significantly.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	290
2.	266
3.	261
4.	315
5.	Fallow
S.E./mean	= 28.8 lb./ac.

Crop :- Chinamug (*Kharif*).

Ref :- Mh. 52(70).

Site :- Agri. Res. Stn., Jalagaon.

Type :- 'M'.

Object :—To study the effects of leguminous crop grown with and without  $P_2O_5$  on succeeding cereal crop, Wheat.

## 1. BASAL CONDITIONS :

(i) (a) *Chinamug*—Wheat. (b) Wheat. (c) Nil. (ii) (a) Deep black cotton type having a depth of 10' to 13' (b) Refer soil analysis, Jalagaon. (iii) 29.6.1952. (iv) (a) N.A. (b) Drilling. (c) 8 lb./ac. (d) Rows 18" apart. (e) N.A. (v) Nil. (vi) N.A. (vii) Unirrigated. (viii) 1 weeding and 2 hoeings. (ix) 17.61". (x) 3.9.1952.

## 2. TREATMENTS :

- Control (no manure).
- 50 lb./ac. of  $P_2O_5$  as Super.
- 100 lb./ac. of  $P_2O_5$  as Super.
- 150 lb./ac. of  $P_2O_5$  as Super.
- No manuring (fallow in *Kharif* and sown in *Rabi*).  
 $P_2O_5$  drilled with seeds of leguminous crop.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 5. (iv) (a) 42'×19'-6". (b) 30'×13'-6". (v) 6'×3'. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Nil. (iii) Grain and chaff yield. (iv) (a) *Kharif* 1949 to *Rabi* 1954. (b) No. (c) N.A. (v) (a) Mohol and Niphad. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 659 lb./ac.  
 (ii) 164.9 lb./ac.  
 (iii) Treatments do not differ significantly.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	589
2.	660
3.	683
4.	705
5.	Fallow
S.E./mean	= 73.7 lb./ac.

Crop :- Chinamug (*Kharif*).  
Site :- Agri. Res. Stn., Jalagaon,

Ref :- Mh. 53(133).  
Type :- 'M'.

Object :—To study the effects of a leguminous crop (*Chinamug*) grown with and without  $P_2O_5$  on the succeeding cereal crop Wheat.

1. BASAL CONDITIONS :

(i) (a) *Chinamug*—Wheat. (b) Wheat. (c) Nil. (ii) (a) Deep black cotton type having a depth of 10' to 13'. (b) Refer soil analysis, Jalagaon. (iii) 25.6.1953. (iv) (a) N.A. (b) Drilling. (c) 8 lb./ac. (d) Between rows 18". (e) N.A. (v) Nil. (vi) N.A. (vii) Unirrigated. (viii) 1 thinning, 1 gapfilling, 1 hoeing and 1 weeding. (ix) 23.77". (x) 1.9.1953.

2. TREATMENTS :

1. Control (no manure).
2. 50 lb./ac. of  $P_2O_5$  as Super.
3. 100 lb./ac. of  $P_2O_5$  as Super.
4. 150 lb./ac. of  $P_2O_5$  as Super.
5. No manure (fallow in *Kharif* and sown in *Rabi*).

3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 5. (iv) (a) 42' × 19'-6". (b) 30' × 13'-6". (v) 6' × 3'. (vi) Yes.

4. GENERAL :

(i) The growth was normal and satisfactory. (ii) Nil. (iii) Grain and Chaff yield. (iv) (a) *Kharif* 1949 to *Rabi* 1954. (b) No. (c) N.A. (v) (a) Mohol and Niphad. (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

- (i) 1863 lb./ac.  
(ii) 329.5 lb./ac.  
(iii) Treatment differences are significant.  
(iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	1331
2.	1976
3.	2084
4.	2061
5.	—
S.E./mean	= 147.3 lb./ac.

Crop :- Chinamug (*Kharif*).  
Site :- Agri. Res. Stn., Mohol.

Ref :- Mh. 49(60).  
Type :- 'M'.

Object :—To study the effect of *Chinamug* grown with and without  $P_2O_5$  on the succeeding cereal crop *Jowar*.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) *Tur*. (c) Nil. (ii) (a) Medium black. (b) Refer soil analysis, Mohol: (iii) 28.6.1949. (iv) (a) and (b) N.A. (c) 10 lb./ac. (d) 12". (e) N.A. (v) Nil. (vi) *Chinamug*. (vii) Unirrigated: (viii) 1 interculturing. (ix) 14". (x) 5.9.1949.

2. TREATMENTS :

1. *Chinamug* grown without  $P_2O_5$ .
2. *Chinamug* grown with 50 lb./ac. of  $P_2O_5$  applied on 28.6.1949.
3. *Chinamug* grown with 100 lb./ac. of  $P_2O_5$  applied on 28.6.1949.
4. *Chinamug* grown with 150 lb./ac. of  $P_2O_5$  applied on 28.6.1949.
5. Fallow.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 5. (iv) (a) 42'×27'. (b) 30'×15'. (v) 6' all round. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) N.A. (iii) Grain yield. (iv) (a) 1949 to 1954. (b) No. (c) N.A. (v) (a) Jalagaon and Niphad. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 390 lb./ac.  
 (ii) 95.74 lb./ac.  
 (iii) Treatments do not differ significantly.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	291
2.	369
3.	460
4.	440
5.	—
S.E./mean	= 42.8 lb./ac.

Crop :- Chinamug (*Kharif*).

Site :- Agri. Res. Stn., Mohol.

Ref :- Mh. 51(8).

Type :- 'M'.

Object :—To study the effect of *Chinamug* grown with and without  $P_2O_5$  on the succeeding cereal crop *Jowar*.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) Gram. (c) 5 C.L./ac. of F.Y.M. (ii) (a) Medium black. (b) Refer soil analysis, Mohol. (iii) 3.7.1951. (iv) (a) 4 harrowings. Ploughed once in 3 years (ploughed this year). (b) Seeds drilled. (c) 10 lb./ac. (d) 12". (e) N.A. (v) 5 C.L./ac. of F.Y.M. applied once in three years. (vi) *Chinamug*. (vii) Unirrigated. (viii) Clod crushing, 2 interculturings. (ix) 19.87". (x) 3 pickings from 29.8.1951 to 26.9.1951.

## 2. TREATMENTS :

- No manure.
- 50 lb./ac. of  $P_2O_5$  as B.M.
- 100 lb./ac. of  $P_2O_5$  as B.M.
- 150 lb./ac. of  $P_2O_5$  as B.M.
- Fallow in *Kharif* and *Jowar* in *Rabi*.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) 42'×135'. (iii) 5. (iv) (a) 42'×27'. (b) 30'×15'. (v) 6' around. (vi) Yes.

## 4. GENERAL :

(i) Normal. (ii) Nil. (iii) Weight of *Chinamug* grain. (iv) (a) 1949 to 1954. (b) No. (c) N.A. (v) (a) Jalagaon and Niphad. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 320 lb./ac.  
 (ii) 66.8 lb./ac.  
 (iii) Treatments differ highly significantly.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	217
2.	265
3.	369
4.	428
5.	—
S.E./mean	= 29.9 lb./ac.

Crop :- Chinamug (*Kharif*).  
Site :- Agri. Res. Stn., Mohol.

Ref. :- Mh. 49(58).  
Type :- 'M'.

Object :- To study the effect of *Chinamug* grown with and without  $P_2O_5$  on the succeeding cereal crop Wheat.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) *Tur.* (c) Nil. (ii) (a) Medium black. (b) Refer soil analysis, Mohol. (iii) 28.6.1949. (iv) (a) and (b) N.A. (c) 10 lb./ac. (d) 12" apart. (e) N.A. (v) Nil. (vi) *Chinamug.* (vii) Unirrigated. (viii) 1 interculturing. (ix) 34". (x) 5.9.1949.

2. TREATMENTS :

1. *Chinamug* grown without  $P_2O_5$ .
2. *Chinamug* grown with 50 lb./ac. of  $P_2O_5$ .
3. *Chinamug* grown with 100 lb./ac. of  $P_2O_5$ .
4. *Chinamug* grown with 150 lb./ac. of  $P_2O_5$ .

3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 4. (iv) (a) 42' x 27'. (b) 30' x 15'. (v) 6' around. (vi) Yes.

4. GENERAL :

(i) N.A. (ii) Nil. (iii) Grain yield. (iv) (a) 1949 to 1954. (b) and (c) No. (v) (a) Jalagaon and Niphad. (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

- (i) 418 lb./ac.  
(ii) 91.27 lb./ac.  
(iii) Treatments differ significantly.  
(iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	342
2.	356
3.	462
4.	510
S.E./mean	=40.8 lb./ac.

Crop :- Chinamug (*Kharif*).  
Site :- Agri. Res. Stn., Mohol.

Ref :- Mh. 51(13).  
Type :- 'M'.

Object :- To study the effect of *Chinamug* grown with and without  $P_2O_5$  on the succeeding cereal crop Wheat.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Gram. (c) 5 C.L./ac. of F.Y.M. (ii) (a) Medium black. (b) Refer soil analysis, Mohol. (iii) 4.7.1951. (iv) (a) Ploughing, clod crushing, 4 times harrowings. (b) Seeds drilled. (c) 10 lb./ac. with 3 coultered drill. (d) 12" apart. (e) N.A. (v) N.A. (vi) *Chinamug.* (vii) Unirrigated. (viii) 2 interculturing. (ix) 19.87". (x) 3 pickings of pod from 30.8.1951 to 26.9.1951.

2. TREATMENTS :

1. Control (no  $P_2O_5$ ).
2. B.M. at 50 lb./ac. of  $P_2O_5$  applied to *Chinamug*.
3. B.M. at 100 lb./ac. of  $P_2O_5$  applied to *Chinamug*.
4. B.M. at 150 lb./ac. of  $P_2O_5$  applied to *Chinamug*.
5. Fallow in *Kharif* and wheat in *Rabi*.

3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) 135' x 42'. (iii) 5. (iv) (a) 27' x 42'. (b) 15' x 30'. (v) 6' around. (vi) Yes.

## 4. GENERAL :

(i) Normal. (ii) Nil. (iii) Weight of *Chinamug* grain. (iv) (a) 1949 to 1954. (b) No. (c) N.A. (v) (a) Jalagaon and Niphad. (b) N.A. (vi) Nil. (vii) The atmosphere was cloudy during the stage of pod formation. Rainfall was well distributed.

## 5. RESULTS :

- (i) 282 lb./ac.  
 (ii) 58.1 lb./ac.  
 (iii) Treatments differ significantly.  
 (iv) Av. yield of grain in lb./ac.
- | Treatment | Av. yield      |
|-----------|----------------|
| 1.        | 169            |
| 2.        | 301            |
| 3.        | 311            |
| 4.        | 345            |
| 5.        | —              |
| S.E./mean | =25.97 lb./ac. |

Crop :- *Chinamug* (*Kharif*).  
 Site :- Agri. Res. Stn., Niphad.

Ref :- Mh. 50(52).  
 Type :- 'M'.

Object :—To study the effect of *Chinamug* grown with and without  $P_2O_5$  on the succeeding cereal crop Wheat.

## 1. BASAL CONDITIONS :

(i) (a) *Chinamug*—Wheat. (b) Wheat. (c) Nil. (ii) (a) Loamy-medium. (b) Refer soil analysis, Niphad. (iii) 24.7.1950. (iv) (a) N.A. (b) Drilling the seeds by 4 coultered drill. (c) N.A. (d) Rows 10' apart. (e) N.A. (v) Nil. (vi) *Chinamug*. (vii) Unirrigated. (viii) Gap filled on 29.7.1960 and hand weeding on 25.8.1950. (ix) 27.73". (x) 26.9.1950.

## 2. TREATMENTS :

- No  $P_2O_5$ .
- 50 lb./ac. of  $P_2O_5$  as Super applied to *Chinamug*.
- 100 lb./ac. of  $P_2O_5$  as Super applied to *Chinamug*.
- 150 lb./ac. of  $P_2O_5$  as Super applied to *Chinamug*.
- Fallow in *Kharif*.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 5. (iv) (a) 40' × 25'. (b) 30' × 15'. (v) 5' around. (vi) Yes.

## 4. GENERAL :

(i) Stunted growth for want of rain. (ii) Attack of *Aphis*. (iii) Grain yield. (iv) (a) 1950 to 1953. (b) No. (c) N.A. (v) (a) Mohol. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 217 lb./ac.  
 (ii) 28.70 lb./ac.  
 (iii) Treatments differ highly significantly.  
 (iv) Av. yield of grain in lb /ac.
- | Treatment | Av. yield      |
|-----------|----------------|
| 1.        | 128            |
| 2.        | 235            |
| 3.        | 249            |
| 4.        | 255            |
| 5.        | —              |
| S.E./mean | =12.83 lb./ac. |

Crop :- Chinamug (*Kharif*).  
Site :- Agri. Res. Stn., Niphad.

Ref :- Mh. 51(54).  
Type :- 'M'.

Object :—To study the effect of *Chinamug* grown with and without  $P_2O_5$  on the succeeding cereal crop Wheat.

#### 1. BASAL CONDITIONS :

(I) (a) *Chinamug*-Wheat. (b) Wheat. (c) N.A. (ii) (a) Loamy medium. (b) Refer soil analysis, Niphad. (iii) 23.6.1951. (iv) (a) N.A. (b) Drilling with 4 coultered drill. (c) 12 lb./ac. (d) 10". (e) N.A. (v) Nil. (vi) *Chinamug*. (vii) Unirrigated. (viii) 2 gapfillings and 1 weeding. (ix) 27.46". (x) 27.8.1951 and 3.9.1951.

#### 2. TREATMENTS :

1. Control (no  $P_2O_5$ ).
2. 50 lb./ac. of  $P_2O_5$  as Super to *Chinamug*.
3. 100 lb./ac. of  $P_2O_5$  as Super to *Chinamug*.
4. 150 lb./ac. of  $P_2O_5$  as Super to *Chinamug*.
5. Fallow.

#### 3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 5. (iv) (a) 40' × 25'. (b) 30' × 15'. (v) 5' alround. (vi) Yes.

#### 4. GENERAL :

(i) Growth satisfactory ; slightly suffered for want of rain. (ii) Nil. (iii) Grain yield. (iv) (a) 1950 to 1953. (b) No. (c) N.A. (v) (a) Mohol. (b) N.A. (vi) and (vii) Nil.

#### 5. RESULTS :

- (i) 372 lb./ac.  
(ii) 66.28 lb./ac.  
(iii) Treatments do not differ significantly.  
(iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	207
2.	362
3.	425
4.	496
5.	—
S.E./mean	=29.63 lb./ac.

Crop :- Chinamug (*Kharif*).  
Site :- Agri. Res. Stn., Niphad.

Ref :- Mh. 52(84).  
Type :- 'M'.

Object :—To study the effect of *Chinamug* grown with and without  $P_2O_5$  on the succeeding cereal crop Wheat.

#### 1. BASAL CONDITIONS :

(i) (a) *Chinamug*-Wheat. (b) Wheat. (c) Nil. (ii) (a) Loamy-medium. (b) Refer soil analysis, Niphad. (iii) 23.7.1952. (iv) (a) N.A. (b) Drilling by 4 coultered row. (c) 12 lb./ac. (d) Rows 10" apart. (e) N.A. (v) Nil. (vi) *Chinamug*. (vii) Unirrigated. (viii) 2 weedings. (ix) 14.17". (x) 22.9.1952.

#### TREATMENTS :

1. Control (no  $P_2O_5$ ).
2. 50 lb./ac. of  $P_2O_5$  as Super applied to *Chinamug*.
3. 100 lb./ac. of  $P_2O_5$  as Super applied to *Chinamug*.
4. 150 lb./ac. of  $P_2O_5$  as Super applied to *Chinamug*.
5. Fallow.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 5. (iv) (a) 40'×25'. (b) 30'×15'. (v) 5' around. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Nil. (iii) Grain yield. (iv) (a) 1950 to 1953. (b) No. (c) N.A. (v) (a) Mohol. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 331 lb./ac.

(ii) 72.48 lb./ac.

(iii) Treatments differ significantly.

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

Treatment	Av. yield
1.	254
2.	290
3.	339
4.	440
5.	—
S.E./mean	=32.4 lb./ac.

Crop :- Chinamug (*Kharij*).

Ref :- Mh. 53(141).

Site :- Agri. Res. Stn., Niphad.

Type :- 'M'.

Object :- To study the effect of *Chinamug* grown with and without  $P_2O_5$  on the succeeding cereal crop Wheat.

## 1. BASAL CONDITIONS ;

(i) (a) *Chinamug*—Wheat. (b) Wheat. (c) Nil. (ii) (a) Loamy-medium. (b) Refer soil analysis, Niphad. (iii) 26.6.1953. (iv) (a) N.A. (b) Drilling by 4 coultered drill. (c) 8 lb./ac. (d) 10". (e) N.A. (v) Nil. (vi) *Chinamug*. (vii) Unirrigated. (viii) 1 gapfilling and weeding on 3.7.1953. (ix) 18.33". (x) 1.9.1953.

## 2. TREATMENTS :

- Control (no  $P_2O_5$ ).
- 50 lb./ac. of  $P_2O_5$  as super applied to *Chinamug*.
- 100 lb./ac. of  $P_2O_5$  as super applied to *Chinamug*.
- 150 lb./ac. of  $P_2O_5$  as super applied to *Chinamug*.
- Fallow.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 5. (iv) (a) 40'×25'. (b) 30'×15'. (v) 5' around. (vi) Yes.

## 4. GENERAL :

(i) Fair. Stunted in the beginning. (ii) Nil. (iii) Grain yield. (iv) (a) 1950 to 1953. (b) No. (c) N.A. (v) (a) Mohol. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 134 lb./ac.

(ii) 43.30 lb./ac.

(iii) Treatments differ significantly.

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

Treatment	Av. yield
1.	54
2.	138
3.	136
4.	209
5.	—
S.E./mean	=19.4 lb./ac.



Crop :-Chinamug (*Kharif*).  
Site :-Agri. Res. Stn., Mohol.

Ref :-Mh. 53(340).  
Type :-'D'.

Object :—To find out the effect on yield of inoculation of legumes with root *nodule bacteria*.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) *Jowar*. (c) Nil. (ii) (a) Medium black. (b) Refer soil analysis, Mohol. (iii) 27.6.1953. (iv) (a) 2 harrowings. (b) Drilling. (c) N.A. (d) 12". (e) N.A. (v) Nil. (vi) N.A. (vii) Unirrigated. (viii) 3 interculturings. (ix) 18.80". (x) 1.9.1953.

2. TREATMENTS

1. *Chinamug* alone.
2. *Chinamug* with A II culture.

3. DESIGN :

(i) R.B.D. (ii) (a) 2. (b) N.A. (iii) 10. (iv) (a) 58'×18'. (b) 55'×18'. (v) 1.5' along breadth (vi) Yes.

4. GENERAL:

(i) Satisfactory. (ii) Nil. (iii) Pod yield. (iv) (a) 1952—53. (b) N.A. (c) Nil. (v) (a), (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

- (i) 149 lb./ac.  
(ii) 20.10 lb./ac.  
(iii) Treatments do not differ significantly.  
(iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	142
2.	156
S.E./mean	=6.35 lb./ac.

Crop :-Wal (*Rabi*)  
Site :- Agri. Res. Stn., Karjat.

Ref :- Mh. 49(19).  
Type :- 'M'.

Object :—To study the effect of Wal grown with and without  $P_2O_5$  on the succeeding cereal crop Paddy.

1. BASAL CONDITIONS

(i) (a) Paddy—Wal—Paddy. (b) Paddy. (c) Nil. (ii) (a) Sandy loam. (b) Refer soil analysis, Karjat. (iii) 10.12.1949. (iv) (a) N.A. (b) Broadcasting behind the plough. (c) 80 lb./ac. (d) and (e) N.A. (v) Nil. (vi) *Wal* (local). (vii) Unirrigated. (viii) N.A. (ix) 5.74". (x) 4.4.1950.

2. TREATMENTS :

1. Control (no  $P_2O_5$ ).
2. 50 lb./ac. of  $P_2O_5$  as Super applied to *Wal* crop.
3. 100 lb./ac. of  $P_2O_5$  as Super applied to *Wal* crop.
4. 150 lb./ac. of  $P_2O_5$  as Super applied to *Wal* crop.
5. Fallow in *Rabi* and Paddy in *Kharif*.

3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 5. (iv) (a) 20'×10'. (b) 18'-4"×8'-4". (v) 10" around. (vi) Yes.

4. GENERAL :

(i) The growth was normal. In one plot it was poorer due to *hariale* trouble. Flowering started by mid-February. (ii) At one month after planting the attack of *Aphis* was seen. Also virus in the form of yellow patches on leaves was seen but it did not affect the crop very much. (iii) Grain yield. (iv) (a) 1949 to 1954. (b) Yes. (c) N.A. (v) (a) Ratnagiri. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 587.3 lb./ac.  
 (ii) 274.6 lb./ac.  
 (iii) Treatments do not differ significantly.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	437.7
2.	672.1
3.	608.9
4.	630.7
5.	—
S.E./mean	= 122.8 lb./ac.

Crop :- Wal (*Rabi*).

Ref :- Mh. 51(20).

Site :- Agri. Res. Stn., Karjat.

Type :- 'M'.

Object :- To study the effect of Wal grown with and without  $P_2O_5$  on the succeeding cereal crop Paddy.

## 1. BASAL CONDITIONS :

- (i) (a) Paddy—Wal—Paddy. (b) Paddy. (c) Nil. (ii) (a) Sandy loam. (b) Refer soil analysis, Karjat.  
 (iii) 6.12.1951. (iv) (a) N.A. (b) Broadcasting behind a plough. (c) 80 lb./ac. (d) and (e) N.A. (v) N.A.  
 (vi) Wal 2-K-2. (vii) Unirrigated. (viii) N.A. (ix) 11.39°. (x) 19.3.1952.

## 2. TREATMENTS :

- Control (no  $P_2O_5$ ).
- 50 lb./ac. of  $P_2O_5$  as Super applied to Wal crop.
- 100 lb./ac. of  $P_2O_5$  as Super applied to Wal crop.
- 150 lb./ac. of  $P_2O_5$  as Super applied to Wal crop.
- Fallow in *Rabi* and Paddy in *Kharif*.

## 3. DESIGN :

- (i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 4. (iv) (a) 20'×10'. (b) 18'-4"×8'-4". (v) 10' around. (vi) Yes.

## 4. GENERAL :

- (i) 3 plots had stunted growth and there were gaps. (ii) Nil. (iii) Grain yield. (iv) (a) 1949 to 1954.  
 (b) Yes. (c) N.A. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 615 lb./ac.  
 (ii) 64.75 lb./ac.  
 (iii) Treatments do not differ significantly.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	798
2.	584
3.	673
4.	405
5.	—
S.E./mean	= 64.75 lb./ac.

Crop :- Wal (*Rabi*).

Ref :- Mh. 52(32).

Site :- Agri. Res. Stn., Karjat.

Type :- 'M'.

Object :- To study the effect of Wal grown with and without  $P_2O_5$  on the succeeding cereal crop Paddy.

## 1. BASAL CONDITIONS :

- (i) (a) Paddy—Wal—Paddy. (b) Paddy. (c) Nil. (ii) (a) Sandy loam. (b) Refer soil analysis, Karjat.  
 (iii) 21.11.1952. (iv) (a) Two plough furrows. (b) Drilled behind the plough. (c) 80 lb./ac. (d) 12".  
 (e) N.A. (v) N.A. (vi) 2-K-2. (vii) Unirrigated. (viii) N.A. (ix) 7.46°. (x) 13.3.1953.

## 2. TREATMENTS :

1. Control (no  $P_2O_5$ ).
2. 50 lb./ac. of  $P_2O_5$  as Super applied to *Wal* crop.
3. 100 lb./ac. of  $P_2O_5$  as Super applied to *Wal* crop.
4. 150 lb./ac. of  $P_2O_5$  as Super applied to *Wal* crop.
5. Fallow in *Rabi* and Paddy in *Kharif*.

## 3. DESIGN :

- (i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 4. (iv) (a) 25'×15'. (b) 21'×11'. (v) 2' around. (vi) Yes.

## 4. GENERAL :

- (i) Germination was poor in 4 plots and growth was poor, the moisture in these plots was less. (ii) Nil.  
 (iii) Grain yield. (iv) (a) 1949—1954. (b) Yes. (c) N.A. (v) (a) and (b) N.A. (vi) and (vii) Nil

## 5. RESULTS :

- (i) 1344 lb./ac.  
 (ii) 295.0 lb./ac.  
 (iii) Treatments do not differ significantly.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	1167
2.	1217
3.	1505
4.	1490
5.	—
S.E./mean	=147.1 lb./ac.

Crop :-*Wal (Rabi)*.

Site :-*Agri. Res. Stn., Karjat.*

Ref :-*Mh. 53(232)*.

Type :-*'M'*.

Object :-*To study the effect of Wal grown with and without  $P_2O_5$  on the succeeding cereal crop Paddy.*

## 1. BASAL CONDITIONS :

- (i) (a) Paddy—*Wal*—Paddy. (b) Paddy. (c) Nil. (ii) (a) Medium black. (b) Refer soil analysis, Karjat. (iii) N.A. (iv) (a) N.A. (b) Behind the plough. (c) 80 lb./ac. (d) 12"×12". (e) N.A. (v) N.A. (vi) *Wal 2-K-2*. (vii) Unirrigated. (viii) N.A. (ix) 6.55". (x) N.A.

## 2. TREATMENTS :

1. Control (no  $P_2O_5$ ).
2. 50 lb./ac. of  $P_2O_5$  as Super applied to *Wal* crop.
3. 100 lb./ac. of  $P_2O_5$  as Super applied to *Wal* crop.
4. 150 lb./ac. of  $P_2O_5$  as Super applied to *Wal* crop.
5. Fallow in *Rabi* and Paddy in *Kharif*.

## 3. DESIGN :

- (i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 4. (iv) (a) 25'×15'. (b) 21'×11'. (v) 2' around. (vi) Yes.

## 4. GENERAL :

- (i) N.A. (ii) N.A. (iii) Grain yield. (iv) (a) 1949 to 1953. (b) Yes. (c) N.A. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 1132 lb./ac.  
 (ii) 290.6 lb./ac.  
 (iii) Treatments do not differ significantly.

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

Treatment	Av. yield
1.	990
2.	1041
3.	1350
4.	1146
5.	—
S.E./mean	=145.3 lb./ac.

Crop :- Wal (*Rabi*).

Site :- Agri. Res. Stn., Ratnagiri.

Ref :- Mh. 48(4).

Type :- 'M'.

Object :—To study the effect of leguminous crop *Wal* grown with and without  $P_2O_5$  on the succeeding cereal crop Paddy.

## 1. BASAL CONDITIONS :

(i) (a) Paddy. (b) Paddy. (c) 5 C.L./ac. of F.Y.M. (ii) (a) Laterite soil. (b) N.A. (iii) 22.12.1948. (iv) (a) N.A., (b) Broadcasting. (c) 50 lb./ac. (d) and (e) —. (v) Nil. (vi) *Wal* 2-K-2. (vii) Unirrigated. (viii) Nil. (ix) Nil. (x) 10.4.1949.

## 2. TREATMENTS :

- Control (no  $P_2O_5$ ).
- 50 lb./ac. of  $P_2O_5$  as Super applied to *Wal* crop.
- 100 lb./ac. of  $P_2O_5$  as Super applied to *Wal* crop.
- 150 lb./ac. of  $P_2O_5$  as Super applied to *Wal* crop.
- Fallow in *Rabi* and Paddy in *Kharif*.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 6. (iv) (a) 30' × 20'. (b) 20' × 10'. (v) 5' around. (vi) Yes.

## 4. GENERAL :

(i) Normal. (ii) N.A. (iii) Grain and straw yield. (iv) (a) 1948 to 1954. (b) N.A. (c) N.A. (v) (a) N.A. (b) N.A. (vi) Nil. (vii) There were 6 replications this year which were subsequently reduced to 5 for all other years

## 5. RESULTS :

- (i) 711 lb./ac.  
 (ii) 227.6 lb./ac.  
 (iii) Treatments do not differ significantly.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	784
2.	734
3.	654
4.	673
5.	—
S.E./mean	=92.57 lb./ac.

Crop :- Wal (*Rabi*).

Site :- Agri. Res. Stn., Ratnagiri.

Ref :- Mh. 50(13).

Type :- 'M'.

Object :—To study the effect of leguminous crop *Wal* grown with and without  $P_2O_5$  on the succeeding cereal crop Paddy.

## 1. BASAL CONDITIONS :

(i) (a) *Wal*. (b) Paddy. (c) Nil. (ii) (a) Laterite soil. (b) N.A. (iii) 8.1.1950. (iv) (a) 2 ploughings. (b) Broadcasting. (c) 40 lb./ac. (d) —. (e) —. (v) Nil. (vi) *Wal* 2-K-2. (vii) Unirrigated. (viii) Nil. (ix) Nil. (x) 29.4.1950.

## 2. TREATMENTS :

1. Control (no  $P_2O_5$ ).
2. 50 lb./ac. of  $P_2O_5$  as B.M. applied to *Wal* crop.
3. 100 lb./ac. of  $P_2O_5$  as B.M. applied to *Wal* crop.
5. 150 lb./ac. of  $P_2O_5$  as B.M. applied to *Wal* crop.
5. Fallow without legume.

## 3. DESIGN :

- (i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 5. (iv) (a) 30'×20'. (b) 20'×10'. (v) 5' around. (vi) Yes.

## 4. GENERAL :

(i) Normal in Replications I, II and ; III growth was checked completely in Replication IV and V due to excess of moisture. (ii) Nil. (iii) Grain yield. (iv) (a) 1948 to 1954. (b) No. (c) Nil. (v) (a) Karjat. (b) N.A. (vi) Nil. (vii) Though the date of sowing is in January 1950 the season is regarded as *Rabi* 1949 and hence the year of the Proforma 1949.

## 5. RESULTS :

- (i) 235 lb./ac.  
 (ii) 119.1 lb./ac.  
 (iii) Treatments differ significantly.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	168
2.	187
3.	430
4.	156
5.	—
S.E./mean	=53.3 lb./ac.

Crop :- *Wal (Rabi)*.

Site :- Agri. Res. Stn., Ratnagiri.

Ref :- Mh. 51(16).

Type :- 'M'.

Object :—To study the effect of leguminous crop *Wal* grown with and without  $P_2O_5$  on the succeeding cereal crop Paddy.

## 1. BASAL CONDITIONS :

- (i) (a) *Wal*—Paddy. (b) Paddy. (c) Nil. (ii) (a) Laterite. (b) N.A. (iii) 5.1.1951. (iv) (a) N.A. (b) Broadcasting. (c) 40 lb./ac. (d)—. (e)—. (v) Nil. (vi) *Wal*, 2-K-2. (vii) Unirrigated. (viii) Nil. (ix) Nil. (x) 27.4.1951.

## 2. TREATMENTS :

1. Control (no  $P_2O_5$ ).
2. 50 lb./ac. of  $P_2O_5$  as B.M. applied to *Wal* crop.
3. 100 lb./ac. of  $P_2O_5$  as B.M. applied to *Wal* crop.
4. 150 lb./ac. of  $P_2O_5$  as B.M. applied to *Wal* crop.
5. Fallow without legume.

## 3. DESIGN

- (i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 5. (iv) (a) 30'×20'. (b) 20'×10'. (v) 5' around. (vi) Yes.

## 4. GENERAL :

- (i) Growth not satisfactory due to lack of moisture. (ii) Yield affected by leaf-blight. (iii) Grain and straw yield. (iv) (a) 1948—1955. (b) Yes. (c) N.A. (v) (a) Karjat. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 63 lb./ac.  
 (ii) 33.78 lb./ac.  
 (iii) Treatments do not differ significantly.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	65
2.	79
3.	57
4.	50
5.	—
S.E./mean	= 15.11 lb./ac.

Crop :- *Wal (Rabi)*.  
 Site :- Agri. Res. Stn., Katnagiri.

Ref :- Mh. 52(30).

Type :- 'M'.

Object :—To study the effect of leguminous crop *Wal* grown with and without  $P_2O_5$  on the succeeding cereal crop Paddy.

## 1. BASAL CONDITIONS :

- (i) (a) *Wal*—Paddy. (b) Paddy. (c) Nil. (ii) (a) Laterite. (b) N.A. (iii) 8.1.1952. (iv) (a) to (e) N.A. (v) Nil. (vi) N.A. (vii) Unirrigated. (viii) Nil. (ix) Nil. (x) 15.4.1952.

## 2. TREATMENTS :

- Control (no  $P_2O_5$ ).
- 50 lb./ac. of  $P_2O_5$  as Super applied to *Wal* crop.
- 100 lb./ac. of  $P_2O_5$  as Super applied to *Wal* crop.
- 150 lb./ac. of  $P_2O_5$  as Super applied to *Wal* crop.
- Fallow in *Rabi* and Paddy in *Kharif*.

## 3. DESIGN :

- (i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 5. (iv) (a)  $30' \times 20'$ . (b)  $20' \times 10'$ . (v) 5' around. (vi) Yes.

## 4. GENERAL :

- (i) Good growth. (ii) *Aphis* attack in the young stage. (iii) Grain and straw yield. (iv) (a) 1948 to 1955. (b) Yes. (c) N.A. (v) (a) Karjat. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 273.1 lb./ac.  
 (ii) 57.8 lb./ac.  
 (iii) Treatments do not differ significantly.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	245.0
2.	299.5
3.	258.6
4.	289.2
5.	—
S.E./mean	= 25.9 lb./ac.

Crop :-Wal (*Rabi*).  
Site :-Agri. Res. Stn., Ratnagiri.

Ref :-Mh. 53(109).  
Type :-'M'.

Object :-To study the effect of leguminous crop *Wal* grown with and without  $P_2O_5$  on the succeeding cereal crop Paddy.

1. BASAL CONDITIONS :

(i) (a) *Wal*-Paddy. (b) Paddy. (c) Nil. (ii) (a) Laterite. (b) N.A. (iii) 28.12.1953. (iv) (a) 4 ploughings. (b) N.A. (c) 50 lb./ac. (d) Nil. (e) N.A. (v) Nil. (vi) Local. (vii) Unirrigated. (viii) Nil. (ix) Nil. (x) 22.4.1954.

2. TREATMENTS :

1. Control (no  $P_2O_5$ ).
2. 50 lb./ac. of  $P_2O_5$  as B.M. applied to *Wal*.
3. 100 lb./ac. of  $P_2O_5$  as B.M. applied to *Wal*.
4. 150 lb./ac. of  $P_2O_5$  as B.M. applied to *Wal*.
5. Fallow.

3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 5. (iv) (a) 33'×20'. (b) 20'×10'. (v) 5' around. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Grain and straw yield. (iv) (a) 1948 to 1955. (b) Yes. (c) N.A. (v) (a) Karjat. (b) N.A. (vi) and (vii) Yes.

5. RESULTS :

- (i) 244.4 lb./ac.
- (ii) 108.9 lb./ac.
- (iii) Treatment differences are not significant.
- (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	190.4
2.	307.9
3.	223.0
4.	256.1
5.	—
S.E./mean	= 48.7 lb./ac.

Crop :- Tur (*Kharif*).  
Site :- Govt. Exptl. Farm, Nagpur.

Ref :- Mh. 53(198).  
Type :- 'C'.

Object :-To find out the optimum line to line spacing for *Tur* crop.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) and (c) N.A. (ii) (a) Black cotton soil. (b) Refer soil analysis, Nagpur. (iii) 9.7.1953. (iv) (a) to (e) N.A. (v) Nil. (vi) E.B-3. (vii) Unirrigated. (viii) N.A. (ix) 39.34". (x) 27.2.1954.

2. TREATMENTS :

3 spacings between lines :  $S_1=18"$ ,  $S_2=24"$  and  $S_3=30"$ .

3. DESIGN :

(i) R.B.D. (ii) (a) 3. (b) N.A. (iii) 6. (iv) (a) 0.54 ac. (b) 36.3'×30'. (v) N.A. (vi) Yes.

4. GENERAL :

(i) N.A. (ii) Nil. (iii) *Tur* and stalk yield. (iv) (a) 1953—N.A. (b) No (c) N.A. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

- (i) 588 lb./ac.
- (ii) 183.2 lb/ac.
- (iii) Treatments do not differ significantly.

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

Treatment	Av. yield
S <sub>1</sub>	527
S <sub>2</sub>	713
S <sub>3</sub>	524
S.E./mean	= 74.8 lb./ac.

Crop :- Lentils (*Rabi*).

Ref :- Mh. 48(114).

Site :- Agri. Res. Stn., Igatpuri.

Type :- 'M'.

Object :—To study the effect of leguminous crop Lentils grown with and without P<sub>2</sub>O<sub>5</sub> on the succeeding cereal crop Paddy.

## 1. BASAL CONDITIONS :

(i) (a) Paddy—Lentils—Paddy. (b) Paddy. (c) Nil. (ii) (a) Shallow and coarse soil. (b) N.A. (iii) 1st week of December 1948. (iv) (a) 2 ploughings. (b) Hand sowing in furrows. (c) 55 lb./ac. (d) Irregular. (e) N.A. (v) Nil. (vi) Local. (vii) Unirrigated. (viii) Nil. (ix) 8.82°. (x) 1st week of March 1949.

## 2. TREATMENTS :

1. Control (no P<sub>2</sub>O<sub>5</sub>).
2. 50 lb./ac. of P<sub>2</sub>O<sub>5</sub> as Super.
3. 100 lb./ac. of P<sub>2</sub>O<sub>5</sub> as Super.
4. 150 lb./ac. of P<sub>2</sub>O<sub>5</sub> as Super.
5. Fallow in *Rabi*.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 5. (iv) (a) 25' × 15'. (b) 20' × 10'. (v) 2.5' around. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) Nil. (iii) Lentils yield. (iv) (a) (*Rabi*) 1948 to (*Kharif*) 1954. (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 187 lt./ac.  
(ii) 57.49 lb./ac.  
(iii) Treatments do not differ significantly.  
(iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	193
2.	215
3.	132
4.	208
5.	—
S.E./mean	= 25.70 lb./ac.

Crop :- Lentils (*Rabi*).

Ref :-Mh. 49(146)

Site :- Agri. Res. Stn., Igatpuri.

Type :- 'M'.

Object :—To study the effect of leguminous crop Lentils grown with and without P<sub>2</sub>O<sub>5</sub> on the succeeding cereal crop Paddy.

## 1. BASAL CONDITIONS:

(i) (a) Lentils—Paddy. (b) Paddy. (c) N.A. (ii) (a) Shallow and coarse trap soil. (b) N.A. (iii) 8, 10, 15 and 28.12.1949. (iv) (a) 2 ploughings. (b) Hand sowing. (c) 55 lb./ac. (d) Irregular. (e) N.A. (v) Nil. (vi) Local variety. (vii) Unirrigated. (viii) Nil. (ix) 7.13°. (x) 22.3.1950 and 1.4.1950.



## 2. TREATMENTS :

1. Control (no  $P_2O_5$ ).
2. 50 lb./ac. of  $P_2O_5$  as Super.
3. 100 lb./ac. of  $P_2O_5$  as Super.
4. 150 lb./ac. of  $P_2O_5$  as Super.
5. Fallow in *Rabi*.

Super was applied in the furrows opened by local ploughs just before sowing.

## 3. DESIGN :

- (i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 5. (iv) (a) N.A. (b)  $20' \times 10'$ . (v) N.A. (vi) Yes.

## 4. GENERAL :

- (i) The growth was poor in one replication due to excessive moisture. (ii) Nil. (iii) Lentils yield. (iv) (a) (*Rabi*) 1948 to (*Kharif*) 1954. (b) No. (c) Nil. (v) (a) and (b) Nil. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 467 lb./ac.  
 (ii) 97.14 lb./ac.  
 (iii) Treatments do not differ significantly.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	349
2.	512
3.	463
4.	545
5.	—
S.E./mean	=43.42 lb./ac.

Crop :-Lentils (*Rabi*).

Site :-Agri. Res. Stn., Igatpuri.

Ref :-Mh. 50(167).

Type :-'M'.

Object :—To study the effect of leguminous crop Lentils grown with and without  $P_2O_5$  on the succeeding cereal crop Paddy.

## 1. BASAL CONDITIONS :

- (i) (a) Paddy-Lentils—Paddy. (b) Paddy. (c) Nil. (ii) (a) Shallow and coarse trap soil. (b) N.A. (iii) 16.11.1950 and 11.12.1950. (iv) (a) 2 ploughings and 1 planking. (b) Hand sowing in furrows opened by the plough. (c) 55 lb./ac. (d) Irregular. (e) N.A. (v) Nil. (vi) Local variety. (vii) Unirrigated. (viii) Nil. (ix) 5.01". (x) 25.2.1951 and 9.3.1951.

## 2. TREATMENTS :

1. Control (no  $P_2O_5$ ).
2. 50 lb./ac. of  $P_2O_5$  as Super.
3. 100 lb./ac. of  $P_2O_5$  as Super.
4. 150 lb./ac. of  $P_2O_5$  as Super.
5. Fallow in *Rabi*.

## 3. DESIGN :

- (i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 5. (iv) (a)  $25' \times 15'$ . (b)  $20' \times 10'$ . (v) 25' around. (vi) Yes.

## 4. GENERAL :

- (i) Growth was normal. (ii) Nil. (iii) Lentils yield. (iv) (a) (*Rabi*) 1948 to (*Kharif*) 1953. (b) No. (c) Nil. (v) (a) and (b) Nil. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 443 lb./ac.  
 (ii) 164.5 lb./ac.  
 (iii) Treatments do not differ significantly.

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

Treatment	Av. yield
1.	377
2.	542
3.	318
4.	536
5.	—
S.E./mean	=73.5 lb./ac.

Crop :- Lentils (*Rabi*).

Ref :- Mh. 51(237).

Site :- Agri. Res. Stn., Igatpuri.

Type :- 'M'.

Object :—To study the effect of leguminous crop Lentils grown with and without  $P_2O_5$  on the succeeding cereal crop Paddy.

## 1. BASAL CONDITIONS :

(i) (a) Paddy—Lentils - Paddy. (b) Paddy. (c) Nil. (ii) (a) Shallow and coarse trap soil. (b) N.A. (iii) 16.11.1951, 5.12.1951 and 14.12.1951. (iv) (a) 2 ploughings and 1 planking. (b) Sowing in furrows opened by plough (c) 55 lb/ac. (d) Irregular. (e) N.A. (v) Nil. (vi) Local. (vii) Unirrigated. (viii) Nil. (ix) 13.05". (x) 28.2.1952 and 19.3.1952.

## 2. TREATMENTS :

1. Control (no  $P_2O_5$ ).
2. 50 lb./ac. of  $P_2O_5$  as Super.
3. 100 lb./ac. of  $P_2O_5$  as Super.
4. 150 lb./ac. of  $P_2O_5$  as Super.
5. Fallow in *Rabi*.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 5. (iv) (a)  $25' \times 15'$ . (b)  $29' \times 10'$ . (v) 2.5' around. (vi) Yes.

## 4. GENERAL :

(i) The growth in general was poor due to cloudy weather and continuous rain in 2nd week of February. (ii) Nil. (iii) Lentils yield. (iv) (a) (*Rabi*) 1948 to (*Kharif*) 1954. (b) No. (c) Nil. (v) (a) and (b) Nil. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 170 lb./ac.
- (ii) 58.90 lb./ac.
- (iii) Treatments do not differ significantly.
- (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	166
2.	185
3.	122
4.	206
5.	—
S.E./mean	=26.33 lb./ac.

Crop :- Lentils (*Rabi*).

Ref :- Mh. 52(319).

Site :- Agri. Res. Stn., Igatpuri.

Type :- 'M'.

Object :- To study the effect of leguminous crop Lentils grown with and without  $P_2O_5$  on the succeeding cereal crop Paddy.

1. BASAL CONDITIONS :

(i) (a) Lentils - Paddy. (b) Paddy. (c) Nil. (ii) (a) Shallow and coarse soil. (b) N.A. (iii) 16.11.1952 to 1.2.1952. (iv) (a) 2 ploughings. (b) Hand sowing. (c) 55 lb./ac. (d) Irregular. (e) —. (v) Nil. (vi) N.A. (vii) Unirrigated. (viii) Nil. (ix) Nil. (x) 23.2.1953 to 4.3.1953.

2. TREATMENTS :

Control (no  $P_2O_5$ ).

2. 50 lb./ac. of  $P_2O_5$  as Super applied to Lentils.
3. 100 lb./ac. of  $P_2O_5$  as Super applied to Lentils.
4. 150 lb./ac. of  $P_2O_5$  as Super applied to Lentils.
5. Fallow.

3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 5. (iv) (a) 25' × 15'. (b) 20' × 10'. (v) 2.5' around. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Grain yield. (iv) (a) 1948 to 1954. (b) No. (c) Nil. (v) (a) and (b) Nil. (vi) and (vii) Nil.

5. RESULTS :

- (i) 291.5 lb./ac.
- (ii) 82.36 lb./ac.
- (iii) Treatment do not differ significantly.
- (iv) Av. yield of grain in lb./ac. -

Treatment	Av. yield
1.	243
2.	302
3.	301
4.	320
5.	—
S.E./mean	=35.91 lb./ac.

Crop :- Lentils (*Rabi*).

Ref :- Mh. 53(348).

Site :- Agri. Res. Stn., Igatpuri.

Type :- 'M'.

Object :- To study the effect of leguminous crop Lentils grown with and without  $P_2O_5$  on the succeeding cereal crop Paddy.

1. BASAL CONDITIONS :

(i) (a) Paddy-Lentils. (b) Paddy. (c) Nil. (ii) (a) Shallow and coarse soil. (b) N.A. (iii) 10.11.1953. (iv) (a) 2 ploughings. (b) Hand sowing. (c) 55 lb./ac. (d) Irregular. (e) —. (v) Nil. (vi) N.A. (vii) Unirrigated (viii) Nil. (ix) Nil. (x) 25.2.1954.

2. TREATMENTS :

1. Control (no  $P_2O_5$ ).
2. 50 lb./ac. of  $P_2O_5$  as Super applied to Lentils.
3. 100 lb./ac. of  $P_2O_5$  as Super applied to Lentils.
4. 150 lb./ac. of  $P_2O_5$  as Super applied to Lentils.
5. Fallow.

DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 5. (iv) (a) 25' × 15'. (b) 20' × 10'. (v) 2.5' around. (vi) Yes.

## 4. GENERAL :

(i) Not good. (ii) Nil. (iii) Grain yield. (iv) (a) 1948 to 1954. (b) No. (c) Nil. (v) (a) and (b) Nil. (vi) and (vii) Nil.

## 5. RESULTS:

- (i) 543 lb./ac.  
 (ii) 99.88 lb./ac.  
 (iii) Treatments differ highly significantly.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	592
2.	692
3.	474
4.	417
5.	—
S.E./mean	= 44.64 lb./ac.

Crop :- Peas (*Rabi*).

Ref :- Mh. 48(15).

Site :- Agri. Res. Stn., Igatpuri.

Type :- 'M'.

Object :- To study the effect of leguminous crop Peas grown with and without  $P_2O_5$  on the succeeding cereal crop Paddy.

## 1. BASAL CONDITIONS :

(i) (a) Paddy—Peas. (b) Paddy. (c) Nil. (ii) (a) Shallow and coarse soil. (b) N.A. (iii) 1st week of December 1948. (iv) (a) 2 ploughings. (b) Hand sowing in the furrows. (c) 45 lb./ac. (d) Irregular. (e) N.A. (v) Nil. (vi) Local variety. (vii) Unirrigated. (viii) Nil. (ix) 8.82°. (x) 2nd week of March, 1949.

## 2. TREATMENTS :

- Control (no  $P_2O_5$ ).
- 50 lb./ac. of  $P_2O_5$  as Super.
- 100 lb./ac. of  $P_2O_5$  as Super.
- 150 lb./ac. of  $P_2O_5$  as Super.
- Fallow in *Rabi*.

Super was applied in the furrows opened by local plough just before sowing.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 4. (iv) (a) 25'×15'. (b) 20'×10'. (v) 2.5' around. (vi) Yes.

## 4. GENERAL :

(i) Germination in replication 4 was very poor and hence the yield is low. (ii) Nil. (iii) Peas yield. (iv) (a) 1948 (*Rabi*) to 1954 (*Kharif*). (b) No. (c) Nil. (v) Nil. (vi) Nil. (vii) Experiment planned with 5 replications, but one replication was omitted from analysis due to low yield.

## 5. RESULTS :

- (i) 182.0 lb./ac.  
 (ii) 65.04 lb./ac.  
 (iii) Treatments do not differ significantly.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	234
2.	128
3.	233
4.	132
S.E./mean	= 32.52 lb./ac.

Crop :- Peas (*Rabi*).

Ref :- Mh. 49(20).

Site :- Agri. Res. Stn., Igatpuri.

Type :- 'M'.

Object : -To study the effect of leguminous crop Peas grown with and without  $P_2O_5$  on the succeeding cereal crop Paddy.

## 1. BASAL CONDITIONS :

(i) (a) Peas—Paddy. (b) Paddy. (c) N.A. (ii) (a) Shallow and coarse trap soil. (b) N.A. (iii) 7 to 15.12.1949. (iv) (a) 2 ploughings. (b) Hand sowings. (c) 45 lb./ac. (d) Irregular. (e) N.A. (v) Nil. (vi) Local. (vii) Unirrigated. (viii) Nil. (ix) 7.13". (x) 6 to 22.3.1950.

## 2. TREATMENTS :

1. Control (no  $P_2O_5$ ).
2. 50 lb./ac. of  $P_2O_5$  as Super.
3. 100 lb./ac. of  $P_2O_5$  as Super.  
150 lb./ac. of  $P_2O_5$  as Super.
5. Fallow in *Rabi*.

Super was applied in the furrows opened by local plough just before sowing.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 5. (iv) (a) N.A. (b) 20' × 10'. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) The growth was normal. (ii) The powdery mildew is a common disease of peas in this tract but its effect was negligible in this season. (iii) Peas yield. (iv) (a) 1948 (*Rabi*) to 1954 (*Kharif*). (b) No. (c) Nil. (v) (a) and (b) Nil. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 800.5 lb./ac.  
 (ii) 165.4 lb./ac.  
 (iii) Treatment differences are not significant.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	649
2.	777
3.	749
4.	1027
5.	—
S.E./mean	=73.9 lb./ac.

Crop :- Peas (*Rabi*).

Ref :- Mh. 50(29).

Site :- Agri. Res. Stn., Igatpuri.

Type :- 'M'.

Object :—To study the effect of leguminous crop Peas grown with and without  $P_2O_5$  on the succeeding cereal crop Paddy.

## 1. BASAL CONDITIONS :

(i) (a) Paddy—Peas—Paddy. (b) Paddy. (c) Nil. (ii) (a) Shallow and coarse trap soil. (b) N.A. (iii) 16.11.1950. (iv) (a) 2 ploughings and 1 planking. (b) Hand sowing in furrows. (c) 45 lb./ac. (d) Irregular. (e) N.A. (v) Nil. (vi) Local variety. (vii) Unirrigated. (viii) Nil. (ix) 5.01". (x) 24.2.1951.

## 2. TREATMENTS :

1. Control (no  $P_2O_5$ ).
2. 50 lb./ac. of  $P_2O_5$  as Super.
3. 100 lb./ac. of  $P_2O_5$  as Super.
4. 150 lb./ac. of  $P_2O_5$  as Super.
5. Fallow in *Rabi*.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 5. (iv) (a) 25' × 15'. (b) 20' × 10'. (v) 2.5' around. (vi) Yes.

## 4. GENERAL :

(i) The growth was quite good. (ii) Nil. (iii) Peas yield. (iv) (a) 1948 (*Rabi*) to 1954 (*Kharif*). (b) No. (c) Nil. (v) (a) and (b) Nil. (vi) and (b) Nil.

## 5. RESULTS :

- (i) 918 lb./ac.  
 (ii) 300.3 lb./ac.  
 (iii) Treatments do not differ significantly.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	991
2.	906
3.	746
4.	1030
5.	—
S.E./mean	= 134.2 lb./ac.

Crop :- Peas (*Rabi*).

Ref :- Mh. 51(133).

Site :- Agri. Res. Stn., Igatpuri.

Type :- 'M'.

Object :- To study the effect of leguminous crop Peas grown with and without  $P_2O_5$  on the succeeding cereal crop Paddy.

## 1. BASAL CONDITIONS :

(i) (a) Paddy—Peas—Paddy. (b) Paddy. (c) Nil. (ii) (a) Shallow and coarse trap soil. (b) N.A. (iii) 21.11.1951. (iv) (a) 2 ploughings and 1 planking. (b) Sowing in furrows opened by the plough. (c) 45 lb./ac. (d) Irregular. (e) N.A. (v) Nil. (vi) Local. (vii) Unirrigated. (viii) Nil. (ix) 13.05°. (x) 10.3.1952.

## 2. TREATMENTS :

- Control (no  $P_2O_5$ ).
- 50 lb./ac. of  $P_2O_5$  as Super.
- 100 lb./ac. of  $P_2O_5$  as Super.
- 150 lb./ac. of  $P_2O_5$  as Super.
- Fallow in *Rabi*.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 5. (iv) (a) 25' × 15'. (b) 20' × 10'. (v) 2.5' around. (vi) Yes.

## 4. GENERAL :

(i) Due to cloudy weather and continuous rains in the second week of February the crop growth was checked to a considerable extent in the plots which were sown earlier. (ii) Leaf burn disease effected the crop. *Mawa* pest was also observed. Powdery mildew was also observed on peas during the cloudy days. (iii) Peas yield. (iv) (a) (*Rabi*) 1948 to (*Kharif*) 1954. (b) and (c) Nil. (v) (a) and (b) Nil. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 108 lb./ac.  
 (ii) 35.12 lb./ac.  
 (iii) Treatments do not differ significantly.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	126
2.	102
3.	113
4.	91
5.	—
S.E./mean	= 15.70 lb./ac.

Crop :- Peas (*Rabi*).

Ref :- Mh. 52(318).

Site :- Agri. Res. Stn., Igatpuri.

Type :- 'M'.

Object :—To study the effect of leguminous crop Peas grown with and without  $P_2O_5$  on the succeeding cereal crop Paddy.

## 1. BASAL CONDITIONS :

- (i) (a) Paddy—Peas. (b) Paddy. (c) Nil. (ii) (a) Shallow and coarse Deccan trap soil. (b) N.A. (iii) 17.11.1952. (iv) (a) 2 ploughings. (b) Sowing in furrows by the plough. (c) 45 lb./ac. (d) Not fixed. (e) —. (v) Nil. (vi) N.A. (vii) Unirrigated. (viii) Nil. (ix) 12.79". (x) 20.3.1953.

## 2. TREATMENTS :

1. Control (no  $P_2O_5$ ).
2. 50 lb./ac. of  $P_2O_5$  as Super.
3. 100 lb./ac. of  $P_2O_5$  as Super.
4. 150 lb./ac. of  $P_2O_5$  as Super.
5. Fallow in *Rabi*.

## 3. DESIGN :

- (i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 5. (iv) (a) 25' × 15'. (b) 20' × 10'. (v) 2.5' around. (vi) Yes.

## 4. GENERAL :

- (i) Good (ii) Attack of pest known as *Mawa* (*Aphis*) was observed. Replication 5 was severely affected by this pest and by field rats also. (iii) Peas yield. (iv) (a) 1948 to 1954. (b) and (c) No. (v) (a) and (b) Nil. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 428 lb./ac.  
 (ii) 126.7 lb./ac.  
 (iii) Treatments do not differ significantly.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	391
2.	425
3.	451
4.	445
5.	—
S.E./mean	= 56.8 lb./ac.

Crop :- Peas (*Rabi*).

Ref :- Mh. 53(347).

Site :- Agri. Res. Stn., Igatpuri.

Type :- 'M'.

Object :—To study the effect of leguminous crop Peas grown with and without  $P_2O_5$  on the succeeding cereal crop Paddy.

## 1. BASAL CONDITIONS :

- (i) (a) Paddy—Peas—Paddy. (b) Paddy. (c) Nil. (ii) (a) Shallow and coarse soil. (b) N.A. (iii) 17.11.1953 and 23.11.1953. (iv) (a) 2 ploughings (b) Hand sowing (c) 45 lb./ac. (d) Irregular (e) —. (v) Nil. (vi) N.A. (vii) Unirrigated. (viii) Nil. (ix) Nil. (x) 23.3.1954.

## 2. TREATMENTS :

1. Control (no  $P_2O_5$ ).
2. 50 lb./ac. of  $P_2O_5$  as Super.
3. 100 lb./ac. of  $P_2O_5$  as Super.
4. 150 lb./ac. of  $P_2O_5$  as Super.
5. Fallow.

## 3. DESIGN :

- ( ) R.B.D. (ii) (a) 5. (b) N.A. (iii) 5. (iv) (a) 25' × 15'. (b) 20' × 10'. (v) 2.5' around. (vi) Yes.

## 4. GENERAL :

- (i) Not satisfactory. (ii) Severe attack of Powdery Mildew and *Aphids*. (iii) Grain yield. (iv) (a) 1948 to 1954. (b) No. (c) Nil. (v) (a) and (b) Nil. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 545 lb./ac.  
 (ii) 99.88 lb./ac.  
 (iii) Treatments differ highly significantly.  
 (iv) Av. yield of grain in lb./ac.

Treatment	Av. yield
1.	595
2.	693
3.	476
4.	416
5.	—
S.E./mean	= 44.64 lb./ac.

Crop :- Sweet Potato (*Rabi*).

Ref :- Mh. 51(212).

Site :- Agri. Res. Stn., Kopergaon.

Type :- 'M'.

Object :- To study the effect of N, P and K on Sweet Potato.

## 1. BASAL CONDITIONS :

- (i) (a) N.A. (b) Fallow. (c) Nil. (ii) (a) 'A' type soil. (b) Refer soil analysis, Kopergaon. (iii) 10 to 12.12.1951.  
 (iv) (a) 1 ploughing and 8 harrowings. (b) Planting on one side of the ridge. (c) 19360 setts/ac. (d) 3' x 9". (e) —. (v) 5 C.L./ac. of F.Y.M. (vi) N.A. (vii) Irrigated. (viii) 12 weedings. (ix) Nil.  
 (x) 30.6.1952 to 15.7.1952.

## 2. TREATMENTS :

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

- (1) 3 levels of N as G.N.C. :  $N_0=0$ ,  $N_1=50$  and  $N_2=100$  lb./ac.  
 (2) 3 levels of  $P_2O_5$  as Super :  $P_0=0$ ,  $P_1=80$  and  $P_2=160$  lb./ac.  
 (3) 3 levels of  $K_2O$  as Pot. Sul.  $K_0=0$ ,  $K_1=80$  and  $K_2=160$  lb./ac.

## 3. DESIGN :

- (i)  $3^3$  confounded. (ii) (a) 3 blocks/replication ; 9 plots/block. (iv) (a) 27' x 22'. (b) 21' x 16'. (v) 3' around. (vi) Yes.

## 4. GENERAL :

- (i) Good. (ii) Mild attack of *Aphis*. (iii) Yield of Sweet Potato. (iv) (a) 1951 to 1953. (b) No. (c) Nil.  
 (v) (a) N.A. (b) N.A. (vi) Nil. (vii) Lay-out N.A., hence analysed as simple factorial.

## 5. RESULTS :

- (i) 7964 lb./ac.  
 (ii) 2693 lb./ac.  
 (iii) Main effects of K and interactions  $N \times K$ ,  $P \times K$  are significant. Other effects are not significant.  
 (iv) Av. yield of tuber in lb./ac.

	$N_0$	$N_1$	$N_2$	Mean	$K_0$	$K_1$	$K_2$
$P_0$	7938	7072	9054	8021	7884	7787	8393
$P_1$	7484	8274	8372	8043	6227	8567	9335
$P_2$	8187	7722	7581	7830	8144	6964	8382
Mean	7869	7689	8335	7964	7418	7772	8704
$K_0$	7624	7256	7375				
$K_1$	7050	6552	9715				
$K_2$	8935	9260	7917				

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

=449 lb./ac.  
 =777 lb./ac.



Crop :- Sweet Potato (*Rabi*).

Ref :- Mh. 52(202).

Site :- Agri. Res. Stn., Kopergaon.

Type :- 'M'.

Object :- To study the effect of N, P and K on Sweet Potato.

## 1. BASAL CONDITIONS :

- (i) (a) Nil. (b) *Jowar*. (c) Nil. (ii) (a) 'A' type. (b) Refer soil analysis, Kopergaon. (iii) 5-6.11.1952.  
 (iv) (a) 1 ploughing by tractor, 1 harrowing cross wise. (b) N.A. (c) 19360 setts/ac. (d) 3' x 9". (e) N.A.  
 (v) F.Y.M. spread on 1.6.1952. (vi) C.L. 44. (vii) Irrigated. (viii) 2 weedings. (ix) N.A. (x) 26.4.1953.

## 2. TREATMENTS :

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

- (1) 3 levels of N as G.N.C. :  $N_0=0$ ,  $N_1=50$  and  $N_2=100$  lb./ac.  
 (2) 3 levels of  $P_2O_5$  as Super :  $P_0=0$ ,  $P_1=80$  and  $P_2=160$  lb./ac.  
 (3) 3 levels of  $K_2O$  as Pot. Sul. :  $K_0=0$ ,  $K_1=80$  and  $K_2=160$  lb./ac.

P and K applied on 31.10.1952 and 1.11.1952 and N. applied on 16.11.1952.

## 3. DESIGN :

- (i) 3<sup>3</sup> Fact. in R.B.D. (ii) (a) 27. (b) N.A. (iii) 2. (iv) (a) 75' x 21'. (b) 69' x 15'. (v) 3' around.  
 (vi) Yes.

## 4. GENERAL :

- (i) Good. (ii) Slight attack of *Aphids*. (iii) Potato tuber yield. (iv) (a) 1951 to 1953 (modified in 1952). (b) No. (c) N.A. (v) (a) Nil. (b) N.A. (vi) Nil. (vii) The expt. was laid out as 3<sup>3</sup> confounded but the layout was N.A. Only yield data was available hence analysed as 3<sup>3</sup> R.B.D. Fact.

## 5. RESULTS :

- (i) 7281 lb./ac.  
 (ii) 1513 lb./ac.  
 (iii) Main effect of N and interactions NP, NK are significant. Other effects are not significant.  
 (iv) Av. yield of tuber in lb./ac.

	$N_0$	$N_1$	$N_2$	Mean	$K_0$	$K_1$	$K_2$
$P_0$	5702	7511	7994	7069	6586	7700	6921
$P_1$	6341	8803	7421	7522	7208	7952	7404
$P_2$	5925	8770	7068	7254	7050	6254	8457
Mean	5989	8361	7494	7281	6948	7302	7594
$K_0$	5646	8184	7014				
$K_1$	6478	7845	7583				
$K_2$	5844	9054	7885				

S.E. of any marginal mean = 356.9 lb./ac.  
 S.E. of body of table = 618.2 lb./ac.

Crop :- Sweet Potato (*Rabi*).

Ref :- Mh. 53(285).

Site :- Agri. Res. Stn., Kopergaon.

Type :- 'M'.

Object :- To study the effect of N, P and K on Sweet Potato.

## 1. BASAL CONDITIONS :

- (i) (a) Nil. (b) Wheat. (c) 3 bags of G.N.C. and 75 lb./ac. of A/S. (ii) (a) 'A' type. (b) Refer soil analysis, Kopergaon. (iii) 27-10 to 1.11.1953. (iv) (a) 1 crosswise harrowing ; 1 ploughing. (b) N.A. (c) 4840 setts/ac. (d) 3' x 3'. (e) N.A. (v) Nil. (vi) C.L. 44. (vii) Irrigated. (viii) 5 weedings. (ix) Nil. (x) 15 to 20.4.1954.

## 2. TREATMENTS :

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

- (1) 3 levels of N :  $N_0=0$ ,  $N_1=60$  and  $N_2=120$  lb./ac.  
 (2) 3 levels of  $P_2O_5$  :  $P_0=0$ ,  $P_1=60$  and  $P_2=120$  lb./ac.  
 (3) 3 levels of  $K_2O$  :  $K_0=0$ ,  $K_1=90$  and  $K_2=180$  lb./ac.

N as G.N.C.,  $P_2O_5$  as Super and  $K_2O$  as Pot. Sul, applied on 21.10.1953.

## 3. DESIGN :

- (i)  $3^3$  Fact. in R.B.D. (ii) (a) 27. (b) N.A. (iii) 2. (iv) (a)  $75' \times 21'$ . (b)  $69' \times 15'$ . (v) 3' around. (vi) Yes.

## 4. GENERAL :

- (i) N.A. (ii) Nil. (iii) Tuber yield. (iv) (a) 1951 to 1953 (modified in 1952). (b) No. (c) N.A. (v) (a) Nil. (b) N.A. (vi) Nil. (vii) The expt. was laid out as  $3^3$  confounded but as the layout was N.A. the expt. was analysed as  $3^3$  Fact. R.B.D.

## 5. RESULTS :

- (i) 3924 lb./ac.  
 (ii) 1328 lb./ac.  
 (iii) Only main effects of N and P are significant.  
 (iv) Av. yield of tuber in lb./ac.

	$N_0$	$N_1$	$N_2$	Mean	$K_0$	$K_1$	$K_2$
$P_0$	3044	3737	3752	3511	2991	4041	3502
$P_1$	3122	3708	4124	3651	3985	3218	3751
$P_2$	2864	5912	5049	4608	4274	4236	5315
Mean	3010	4452	4308	3924	3750	3832	4189
$K_0$	2651	4907	3690				
$K_1$	3414	3864	4216				
$K_2$	2964	4586	5018				

S.E. of any marginal mean = 313.1 lb./ac.  
 S.E. of body of table = 542.2 lb./ac.

Crop :- Tapioca.

Site :- Agri. Res. Stn., Phondaghat.

Ref :- Mh. 53(287).

Type :- 'M'.

Object :- To study the optimum combination of N, P and K.

## 1. BASAL CONDITIONS :

- (i) (a) Nil. (b) Tapioca. (c) N.A. (ii) (a) Loam, derived from *Gniess* and laterite. (b) N.A. (iii) 1st week of June, 1953. (iv) (a) N.A. (b) Planting seed sets. (c) N.A. (d)  $3' \times 3'$ . (e) N.A. (v) 5 C.L./ac. of F.Y.M. (vi) Travancore. (vii) Unirrigated. (viii) 2 weedings on 13.7.1953 and 29.9.1953. (ix) N.A. (x) 30.5.1954.

## 2. TREATMENTS :

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

- (1) 3 levels of N :  $N_0=0$ ,  $N_1=50$  and  $N_2=100$  lb./ac.  
 (2) 3 levels of  $P_2O_5$  :  $P_0=0$ ,  $P_1=40$  and  $P_2=80$  lb./ac.  
 (3) 3 levels of  $K_2O$  :  $K_0=0$ ,  $K_1=80$  and  $K_2=160$  lb./ac.

## 3. DESIGN :

- (i)  $3^3$  confounded. (ii) (a) 3 blocks/replication and 9 plots/block. (b) N.A. (iii) 1. (iv) (a)  $21' \times 15'$ . (b)  $15' \times 9'$ . (v) 3' all round. (vi) Yes.

## 4. GENERAL :

- (i) Satisfactory. (ii) Some plants affected by hedge hover. (iii) Tapioca yield. (iv) (a) 1953—N.A. (b) and (c) No. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 4142 lb./ac.  
(ii) 2158 lb./ac.  
(iii) None of the effects is significant.  
(iv) Av. yield of tapioca in lb./ac.

	N <sub>0</sub>	N <sub>1</sub>	N <sub>2</sub>	Mean	K <sub>0</sub>	K <sub>1</sub>	K <sub>2</sub>
P <sub>0</sub>	3448	3711	3986	3715	4672	4375	2097
P <sub>1</sub>	3769	5788	4087	4548	4820	4679	4145
P <sub>2</sub>	3992	3535	4962	4163	4948	4437	3105
Mean	3736	4344	4345	4142	4813	4497	3116
K <sub>0</sub>	2420	6695	5324				
K <sub>1</sub>	4154	4584	4753				
K <sub>2</sub>	4636	1754	4345				

S.E. of any marginal means = 719 lb./ac.

S.E. of body of table = 1246 lb./ac.

Crop :- Onion (*Rabi*).

Site :- Agri. College Farm, Poona.

Ref :-Mh. 51(180).

Type :-'C'.

Object :-To study the effect of size of bulb and spacing on the yield of Onion.

## 1. BASAL CONDITIONS :

- (i) (a) Nil. (b) and (c) N.A. (ii) (a) Medium black. (b) Refer soil analysis, Poona. (iii) N.A. (iv) (a) N.A. (b) Ridges of furrows at 2½' depth. Planting in furrows. (c) N.A. (d) As per treatments. (e) N.A. (v) Nil. (vi) N.A. (vii) Irrigated. (viii) N.A. (ix) 12.84". (x) N.A.

## 2. TREATMENTS :

Main-plot treatments :

3 spacings : S<sub>1</sub>=12", S<sub>2</sub>=18" and S<sub>3</sub>=24".

Sub-plot treatments :

3 sizes of bulb : B<sub>1</sub>=2", B<sub>2</sub>=2½" and B<sub>3</sub>=3" diameter bulb.

## 3. DESIGN :

- (i) Split-plot. (ii) (a) 3 main-plots/replication ; 3 sub-plots/main-plot. (b) N.A. (iii) 8. (iv) (a) 20'×2½'. (b) 12'×7½'. (v) 4'×2½'. (vi) Yes.

## 4. GENERAL :

- (i) N.A. (ii) Nil. (iii) Bulb yield. (iv) (a) 1950—N.A. (b) and (c) No. (v) (a) and (b) Nil. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 54.54 ton/ac.  
(ii) (a) 5.37 ton/ac.  
(b) 5.68 ton/ac.  
(iii) Main effect of S and B and their interaction are highly significant.

(iv) Av. yield of onion in ton/ac.

	S <sub>1</sub>	S <sub>2</sub>	S <sub>3</sub>	Mean
B <sub>1</sub>	60.47	74.87	86.29	73.88
B <sub>2</sub>	37.92	53.13	55.75	48.93
B <sub>3</sub>	33.79	41.43	47.24	40.82
Mean	44.06	56.48	63.09	54.54

S.E. of difference of two

1. S marginal means =1.70 ton/ac.
2. B marginal means =1.64 ton/ac.
3. B means at the same level of S =2.84 ton/ac.
4. S means at the same level of B =2.79 ton/ac.

Crop :- Onion.

Ref :-Mh. 53(68).

Site :-Agri. College Farm, Poona.

Type :-'C'.

Object :—To find the effect of different planting dates on the yield of Onion.

**1. BASAL CONDITIONS :**

(i) (a) Nil. (b) Gram. (c) Nil. (ii) (a) Medium black. (c) Refer soil analysis, Poona. (iii) As per treatments. (iv) (a) Ploughing discing and harrowing to get good tilth. (b) to (e) N.A. (v) 16 C.L./ac. of F.Y.M. (vi) Red variety of Onion. (vii) Irrigated. (viii) Two weedings and one top dressing with 30 lb./ac. of N. (ix) 3.65". (x) D<sub>1</sub> on 11.3.1954, D<sub>2</sub> on 13.3.1954, D<sub>3</sub> on 6.4.1954, D<sub>4</sub> on 27.4.1954 and D<sub>5</sub> on 28.4.1954.

**2. TREATMENTS :**

5 transplanting dates : D<sub>1</sub>=1.9.1953, D<sub>2</sub>=15.9.1953, D<sub>3</sub>=1.10.1953, D<sub>4</sub>=15.10.1953 and D<sub>5</sub>=1.11.1953.

**3. DESIGN :**

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 5. (iv) (a) N.A. (b) 184 sq. ft. (v) N.A. (vi) Yes.

**4. GENERAL :**

(i) Normal. (ii) Nil. (iii) Bulb yield. (iv) (a) 1952 to 1954. (b) and (c) No. (v) (a) and (b) No. (vi) and (vii) Nil.

**5. RESULTS :**

(i) 17.37 ton/ac.

(ii) 2.72 ton/ac.

(iii) Treatment differences are not significant.

(iv) Av. yield of onion in ton/ac.

Treatment	Av. yield
D <sub>1</sub>	15.92
D <sub>2</sub>	18.94
D <sub>3</sub>	17.54
D <sub>4</sub>	16.57
D <sub>5</sub>	17.90
S.E./mean	=1.22 ton/ac.

Crop :- Tomato.

Ref :- Mh. 52(157).

Site :- Agri. College Farm, Poona.

Type :- 'M'.

Object : - To find out the best combination of N, P and K to get the maximum yield of Tomato.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Suran*. (c) 30 C.L./ac. of F.Y.M. + 75 lb./ac. of N as A/S and Cake. (ii) (a) Medium black. (b) Refer soil analysis, Poona. (iii) 7.7.1952/26.7.1952 and 3.8.1952. (iv) (a) 1 ploughing, 1 harrowing and 1 discing. (b) to (c) N.A. (v) F.Y.M. spread on 1.5.1952. (vi) N.A. (vii) Irrigated. (viii) 1 interculturing, 1 weeding and 1 gap-filling. (ix) 22.03°. (x) 6 pickings from 10.9.1952 to 15.10.1952.

## 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 Super :  $P_0=0$ ,  $P_1=20$  and  $P_2=40$  lb./ac.(3) 3 levels of  $K_2O$  as Pot. Sul. :  $K_0=0$ ,  $K_1=20$  and  $K_2=40$  lb./ac.N,  $P_2O_5$  and  $K_2O$  applied as top dressing on 6.8.1952.

## 3. DESIGN :

(i) 3<sup>3</sup> Fact. in R.B.D. (ii) (a) 27. (b) N.A. (iii) 3. (iv) (a) 40' x 12½'. (b) 35' x 7½'. (v) 2½' around. (vi) Yes.

## 4. GENERAL :

(i) Uniform and normal. (ii) The tops of plants turned blackish. The leaves were curling, spraying with Nicotinia sulphate. (iii) Tomato yield. (iv) (a) 1951 to 1954. (b) and (c) No. (v) (a) and (b) Nil. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 4.73 ton/ac.

(ii) 1.27 ton/ac.

(iii) None of the effects is significant.

(iv) Av. yield of tomatoes in ton/ac.

	$N_0$	$N_1$	$N_2$	Mean	$K_0$	$K_1$	$K_2$
$P_0$	4.70	4.81	4.72	4.74	4.19	5.50	4.54
$P_1$	4.25	4.36	5.08	4.56	4.99	3.66	5.03
$P_2$	3.93	5.22	5.49	4.88	4.90	4.94	4.79
Mean	4.29	4.80	5.09	4.73	4.69	4.70	4.79
$K_0$	3.92	4.90	5.26				
$K_1$	4.23	4.99	4.89				
$K_2$	4.73	4.50	5.13				

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

=0.24 ton/ac.  
=0.42 ton/ac.

Crop :- Tomato.

Ref :- Mh. 53(74).

Site :- Agri. College Farm, Poona.

Type :- 'M'.

Object :—To find out the best combination of N, P and K to get the maximum yield of Tomato.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) *Suran*. (c) 30 C.L./ac. of F.Y.M. (ii) (a) Medium black. (b) Refer soil analysis, Poona. (iii) 15.5.1953/19.6.1953. (iv) (a) Ploughing and harrowing. (b) to (c) N.A. (v) 20 C.L./ac. of F.Y.M. (vi) Bonny best. (vii) Unirrigated. (viii) 1 weeding on 15th July 1953, 2 interculturings and 3 top dressings in July 1956. (ix) 10.50°. (x) 28 and 29.8.1953, 9 and 10.9.1953, 14 to 18.9.1953 and 28 and 29.9.1953.

**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 Super :  $P_0=0$ ,  $P_1=20$  and  $P_2=40$  lb./ac.(3) 3 levels of  $K_2O$  as Pot. Sul. :  $K_0=0$ ,  $K_1=20$  and  $K_2=40$  lb./ac.**3. DESIGN :**(i)  $3^3$  Fact. in R.B.D. (ii) (a) 27. (b) N.A. (iii) 3. (iv) (a)  $40' \times 12\frac{1}{2}'$ . (b)  $35' \times 7\frac{1}{2}'$ . (v) 1 row all round the plot. (vi) Yes.**4. GENERAL :**

(i) Good. (ii) During August spraying of pyronox 2%. (iii) Tomato yield. (iv) (a) 1951 to 1954. (b) and (c) No. (v) (a) and (b) No. (vi) and (vii) Nil.

**5. RESULTS :**

(i) 3.70 ton/ac.

(ii) 1.05 ton/ac.

(iii) None of the effects is significant.

(iv) Av. yield of tomato in ton/ac.

	$N_0$	$N_1$	$N_2$	Mean	$K_0$	$K_1$	$K_2$
$P_0$	3.43	4.20	3.56	3.73	3.53	3.54	4.12
$P_1$	3.85	3.55	4.41	3.95	3.26	4.41	4.18
$P_2$	3.26	3.91	3.05	3.41	3.38	3.38	3.46
Mean	3.53	3.88	3.67	3.70	3.39	3.78	3.92
$K_0$	3.75	3.28	3.15				
$K_1$	3.61	3.92	3.80				
$K_2$	3.23	4.45	4.08				

S E. of any marginal mean = 0.20 ton/ac.

S.E. of body of table = 0.35 ton/ac.

Crop :- Sugarcane.

Site :- Agri. Res. Stn., Akluj.

Ref :- Mh. 50(90).

Type :- 'M'.

Object :- To find out a suitable ratio of A/S and G.N.C. in top dressing N with varying doses of basal dressing.

**1. BASAL CONDITIONS :**

(i) (a) Bajra+Tur—Sugarcane. (b) Bajra+Tur. (c) Nil. (ii) (a) 'D' type. (b) Refer soil analysis, Akluj. (iii) 1.12.1950. (iv) (a) 1 ploughing, 1 harrowing and 1 opening of furrows. (b) N.A. (c) 10,000 sets/ac. (d) 4' between rows. (e) N.A. (v) As per treatments. (vi) CO-475. (vii) Irrigated. (viii) 4 weedings. (ix) 34'. (ix) 18 to 22.3.1952.

**2. TREATMENTS :**

All combinations of (1) and (2)

(1) 2 levels of compost as B.D. :  $B_1=20$  and  $B_2=40$  C.L./ac.

(2) 4 ratios of A/S and G.N.C. each to supply 375 lb./ac. of N :

 $R_1=A/S$  alone,  $R_2=G.N.C.$  alone,  $R_3=A/S$  and G.N.C. in 1:2 and  $R_4=A/S$  and G.N.C. in 2:1 ratio.

Time and method of application N.A.

## 3. DESIGN :

(i) 2×4 Fact. in R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a) 1.25 *guntha*. (b) 0.75 *guntha*. (v) One row on either side, 4.4' on either end. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Attack of stem borer and top shoot borer observed. Dusting gammaxene. (iii) Germination count and weight, no. of nodes and yield of cane. (iv) (a) 1950—1954. (b) No. (c) N.A. (v) (a) Padegaon and Kopergaon. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 57.89 ton/ac.  
 (ii) 7.16 ton/ac.  
 (iii) Main effect of R and interaction R×B are significant. Main effect of B is not significant.  
 (iv) Av. yield of sugarcane in ton/ac.

	B <sub>1</sub>	B <sub>2</sub>	Mean
R <sub>1</sub>	50.71	51.08	50.89
R <sub>2</sub>	58.37	61.59	59.98
R <sub>3</sub>	60.94	56.20	58.57
R <sub>4</sub>	57.78	66.47	62.12
Mean	56.95	58.83	57.89

S.E. of B marginal means = 1.79 ton/ac.

S.E. of R marginal means = 2.53 ton/ac.

S.E. of body of table = 3.58 ton/ac.

Crop :- Sugarcane.

Ref :- Mh. 51(117).

Site :- Agri. Res. Stn., Akluj.

Type :- 'M'.

Object :—To find out a suitable ratio of A/S to G.N.C. in top dressing of N with varying doses of basal dressing.

## 1. BASAL CONDITIONS :

(i) (a) *Bajra+tur* — Cane. (b) *Bajra+tur*. (c) Nil. (ii) (a) 'D' type. (b) Refer soil analysis, Akluj. (iii) 20.11.1951. (iv) (a) 1 ploughing, 2 harrowing, opening of furrows. (b) N.A. (c) 10,000 sets/ac. (d) between rows 4'. (e) N.A. (v) As per treatments. (vi) CO.475. (vii) Irrigated. (viii) 4 weedings; 2 *tagarani*. (ix) 31". (x) 3.2.1953.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 2 levels of compost as B.D. : B<sub>1</sub>=20 and B<sub>2</sub>=40 lb./ac.

(2) 4 ratios of A/S and G.N.C. each to supply 375 lb./ac. of N : R<sub>1</sub>=A/S alone, R<sub>2</sub>=G.N.C. alone, R<sub>3</sub>=A/S and G.N.C. in 1 : 2 and R<sub>4</sub>=A/S and G.N.C. in 2 : 1 ratio.

Time and method of application N.A.

## 3. DESIGN

(i) 4×2 Fact. in R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 0.75 *guntha*. (v) One row on either side; 4.4' on either end. (vi) Yes.

## 4. GENERAL :

(i) Normal. (ii) Attack of stem borer and shoot borer observed. Dusting by gammaxene done. (iii) Germination counts, height, growth etc., and yield of cane. (iv) (a) 1950 to 1954. (b) No. (c) N.A. (v) (a) Padegaon and Kopergaon. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS

- (i) 60.34 ton/ac.  
 (ii) 3.61 ton/ac.  
 (iii) Main effects of R and B and their interaction are not significant.  
 (iv) Av. yield sugarcane in ton/ac.

	B <sub>1</sub>	B <sub>2</sub>	Mean
R <sub>1</sub>	59.50	59.65	59.57
R <sub>2</sub>	62.15	60.18	61.16
R <sub>3</sub>	60.39	60.77	60.58
R <sub>4</sub>	57.54	63.43	60.48
Mean	59.89	61.00	60.34

S.E. of B marginal means = 0.90 ton/ac.  
 S.E. of R marginal means = 1.27 ton/ac.  
 S.E. of body of table = 1.80 ton/ac.

Crop :- Sugarcane.

Ref :- Mh. 52(11).

Site :- Agri. Res. Stn., Akluj.

Type :- 'M'.

Object :- To find out suitable ratio of A/S to G.N.C. in top dressing of N with varying doses of basal dressing.

## 1. BASAL CONDITIONS :

- (i) (a) *Kharif Mug-Cane-Rabi Jowar*. (b) *Chinamug*. (c) Nil. (ii) (a) 'D' type. (b) Refer soil analysis, Akluj. (iii) 31.10.1952. (iv) (a) 2 ploughings, clod crushing, harrowing and opening ridges. (b) The buds of the cane are exposed and allowed to germinate under soil. (c) to (e) N.A. (v) As per treatments. (vi) CO. 475. (vii) Irrigated. (viii) One light *tagarani*, one earthing up; 3 weeding. (ix) 18.04" (x) 13 to 26.3.1954.

## 2. TREATMENTS:

All combinations of (1) and (2)

- (1) 2 levels of compost as B.D. : B<sub>1</sub>=20 and B<sub>2</sub>=40 C.L./ac.  
 (2) 4 ratios of A/S and G.N.C. each to supply 375 lb./ac. of N : R<sub>1</sub>=A/S alone, R<sub>2</sub>=G.N.C. alone, R<sub>3</sub>=A/S and G.N.C. in 1 : 2 and R<sub>4</sub>=A/S and G.N.C. in 2 : 1 ratio.

## 3. DESIGN :

- (i) 4x2 Fact. in R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a) 38'x36'. (b) 29.2'x28'. (v) One row on each side of the plot and 4.4' on each end of the plot. (vi) Yes.

## 4. GENERAL :

- (i) Good. (ii) The attack of stem borer was severe specially on tillers in May; attack of top shoot borer. (iii) Germination; tillers; borer counts; height, inter nodes etc. and yield of cane. (iv) (a) 1950-1952, 1954 to 1956. (b) Not in the 1st cycle. Treatments are assigned to the same plot during second cycle. (c) N.A. (v) (a) Lakhmapur, Deolali, Padegaon and Kopergaon. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 50.34 ton/ac.  
 (ii) 4.95 ton/ac.  
 (iii) Main effect of B alone is significant.



(iv) Av. yield of sugarcane in ton/ac.

	B <sub>1</sub>	B <sub>2</sub>	Mean
R <sub>1</sub>	30.68	44.63	37.66
R <sub>2</sub>	47.65	52.82	50.24
R <sub>3</sub>	60.89	56.05	58.47
R <sub>4</sub>	52.64	57.33	54.99
Mean	47.96	52.71	50.34

S.E. of B marginal means = 1.24 ton/ac.

S.E. of R marginal means = 1.75 ton/ac.

S.E. of body of table = 2.48 ton/ac.

Crop :- Sugarcane (Pre-seasonal).

Ref :- Mh. 53(203).

Site :- Agri. Res. Stn., Akluj.

Type :- 'M'.

Object :—To find out a suitable ratio of A/S to G.N.C. ; top dressing of N with varying doses of basal dressing.

**BASAL CONDITIONS :**

(i) (a) *Chinamug*—Pre-seasonal Sugarcane—*Rabi Jowar*. (b) *Chinamug*. (c) Nil. (ii) (a) 'D' type. (b) Refer soil analysis, Akluj. (iii) 16.11.1953. (iv) (a) 2 ploughings, clod crushing, harrowings and ridging. (b) The buds of the sugarcane are exposed and allowed to germinate under soil. (c) to (e) N.A. (v) As under treatments. (vi) CO. 419. (vii) Irrigated. (viii) One light *tagarani*, one earthing up and 4 weedings. (ix) 19.19" (x) 22 to 28.2.1955.

**TREATMENTS :**

All combinations of (1) and (2)

(1) 2 levels of compost as B.D. : B<sub>1</sub>=20 and B<sub>2</sub>=40 C.L./ac.

(2) 4 ratios of A/S to G.N.C. each to supply 375 lb./ac. of N :

R<sub>1</sub>=A/S alone, R<sub>2</sub>=G.N.C. alone, R<sub>3</sub>=A/S and G.N.C. in 1 : 2 and R<sub>4</sub>=A/S and G.N.C. in 2 : 1 ratio.

Time and method of application N.A.

**DESIGN :**

(i) 4×2 Fact. in R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a) 38'×36'. (b) 29.2'×28'. (v) One row on each side of the plot and 4.4' on each end of the plot. (vi) Yes.

**GENERAL :**

(i) Normal, no lodging. (ii) The attack of stem borer was upto 15%. The attack of the top shoot borer was upto 5%. The affected shoots were cut and destroyed. (iii) Germination, tillering, borer counts, heights, girth, internodes etc. and yield of cane (iv) (a) 1950—1952 and 1954—1956, (b) Treatments are assigned to the same plots during second cycle but not in the first cycle. (c) N.A. (v) (a) Lakhmapur, Padegaon, Deolali and Kopergaon. (b) N.A. (vi) and (vii) Nil.

**RESULTS :**

(i) 46.67 ton/ac.

(ii) 6.12 ton/ac.

(iii) Main effect of R and B are highly significant. Interaction is not significant.

(iv) Av. yield of sugarcane in ton/ac.

	B <sub>1</sub>	B <sub>2</sub>	Mean
R <sub>1</sub>	27.81	45.85	36.83
R <sub>2</sub>	44.33	53.56	48.94
R <sub>3</sub>	53.44	57.63	55.53
R <sub>4</sub>	41.25	49.54	45.39
Mean	41.71	51.64	

S.E. of B marginal means = 1.53 ton/ac.

S.E. of R marginal means = 2.15 ton/ac.

S.E. of body of table = 3.06 ton/ac.

Crop :- Sugarcane.

Ref :- Mh. 50(91).

Site :- Agri. Res. Stn., Akluj.

Type :- 'M'.

Object :—To study the effect of applying P<sub>2</sub>O<sub>5</sub> with two levels of top dressing for *Adsali* crop.**1. BASAL CONDITIONS :**

(i) (a) *Bajra, Tur* mixture—Sugarcane. (b) *Bajra, Tur* mixture. (c) Nil. (ii) (a) 'D' type soil. (b) Refer soil analysis, Akluj. (iii) 20.8.1950. (iv) (a) Opening ridges and furrows, and harrowing (b) N.A. (c) 10000 setts/ac. (d) 4' between rows. (e) N.A. (v) As per treatments. (vi) CO. 419. (vii) Irrigated. (viii) 2 weedings, one in October, other in December. Earthing up on 11.4.1952; *tagrani* on 22.10.1950. (ix) 34°. (x) 29.1.1952 to 22.2.1952.

**2. TREATMENTS :**

Main-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 methods of application of Super : M<sub>1</sub>=Placement at surface, M<sub>2</sub>=Placement half way down the ridge and M<sub>3</sub>=Placement at the base of the ridge.

Sub-plot treatments :

2 levels of N : N<sub>1</sub>=450 and N<sub>2</sub>=600 lb./ac.

Source of N : A/S and G.N.C. in ratio 1 : 2.

**3. DESIGN :**

(i) Split-plot. (ii) (a) 9 main-plots/replication ; 2 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) 1.6 *guntha*. (b) 1.0 *guntha*. (v) N.A. (vi) Yes.

**4. GENERAL :**

(i) Normal. (ii) N.A. (iii) Sugarcane yield. (iv) (a) 1950—1954. (b) No. (c) N.A. (v) (a) N.A. (b) N.A. (vi) and (vii) Nil.

**5. RESULTS :**

(i) 65.95 ton/ac.

(ii) (a) 6.42 ton/ac.

(b) 3.96 ton/ac.

(iii) Main effect of P and interaction PM are significant while main effect of M is not significant. Main effect of N is significant and interaction main × sub is not significant.

(iv) Av. yield of sugarcane in ton/ac.

	N <sub>1</sub>	N <sub>2</sub>	Mean
P <sub>0</sub>	59.33	64.98	62.15
P <sub>1</sub> M <sub>1</sub>	64.74	66.93	65.83
P <sub>1</sub> M <sub>2</sub>	66.40	67.00	66.70
P <sub>1</sub> M <sub>3</sub>	64.13	75.23	69.68
P <sub>2</sub> M <sub>1</sub>	74.39	76.33	75.36
P <sub>2</sub> M <sub>2</sub>	61.99	63.56	62.77
P <sub>2</sub> M <sub>3</sub>	66.53	66.94	66.73
Mean	65.36	68.71	65.95

S.E. of difference of two

- |  |               |
|--|---------------|
| 1. means in the same row (except 1st row)                          | =3.20 ton/ac. |
| 2. means in the same column (except 1st row)                       | =4.35 ton/ac. |
| 3. means in the 1st row  | =1.86 ton/ac. |
| 4. means in the same column, one of the means being in the 1st row | =3.55 ton/ac. |
| S.E. of P <sub>0</sub> marginal mean                               | =1.51 ton/ac. |
| S.E. of any PM combination marginal mean                           | =2.62 ton/ac. |
| S.E. of N marginal mean  | =0.76 ton/ac. |

Crop :-Sugarcane.

Ref :-Mh. 51(116).

Site :-Agri. Res. Stn., Akluj.

Type :-'M'.

Object :—To study the placement of phosphoric acid together with N manure.

## 1. BASAL CONDITIONS :

(i) (a) Bajra—Tur mixture—Sugarcane. (b) Bajra—Tur mixture. (c) Nil. (ii) (a) D type. (b) Refer soil analysis, Akluj. (iii) 23.8.1951. (iv) (a) 2 ploughings, 1 harrowings, making and opening of ridges and furrows. (b) N.A. (c) 10,000 sets/ac. (d) 4' between rows. (e) N.A. (v) 20 C.L./ac. of compost. (vi) CO.419. (vii) Irrigated. (viii) 2 weedings and 3 tagranis. (ix) 19". (x) 30.12.1952.

## 2. TREATMENTS :

Main-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 methods of application of Super : M<sub>1</sub>=Applied in furrows, M<sub>2</sub>=Applied half way down the ridge and M<sub>3</sub>=Applied at the bottom of the ridge.

Sub-plot treatments :

2 levels of N : N<sub>1</sub>=450 and N<sub>2</sub>=600 lb./ac.

Source of N : A/S and G.N.C. in 1 : 2 ratio.

## 3. DESIGN :

(i) Split-plot. (ii) (a) 9 main-plots/replication and 2 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) 1.6 guntha. (b) 1.2 guntha. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) Normal. (ii) Stem bores 10% ; top borer 5%. (iii) Total no. of millable sugarcane, water shoots and yield of cane. (iv) (a) 1950—1954. (b) No. (c) N.A. (v) (a) Deolali, Lakhmapur and Kopergaon. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 78.26 ton/ac.  
 (ii) (a) 5.66 ton/ac.  
 (b) 3.58 ton/ac.  
 (iii) Only level of  $P_2O_5$  is significant. All other effects and interactions are not significant.  
 (iv) Av. yield of sugarcane in ton/ac.

	$N_1$	$N_2$	Mean
$P_0$	72.47	76.49	74.48
$P_1M_1$	77.52	77.56	77.54
$P_1M_2$	79.63	82.27	80.95
$P_1M_3$	77.29	77.78	76.04
$P_2M_1$	84.04	82.04	83.06
$P_2M_2$	83.13	81.35	82.24
$P_2M_3$	80.32	81.72	81.20
Mean	78.20	79.88	78.26

## S.E. of difference of two

- means in the same row (except 1st row) =2.91 ton/ac.
  - means in the same column (except 1st row) =3.86 ton/ac.
  - means in the 1st row =1.68 ton/ac.
  - mean in the same column, one of the means being in the 1st row =3.15 ton/ac.
- S.E. of  $P_0$  marginal mean =1.33 ton/ac.  
 S.E. of any PM combination marginal mean =2.31 ton/ac.  
 S.E. of N marginal mean =0.67 ton/ac.

Crop :-Sugarcane.

Ref :-Mh. 52(379).

Site:- Agri. Res. Stn., Akluj.

Type :-'M'.

Object :-To study the effect of  $P_2O_5$ , applied at different depths and N on Sugarcane yield.

## 1. BASAL CONDITIONS :

(i) (a) *Tur+Bajra*—Sugarcane. (b) *Tur+Bajra*. (c) N.A. (ii) (a) 'D' type soil. (b) Refer soil analysis, Akluj. (iii) 6.8.1952. (iv) (a) 2 ploughings, harrowings, discing and ridging. (b) Planting in ridges and furrows. (c) 10000 setts/ac. (d) 4' between rows. (e) N.A. (v) 20 C.L./ac. of compost. (vi) CO.419. (vii) Irrigated. (viii) 3 weedings. (ix) 11.03". (x) 30.1.1954.

## 2. TREATMENTS :

## Main-plot treatments :

All combinations of (1) and (2)

- 3 levels of  $P_2O_5$  :  $P_0=0$ ,  $P_1=75$  and  $P_2=150$  lb./ac.
- 3 methods of application of  $P_2O_5$  :  $M_1$ =Applied in furrows,  $M_2$ =Applied half way down the ridge and  $M_3$ =Applied at the bottom of the ridge.

## Sub-plot treatments:

2 levels of N :  $N_1=450$  and  $N_2=600$  lb./ac.  
 Source of N : A/S and G.N.C. in 1 : 2 ratio.

## 4. DESIGN :

(i) Split-plot. (ii) (a) 9 main-plots/replications ; 2 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) 54.44'×32'. (b) 45.44'×24'. (v) One row kept. (vi) Yes.

## 4. GENERAL :

(i) Slight lodging. (ii) Stem borer 2.5%, top borer shoots 2.0%, mild attack of pyrilla. (iii) Germination, tillering, girth and yield of cane. (iv) (a) 1950 to 1953. (b) No. (c) Nil. (v) (a) Kopergaon, Deolali and Lakhmapur. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 72.32 ton/ac.  
 (ii) (a) 6.70 ton/ac.  
 (b) 4.45 ton/ac.  
 (iii) Main effect of M is significant. Control vs others, main effect of P and interaction PM are not significant. Main effect of N is highly significant while the interaction main $\times$ sub is not significant.  
 (iv) Av. yield of sugarcane in ton/ac.

	N <sub>1</sub>	N <sub>2</sub>	Mean
P <sub>0</sub>	70.04	74.07	72.05
P <sub>1</sub> M <sub>1</sub>	69.23	76.20	72.71
P <sub>1</sub> M <sub>2</sub>	72.60	79.50	76.05
P <sub>1</sub> M <sub>3</sub>	67.43	70.33	68.88
P <sub>2</sub> M <sub>1</sub>	72.53	75.23	73.88
P <sub>2</sub> M <sub>2</sub>	77.43	76.17	76.80
P <sub>2</sub> M <sub>3</sub>	64.79	68.03	66.41
Mean	70.46	74.18	72.32

S.E. of difference of two

- |  |               |
|--|---------------|
| 1. means in the same row (except 1st row)                          | =3.64 ton/ac. |
| 2. means in the same column (except 1st row)                       | =4.64 ton/ac. |
| 3. means in the 1st row  | =1.63 ton/ac. |
| 4. means in the same column, one of the means being in the 1st row | =3.79 ton/ac. |
| S.E. of P <sub>0</sub> marginal mean                               | =1.58 ton/ac. |
| S.E. of any PM combination marginal mean                           | =2.73 ton/ac. |
| S.E. of N marginal mean  | =0.86 ton/ac. |

Crop :- Sugarcane.

Ref :- Mh. 53(380).

Site :- Agri. Res. Stn., Akluj.

Type :- 'M'.

Object :- To study the effect of P<sub>2</sub>O<sub>5</sub>, applied at different depths and N on Sugarcane yield.

## 1. BASAL CONDITIONS :

(i) (a) Bajra+Tur—Sugarcane. (b) Bajra+Tur. (c) N.A. (ii) (a) 'D' type soil. (b) Refer soil analysis, Akluj. (iii) 10.8.1953. (iv) (a) 2 ploughings, harrowing, discing and ridging etc. (b) Planting in ridges and furrows. (c) 10,000 sets/ac. (d) 4' between rows. (e) N.A. (v) 20 C.L./ac. of compost. (vi) CO.419. (vii) Irrigated. (viii) 3 weedings. (ix) 20.19". (x) 4.2.1955.

## 2. TREATMENTS:

Main-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 methods of application of P<sub>2</sub>O<sub>5</sub> : M<sub>1</sub>=Applied in furrows, M<sub>2</sub>=Applied half way down the ridge and M<sub>3</sub>=Applied at the bottom of the ridge.

Sub-plot treatments :

2 levels of N : N<sub>1</sub>=450 and N<sub>2</sub>=600 lb./ac.

Source of N : A/S and G.N.C. in 1 : 2 ratio.

## 3. DESIGN :

- (i) Split-plot. (ii) (a) 9 main-plots/replication ; 2 sub-plots/main-plot (b) N.A. (iii) 3. (iv) (a) 54.44' x 32'. (b) 45.44' x 24'. (v) One row kept. (vi) Yes.

## 4. GENERAL :

- (i) Slight lodging. (ii) Stemborer ; 2 to 2.5% ; top—shoot ; 1 to 5% ; mild attack of pyrilla noticed. (iii) Germination, tillering height, girth and yield of cane. (iv) (a) 1950 to 1953. (b) and (c) No. (v) (a) Kopergaon, Deolali and Lakhampur. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 67.93 ton/ac.  
 (ii) (a) 7.68 ton/ac.  
 (b) 3.96 ton/ac.  
 (iii) Main effects of P and M and interaction PM and control vs. others are not significant. Main effect of N is highly significant. Interaction "main x sub" is not significant.  
 (iv) Av. yield of sugarcane in ton/ac.

	N <sub>1</sub>	N <sub>2</sub>	Mean
P <sub>0</sub>	64.55	69.56	67.05
P <sub>1</sub> M <sub>1</sub>	68.48	72.83	70.66
P <sub>1</sub> M <sub>2</sub>	68.52	74.88	71.70
P <sub>1</sub> M <sub>3</sub>	62.91	69.68	66.29
P <sub>2</sub> M <sub>1</sub>	57.13	73.23	65.18
P <sub>2</sub> M <sub>2</sub>	62.73	71.66	67.19
P <sub>2</sub> M <sub>3</sub>	68.11	70.15	69.13
Mean	64.62	71.24	67.93

## S.E. of difference of two

- |  |               |
|--|---------------|
| 1. means in the same row (except 1st row)                          | =3.23 ton/ac. |
| 2. means in the same column (except 1st row)                       | =4.98 ton/ac. |
| 3. means in the 1st row  | =1.87 ton/ac. |
| 4. means in the same column, one of the means being in the 1st row | =4.07 ton/ac. |
| S.E. of P <sub>0</sub> marginal mean                               | =1.81 ton/ac. |
| S.E. of any PM combination marginal mean                           | =3.14 ton/ac. |
| S.E. of N marginal mean  | =0.76 ton/ac. |

Crop :-Sugarcane.

Ref :-Mh. 48(76).

Site :-Agri, Res. Stn., Akulj.

Type :-'M'.

Object :—To find out the ratio of inorganic to organic manures in the top dressing of N on Sugarcane with and without basal manure.

## 1. BASAL CONDITIONS :

- (i) (a) Sugarcane—Nilwa—Gram—Cotton—Bajra. (b) Cotton—Bajra. (c) Nil. (ii) (a) 'D' type. (b) Refer soil analysis, Akulj. (iii) 25.1.1948. (iv) (a) 2 ploughings, harrowings and weedings. (b) to (e) N.A. (v) As per treatments. (vi) CO.419. (vii) Irrigated. (viii) 2,3 weedings, 1 light earthing up and final earthing up. (ix) 21.78". (x) 23.3.1949.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 2 levels of F.Y.M. as B.M.: B<sub>0</sub>=0 and B<sub>1</sub>=20 C.L./ac.(2) 4 ratios of A/S to G.N.C.: R<sub>1</sub>=G.N.C. alone, R<sub>2</sub>=A/S to G.N.C. in 1 : 1, R<sub>3</sub>=A/S to G.N.C. in 1 : 2 and R<sub>4</sub>=A/S to G.N.C. in 2 : 1 ratio.

Each ratio to supply 300 lb./ac. of N ; N is top-dressed.

## 3. DESIGN :

(i) 4×2 Fact. in R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a) 1.25 *gunthas*. (b) 0.75 *gunthas*. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) No lodging. (ii) Stemborer 15 to 16%. (iii) Germination and tillering percentages, height, girth and internodes of sugarcane ; total no. of cane total weight and yield of cane. (iv) (a) 1941 to 1949. (b) and (c) No. (v) (a) Kopergaon, Deolali and Lakhmapur. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 37.24 ton/ac.  
 (ii) 3.74 ton/ac.  
 (iii) Main effects of B and R and their interaction are highly significant.  
 (iv) Av. yield of sugarcane in ton/ac.

	B <sub>0</sub>	B <sub>1</sub>	Mean
R <sub>1</sub>	38.23	47.58	42.90
R <sub>2</sub>	31.18	43.81	37.49
R <sub>3</sub>	33.03	41.96	37.49
R <sub>4</sub>	26.00	35.66	30.83
Mean	32.11	42.25	37.24

S.E. of B marginal mean = 0.94 ton/ac.  
 S.E. of R marginal mean = 1.32 ton/ac.  
 S.E. of body of table = 1.87 ton/ac.

Crop :- Sugarcane.

Ref :- Mh. 49(109).

Site :- Agri. Res. Stn., Akluj.

Type :- 'M'.

Object :- To find out the ratio of inorganic to organic manures in top dressing of N on Sugarcane with and without basal.

## 1. BASAL CONDITIONS :

(i) (a) Sugarcane-Nilwa-Gram-Cotton+Bajra. (b) Cotton+Bajra. (c) Nil. (ii) (a) 'D' type. (b) Refer soil analysis, Akluj. (iii) January 1949. (iv) (a) 2 ploughings ; harrowings, ridging. (b) to (e) N.A. (v) As per treatments. (vi) CO. 419. (vii) Irrigated. (viii) 2-3 weedings ; one light earthing-up and final earthing up. (ix) 23.64". (x) March 1950.

## 2. TREATMENTS :

All combinations of (1) and (2).

(1) 2 levels of F.Y.M. as B.D.: B<sub>0</sub>=0 and B<sub>1</sub>=20 C.L./ac.

(2) 4 ratios of A/S to G.N.C. : R<sub>1</sub>=G.N.C. alone, R<sub>2</sub>=A/S to G.N.C. in 1 : 1, R<sub>3</sub>=A/S to G.N.C. in 1 : 2 and R<sub>4</sub>=A/S to G.N.C. in 2 : 1 ratio.

Each ratio to supply 300 lb./ac. of N ; N top dressed.

## 3. DESIGN :

(i) 4×2 Fact. in R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a) 1.25 *gunthas*. (b) 0.75 *gunthas*. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) No lodging. (ii) Stem borer—10 to 15%. (iii) Germination and tillering %, height, girth and internodes of cane. Total no. of canes and total wt. of cane. (iv) (a) 1941 to 1949. (b) No. (c) Nil. (v) (a) Kopergaon, Deolali, Lakhmapur. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 40.20 ton/ac.  
 (ii) 5.88 ton/ac.  
 (iii) Main effects of B and R are significant while their interaction is not significant.  
 (iv) Av. yield of sugarcane in ton/ac.

	B <sub>0</sub>	B <sub>1</sub>	Mean
R <sub>1</sub>	44.66	50.27	47.46
R <sub>2</sub>	33.35	40.99	37.17
R <sub>3</sub>	39.77	50.27	45.02
R <sub>4</sub>	25.20	36.54	30.87
Mean	35.74	44.52	

S.E. of B marginal mean = 1.47 ton/ac.  
 S.E. of R marginal mean = 2.08 ton/ac.  
 S.E. of body of table = 2.94 ton/ac.

Crop :- Sugarcane.

Ref :- Mh. 48(28).

Site :- Agri. Res. Stn., Deolali.

Type :- 'M'.

Object :- To find out a suitable ratio of A/S to G.N.C. for top-dressing N with and without basal dressing.

## 1. BASAL CONDITIONS :

(i) (a) Nilwa-Gram-Cotton-Sugarcane. (b) Cotton. (c) N.A. (ii) (a) 'G' type soil. (b) N.A. (iii) January 1948. (iv) (a) 2 ploughings, 1 harrowing. (b) N.A. (c) 10,000 setts/ac. (d) 4' spacing between rows. (e) N.A. (v) As per treatments. (vi) CO.419. (vii) Irrigated. (viii) 2 to 3 weedings. (ix) 39.21%. (x) First week of March 1950.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 2 levels of compost as B.D. : B<sub>0</sub>=0 and B<sub>1</sub>=20 C.L./ac.

(2) 4 ratios of A/S to G.N.C. : R<sub>1</sub>=G.N.C. alone, R<sub>2</sub>=A/S to G.N.C. in 1 : 1, R<sub>3</sub>=A/S to G.N.C. in 1 : 2 and R<sub>4</sub>=A/S to G.N.C. in 2 : 1 ratio.

Amount of N : N.A. ; N top dressed.

## 3. DESIGN :

(i) 2×4 Fact. in R.B.D. (ii) (a)-8. (b) N.A. (iii) 4. (iv) (a) 40'×34'. (b) 32'×25.5'. (v) 1 row on either side ; 4.25' at either end. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) N.A. (iii) Cane yield ; no. of tillers. (iv) (a) 1941 to 1949. (b) No. (c) N.A. (v) (a) Kopergaon. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 21.31 ton/ac.  
 (ii) 2.87 ton/ac.  
 (iii) Main effects of B and R and their interaction are not significant.



(iv) Av. yield of sugarcane in ton/ac.

	B <sub>0</sub>	B <sub>1</sub>	Mean
R <sub>1</sub>	21.88	22.72	22.30
R <sub>2</sub>	19.85	19.96	19.90
R <sub>3</sub>	19.25	22.61	20.93
R <sub>4</sub>	22.25	21.98	22.12
Mean	20.81	21.82	21.31

S.E. of B marginal mean =0.72 ton/ac.

S.E. of R marginal mean =1.01 ton/ac.

S.E. of body of table =1.44 ton/ac.

Crop :- Sugarcane.

Ref :- Mh. 49(43).

Site :- Agri. Res. Stn., Deolali.

Type :- 'M'.

Object :- To find out a suitable ratio of A/S to G.N.C. for top dressing N with varying doses of basal manure.

## 1. BASAL CONDITIONS :

(i) (a) Nilwa—Gram—Cotton—Sugarcane. (b) Cotton. (c) N.A. (ii) (a) 'G' type soil. (b) N.A. (iii) 3rd week of January 1949. (iv) (a) 2 ploughings and 1 harrowing. (b) N.A. (c) 10,000 setts/ac. (d) 4' spacing between rows. (e) N.A. (v) As per treatments. (vi) CO. 419. (vii) Irrigated. (viii) 2 to 3 weedings. (ix) 26.52". (x) 1st week of March 1951.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 2 levels of compost as B.D. : B<sub>0</sub>=0 and B<sub>1</sub>=20 C.L./ac.(2) 4 ratios of A/S to G.N.C. : R<sub>1</sub>=G.N.C. alone, R<sub>2</sub>=A/S to G.N.C. in 1 : 1, R<sub>3</sub>=A/S to G.N.C. in 1 : 2 and R<sub>4</sub>=A/S to G.N.C. in 2 : 1 ratio.

Amount of N : N.A.

## 3. DESIGN :

(i) 2×4 Fact. in R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a) 40'×34'. (b) 32'×25.5'. (v) 1' row on either side; 4.25' at either end. (vi) Yes.

## 4. GENERAL :

(i) Normal. (ii) N.A. (iii) Sugarcane yield, no. of tillers. (iv) (a) 1941—1949. (b) No. (c) N.A. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 22.29 ton/ac.

(ii) 2.93 ton/ac.

(iii) Main effect of B and R and their interaction are not significant.

(iv) Av. yield of sugarcane in ton/ac.

	B <sub>0</sub>	B <sub>1</sub>	Mean
R <sub>1</sub>	22.71	22.56	22.63
R <sub>2</sub>	21.44	21.21	21.32
R <sub>3</sub>	23.42	21.54	22.48
R <sub>4</sub>	21.46	23.95	22.71
Mean	22.26	22.32	22.29

S.E. of B marginal mean

=0.73 ton/ac.

S.E. of R marginal mean

=1.03 ton/ac.

S.E. of body of table

=1.47 ton/ac.

Crop :- Sugarcane.

Ref :- Mh. 50(70).

Site :- Agri. Res. Stn., Deolali.

Type :- 'M'.

Object :- To find out suitable ratio of A/S to cake for top dressing N with varying doses of basal manure.

## 1. BASAL CONDITIONS :

- (i) *Bajra+Tur*—Sugarcane. (b) *Bajra+Tur*. (c) Nil. (ii) (a) 'G' type soil. (b) N.A. (iii) October 1950. (iv) (a) and (b) N.A. (c) 10,000 setts/ac. (d) 4' between rows. (e) N.A. (v) As per treatments. (vi) CO. 419. (vii) Irrigated. (viii) N.A. (ix) 27.71°. (x) 3rd week of February 1952.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 2 levels of F.Y.M. as B.D.  $B_1=20$  and  $B_2=40$  C.L./ac.

(2) 4 ratios of A/S to G.N.C. :  $R_1=A/S$  alone,  $R_2=A/S$  to G.N.C. in 2 : 1,  $R_3=A/S$  to G.N.C. in 1 : 2 ratio and  $R_4=G.N.C.$  alone.

Each ratio to supply 375 lb./ac. of N. Manures applied at sowing by broadcast.

## 3. DESIGN :

- (i) 2×4 Fact. in R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a) 40'×34'. (b) 32'×25.5'. (v) 1' row on either side, 4.25' at either end. (vi) Yes.

## 4. GENERAL :

- (i) Good. (ii) Nil. (iii) Germination % ; millable and non-millable sugarcane count, height in inches. and yield of cane. (iv) (a) 1950—1954. (b) No. (c) N.A. (v) (a) Akluj, Lakhmapur and Kopergaon. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 46.15 ton/ac.

(ii) 6.47 ton/ac.

(iii) Main effect of B is not significant. Main effect of R and the interaction are significant.

(iv) Av. yield of sugarcane in ton/ac.

	$B_1$	$B_2$	Mean
$R_1$	41.86	39.98	40.92
$R_2$	51.49	44.29	47.89
$R_3$	46.77	50.64	48.70
$R_4$	46.95	47.23	47.09
Mean	46.77	45.53	46.15

S.E. of B marginal mean

=1.62 ton/ac.

S.E. of R marginal mean

=2.28 ton/ac.

S.E. of body of table

=3.23 ton/ac.

Crop :- Sugarcane.

Ref :- Mh. 51(81).

Site :- Agri. Res. Stn., Deolali.

Type :- 'M'.

Object :- To find out a suitable ratio of A/S to G.N.C. for top-dressing N with varying doses of basal manure.

## 1. BASAL CONDITIONS :

- (i) (a) *Bajra+Tur*—Sugarcane. (b) *Bajra+Tura*. (c) Nil. (ii) (a) 'G' type. (b) N.A. (iii) 21.10.1951. (iv) (a) 2 ploughings and 1 clod crushing. (b) N.A. (c) 10,000 setts/ac. (d) 4' between rows. (e) N.A. (v) As per treatments. (vi) CO. 419. (vii) Irrigated. (viii) 3 weedings and 1 gap-filling. (ix) 8.5°. (x) 15.2.1951.

## 2. TREATMENTS

All combinations of (1) and (2)

(1) 2 levels of F.Y.M. as B.D. :  $B_1=20$  and  $B_2=40$  C.L./ac.

(2) 4 ratios of A/S to G.N.C. :  $R_1=A/S$  alone,  $R_2=A/S$  to G.N.C. in 2 : 1,  $R_3=A/S$  to G.N.C. in 1 : 2 and  $R_4=G.N.C.$  alone.

Each ratio to supply 375 lb./ac. of N.

## 3. DESIGN :

(i)  $2 \times 4$  Fact. in R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a)  $40' \times 34'$ . (b)  $32' \times 25.5'$ . (v) 1 row on either side and 4.25' at either end. (vi) Yes.

## 4. GENERAL :

(i) Normal. (ii) Nil. (iii) Germination %, milleable and non-milleable sugarcane ; av. height and yield data. (iv) (a) 1950—1954. (b) No. (c) N.A. (v) (a) Akluj and Kopergaon. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 31.04 ton/ac.

(ii) 9.75 ton/ac.

(iii) Main effects of B and R and their interaction are not significant.

(iv) Av. yield of sugarcane in ton/ac.

	$B_1$	$B_2$	Mean
$R_1$	29.51	27.50	28.50
$R_2$	26.38	33.77	30.08
$R_3$	32.93	25.27	29.10
$R_4$	38.02	34.89	36.46
Mean	31.71	30.37	31.04

S.E. of B marginal mean = 2.44 ton/ac.  
 S.E. of R marginal mean = 3.45 ton/ac.  
 S.E. of body of table = 4.88 ton/ac.

Crop :- Sugarcane.

Ref :- Mh. 52(10).

Site :- Agri. Res. Stn., Deolali.

Type :- 'M'.

Object :- To find out a suitable method of manuring for Sugarcane crop.

## 1. BASAL CONDITIONS :

(i) (a) Sugarcane—Bajra+Tur—Chinamug—Sugarcane. (b) Chinamug in Kharif. (c) Nil. (ii) (a) Type 'G' as per genetic classification of soil. (b) N.A. (iii) 21.10.1952. (iv) (a) 2 ploughings, harrowing, mixing, opening ridges, planting, earthing etc. (b) The buds of the sugarcane are exposed and allowed to germinate under soil. (c) to (e) N.A. (v) Nil. (vi) CO. 419. (vii) Irrigated. (viii) Weeding, mixing and earthing. (ix) 25.68". (x) 16.2.1954.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 2 levels of F.Y.M. as B.D. :  $B_1=20$  and  $B_2=40$  C.L./ac.

(2) 4 ratios of A/S to G.N.C. :  $R_1=A/S$  alone,  $R_2=A/S$  to G.N.C. in 2 : 1,  $R_3=A/S$  to G.N.C. in 1 : 2 and  $R_4=G.N.C.$  alone.

Each ratio to supply 375 lb./ac. of N.

## 3. DESIGN :

(i)  $2 \times 4$  Fact. in R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a)  $40' \times 34'$ . (b)  $32' \times 25'$ . (v) One row or each side and  $4\frac{1}{2}'$  side ways. (vi) Yes.

## 5. GENERAL :

(i) No lodging. (ii) (a) Attack of top-shoot-borer, stem-borer and pyrilla. (mechanical control). (iii) Germination, tillering, milleable sugarcane counts, borer counts, growth observation, ripeness counts and weight of sugarcane. (iv) (a) 1950-56 (b) No. (c) N.A. (v) (a) Akluj, Lakhmapur and Padegaon. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 31.75 ton/ac.  
 (ii) 4.42 ton/ac.  
 (iii) Only the main effect of R is highly significant.  
 (iv) Av. yield of sugarcane in ton/ac.

	B <sub>1</sub>	B <sub>2</sub>	Mean
R <sub>1</sub>	25.72	25.59	25.66
R <sub>2</sub>	30.62	34.03	32.32
R <sub>3</sub>	36.88	32.94	34.91
R <sub>4</sub>	32.39	35.79	31.09
Mean	31.40	32.09	31.75

S.E. of B marginal mean = 1.10 ton/ac.  
 S.E. of R marginal mean = 1.55 ton/ac.  
 S.E. of body of table = 2.21 ton/ac.

Crop :- Sugarcane (*Adsali*).

Ref :- Mh. 53(201).

Site :- Agri. Res. Stn., Deolali.

Type :- 'M'.

Object :- To find the suitable method of manuring for Sugarcane.

## 1. BASAL CONDITIONS :

(i) (a) Sugarcane—*Bajra+Tur—Chinamug*—Sugarcane. (b) *Chinamug* in *Kharif*. (c) Nil. (ii) (a) 'G' type according to genetic classification of soil. (b) N.A. (iii) 20.10.1953. (iv) (a) 2 ploughings, harrowings, and opening ridges. (b) The buds of the sugarcane are exposed and allowed to germinate in the soil. (c) to (e) N.A. (v) As per treatments. (vi) *Adsali* sugarcane CO.419. (vii) Irrigated. (viii) Weeding, mixing and earthing etc (ix) 31.76(x) 25.2.1955 to 3.3.1955.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 2 levels of F Y.M. as B.D. : B<sub>1</sub>=20 and B<sub>2</sub>=40 C.L./ac.

(2) 4 ratios of A/S to G.N.C. : R<sub>1</sub>=A/S alone, R<sub>2</sub>=A/S to G.N.C. in 2:1, R<sub>3</sub>=A/S to G.N.C. in 1:2 and R<sub>4</sub>=G.N.C. alone.

Each ratio to supply 375 lb./ac. of N.

## 3. DESIGN :

(i) 2×4 Fact. in R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a) 40'×34'. (b) 32'×25'. (v) One row of cane on each side and 4½' side ways. (vi) Yes.

## 4. GENERAL :

(i) No lodging. (ii) Top-shoot-borer, stem-borer; pyrilla (mechanical control). (iii) Germination, tillering, borer counts, milleable, sugarcane counts, growth observation, ripeness and yield of sugarcane by weight. (iv) (a) 1950-1956 (b) No. (c) N.A. (v) (a) Akluj, Lakhmapur, Kopergaon and Padegaon. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 44.24 ton/ac.  
(ii) 4.83 ton/ac.  
(iii) Only the main effect of R is highly significant.  
(iv) Av. yield of sugarcane in ton/ac.

	B <sub>1</sub>	B <sub>2</sub>	Mean
R <sub>1</sub>	35.79	38.92	37.35
R <sub>2</sub>	45.87	40.56	43.21
R <sub>3</sub>	47.91	46.00	46.95
R <sub>4</sub>	50.22	48.72	49.47
Mean	44.95	43.55	44.24

S.E. of B marginal mean = 1.20 ton/ac.  
S.E. of R marginal mean = 1.69 ton/ac.  
S.E. of body of table = 2.41 ton/ac.

Crop :- Sugarcane.  
Site :- Agri. Res. Stn., Deolali.

Ref :- Mh. 50(71).  
Type :- 'M'.

Object :- To study the placement of varying doses of P<sub>2</sub>O<sub>5</sub> with two levels of N as top-dressing.

## 1. BASAL CONDITIONS :

(i) (a) *Bajra+Tur*—Sugarcane. (b) *Bajra+Tur*. (c) Nil. (ii) (a) 'G' type soil. (b) N.A. (iii) October 1950. (iv) (a) and (b) N.A. (c) 10,000 sett/ac. (d) 4' spacing between rows. (e) N.A. (v) 20 C.L./ac. of F.Y.M. broadcasted before sowing. (vi) CO.419. (vii) Irrigated. (viii) N.A. (ix) 27.71%. (x) 3rd week of Feb. 1952.

## 2. TREATMENTS :

Main-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 methods of application of P<sub>2</sub>O<sub>5</sub> : M<sub>1</sub>=Applied in furrows, M<sub>2</sub>=Applied half way down the ridge and M<sub>3</sub>=Applied at the bottom of the ridge.

Sub-plot treatments :

2 levels of N : N<sub>1</sub>=450 and N<sub>2</sub>=600 lb./ac.

Source of N : A/S to G.N.C. in ratio 1 : 2.

## 3. DESIGN :

(i) Split-plot. (ii) (a) 9 main-plots/block and 2 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) 54.45'×32'. (b) 45.45'×24'. (v) 1 row on either side and 4.5' at either end. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Nil. (iii) Germination counts. (iv) (a) 1950—1954. (b) No. (c) N.A. (v) (a) Akluj, Kopergaon and Lakmapur. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 48.64 ton/ac.  
(ii) (a) 7.87 ton/ac.  
(b) 7.01 ton/ac.  
(iii) Main effects of P and M and their interaction are not significant. Sub-plot treatments and interaction 'main×sub' are also not significant.

(iv) Av. yield of sugarcane in ton/ac.

	N <sub>1</sub>	N <sub>2</sub>	Mean
P <sub>0</sub>	44.36	48.18	46.27
P <sub>1</sub> M <sub>1</sub>	49.90	42.17	46.03
P <sub>1</sub> M <sub>2</sub>	52.14	50.01	51.07
P <sub>1</sub> M <sub>3</sub>	42.45	48.75	45.60
P <sub>2</sub> M <sub>1</sub>	50.52	50.36	50.44
P <sub>2</sub> M <sub>2</sub>	52.55	46.66	49.60
P <sub>2</sub> M <sub>3</sub>	55.50	56.76	56.13
Mean	48.46	48.81	48.64

S.E. of difference of two

1. means in the same row (except 1st row) = 5.72 ton/ac.
  2. means in the same column (except 1st row) = 6.08 ton/ac.
  3. means in the 1st row = 3.30 ton/ac.
  4. means in the same column, one of the means being in the 1st row = 4.97 ton/ac.
- S.E. of P<sub>0</sub> marginal mean = 1.05 ton/ac.  
S.E. of any PM combination marginal mean = 3.21 ton/ac.  
S.E. of N marginal mean = 1.34 ton/ac.

Crop :- Sugarcane.

Ref :- Mh. 51(82).

Site :- Agri. Res. Stn., Deolali.

Type :- 'M'.

Object :- To study the effect of P manure with different methods of placement in combination with two levels of N.

## 1. BASAL CONDITIONS :

(i) (a) Bajra+Tur mixture—Sugarcane. (b) Bajra+Tur. (c) Nil. (ii) (a) 'G' type soil. (b) N.A. (iii) 23.8.1951. (iv) (a) 2 ploughings and 1 harrowing. (b) N.A. (c) 10,000 sett/ac. (d) 4' spacing between rows. (e) N.A. (v) 20 C.L./ac. of F.Y.M. (vi) CO: 419. (vii) Irrigated. (viii) 3 weedings and 1 gap filling. (ix) 8.5". (x) 1.10.1953.

## 2. TREATMENTS :

Main-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 methods of application of P<sub>2</sub>O<sub>5</sub> : M<sub>1</sub>=Applied in furrows, M<sub>2</sub>=Applied half way down the ridge and M<sub>3</sub>=Applied at the bottom of the ridge.

Sub-plot treatments :

2 levels of N : N<sub>1</sub>=450 and N<sub>2</sub>=600 lb./ac.

Source of N=A/S to G.N.C. in 1 : 2 ratio.

## 3. DESIGN :

(i) Split-plot. (ii) (a) 9 main-plots/block and 2 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) 54.45'×32' (b) 45.45'×24'. (v) 1' row of sugarcane on each side, 4.5' at either end. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) No. (iii) Germination count, tillering no., mileable sugarcane count. (iv) (a) 1950—1954. (b) No. (c) N.A. (v) (a) Akluj, Kopergaon and Lakhmapur. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 44.64 ton/ac.  
 (i) (a) 9.37 ton/ac.  
 (b) 4.47 ton/ac.  
 (iii) Main effects of P and M and their interaction are not significant. Sub-plot treatments and interaction 'main × sub' are also not significant.  
 (iv) Av. yield of sugarcane in ton/ac.

	N <sub>1</sub>	N <sub>2</sub>	Mean
P <sub>0</sub>	42.50	43.81	43.16
P <sub>1</sub> M <sub>1</sub>	47.38	47.42	47.40
P <sub>1</sub> M <sub>2</sub>	51.07	47.03	49.05
P <sub>1</sub> M <sub>3</sub>	42.24	37.42	39.83
P <sub>2</sub> M <sub>1</sub>	49.05	45.20	47.12
P <sub>2</sub> M <sub>2</sub>	42.80	41.36	42.08
P <sub>2</sub> M <sub>3</sub>	45.53	48.13	46.83
Mean	45.06	44.22	44.64

## S.E. of difference of two

1. means in the same row (except 1st row) = 3.64 ton/ac.
  2. means in the same column (except 1st row) = 5.99 ton/ac.
  3. means in the 1st row = 2.11 ton/ac.
  4. means in the same column, one of the means being in the 1st row = 4.89 ton/ac.
- S.E. of P<sub>0</sub> marginal means = 2.20 ton/ac.  
 S.E. of any PM combination marginal mean = 3.82 ton/ac.  
 S.E. of N marginal mean = 0.86 ton/ac.

Crop :- Sugarcane.

Ref :- Mh. 52(109).

Site :- Agri. Res. Stn., Deolali.

Type :- 'M'.

Object :- To find out the response of Sugarcane to the varying quantities of P manures with different placements at two levels of N.

## 1. BASAL CONDITIONS :

(i) (a) Sugarcane—*Bajra+Tur* mixture—Sugarcane. (b) *Bajra+Tur* mixture. (c) Nil. (ii) (a) 'G' type according to genetic classification of soil. (b) N.A. (iii) 9.8.1952. (iv) (a) 2 ploughings, clod crushing, harrowing, opening ridges, earthing etc. (b) to (e) N.A. (v) 20,000 lb. of compost was added in furrows before planting. (vi) CO. 419. (vii) Irrigated. (viii) Weeding, application of N as top dressing, mixing and earthing up twice etc. (ix) 25.68". (x) 21.12.1953.

## 2. TREATMENTS :

## Main-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 methods of application of P<sub>2</sub>O<sub>5</sub> : M<sub>1</sub>=Applied in furrows, M<sub>2</sub>=Applied half way down the ridge and M<sub>3</sub>=Applied at the bottom of the ridge.

## Sub-plot treatments :

2 levels of N: N<sub>1</sub>=450 and N<sub>2</sub>=600 lb./ac.

Source of N : A/S and G.N.C. in 1 : 2 ratio.

## 3. DESIGN :

(i) Split-plot. (ii) (a) 9 main-plots/block ; 2 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) 54.45' × 32'. (b) 45.44' × 24'. (v) One row on each side and 4½' side ways. (vi) Yes.

## 4. GENERAL:

(i) No lodging. (ii) Attack of top-shoot-borer, stem-borer, pyrilla, mealy bugs, etc. (iii) Germination, tillering, borer counts, millable sugarcane counts, ripeness studies and yield of sugarcane in each plot. (iv) (a) 1951—1955. (3 *adsali* crops). (b) N.A. (c) N.A. (v) (a) Lakhmapur, Akluj, Padegaon and Kolhapur. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 46.01 ton/ac.  
 (ii) (a) 5.92 ton/ac.  
 (b) 3.35 ton/ac.  
 (iii) Main effects of P and M and their interaction are not significant ; sub-plot treatments and interaction 'main  $\times$  sub' are significant.  
 (iv) Av. yield of sugarcane in ton/ac.

	N <sub>1</sub>	N <sub>2</sub>	Mean
P <sub>0</sub>	46.16	45.52	45.83
P <sub>1</sub> M <sub>1</sub>	43.71	46.92	45.32
P <sub>1</sub> M <sub>2</sub>	43.71	47.58	45.64
P <sub>1</sub> M <sub>3</sub>	45.60	50.76	48.18
P <sub>2</sub> M <sub>1</sub>	41.81	50.62	46.21
P <sub>2</sub> M <sub>2</sub>	39.11	46.96	43.03
P <sub>2</sub> M <sub>3</sub>	48.91	47.57	48.24
Mean	44.59	47.44	46.01

## S E. of difference of two

- means in the same row (except 1st row) =2.73 ton/ac.
  - means in the same column (except 1st row) =3.93 ton/ac.
  - means in the 1st row =1.58 ton/ac.
  - means in the same column, one being in the 1st row =3.31 ton/ac.
- S.E. of P<sub>0</sub> marginal mean =1.39 ton/ac.  
 S.E. of any PM combination marginal mean =2.42 ton/ac.  
 S.E. of N marginal mean =0.64 ton/ac.

Crop :- Sugarcane.

Ref :- Mh. 53(162).

Site :- Agri. Res. Stn., Deolali.

Type :- 'M'.

Object :—To find out the response of Sugarcane to varying quantities of P manures with different methods of placement at two levels of N.

## 1. BASAL CONDITIONS :

(i) (a) Sugarcane - *Bajra*+*Tur* mixture—Sugarcane. (b) *Bajra*+*Tur* mixture. (c) Nil. (ii) (a) 'G' type according to genetic classification of soil. (b) N.A. (iii) 5.8.1953. (iv) (a) 2 ploughings, clod crushing, harrowing, opening ridges and earthing. (b) to (e) N.A. (v) 20,000 lb. of F.Y.M. was applied in furrows before planting. (vi) CO. 419. (vii) Irrigated. (viii) Weeding, watering, mixing, earthing up etc. (ix) 31.76". (x) 28.1.1955 to 9.2.1955.

## 2. TREATMENTS :

## Main-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 methods of application of P<sub>2</sub>O<sub>5</sub> : M<sub>1</sub>=Applied in furrows, M<sub>2</sub>=Applied half way down the ridge and M<sub>3</sub>=Applied at the bottom of the ridge.

## Sub-plot treatments :

2 levels of N : N<sub>1</sub>=450 and N<sub>2</sub>=600 lb./ac.

Source of N : A/S and G.N.C. in 1 : 2 ratio.



## 3. DESIGN :

(i) Split-plot. (ii) (a) 9 main-plots/replication ; 2 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) 54.45' × 32'. (b) 45.45' × 24'. (v) One row of sugarcane each side and 4½' side ways. (vi) Yes.

## 4. GENERAL :

(i) No lodging. (ii) Top-shoot-borers, stem-borer, pyrilla and mealy bugs. (iii) Germination, tillering, borer counts, millable sugarcane counts, ripeness studies, and yield of cane. (iv) (a) 1951—1955 (4 *adsali* crops). (b) N.A. (c) N.A. (v) (a) Akluj, Padegaon and Kopergaon. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 50.72 ton/ac.  
 (ii) (a) 4.43 ton/ac.  
 (b) 6.21 ton/ac.  
 (iii) None of the effects is significant.  
 (iv) Av. yield of sugarcane in ton/ac.

	N <sub>1</sub>	N <sub>2</sub>	Mean
P <sub>0</sub>	50.74	52.58	51.66
P <sub>1</sub> M <sub>1</sub>	49.26	51.08	50.17
P <sub>1</sub> M <sub>2</sub>	45.45	54.32	49.88
P <sub>1</sub> M <sub>3</sub>	49.70	46.77	48.24
P <sub>2</sub> M <sub>1</sub>	49.08	49.96	49.52
P <sub>2</sub> M <sub>2</sub>	51.89	51.83	51.86
P <sub>2</sub> M <sub>3</sub>	48.01	55.58	51.79
Mean	49.51	51.92	50.72

## S.E. of the difference of two

1. means in the same row (except 1st row) = 5.07 ton/ac.
2. means in the same column (except 1st row) = 4.40 ton/ac.
3. means in the 1st row = 2.93 ton/ac.
4. means in the same column, one of means being in the 1st row = 3.60 ton/ac.
- S.E. of P<sub>0</sub> marginal mean = 1.04 ton/ac.
- S.E. of any PM combination marginal mean = 1.81 ton/ac.
- S.E. of N marginal mean = 1.19 ton/ac.

Crop :- Sugarcane.

Ref :- Mh. 50(59).

Site :- Agri. Res. Rtn., Kolhapur.

Type :- 'M'.

Object :- To study the effect of ratio of A/S to G.N.C. for top dressing of N for sugarcane with varying quantities of basal manure.

## 1. BASAL CONDITIONS :

(i) (a) Sugarcane-Ratoon-fallow. (b) Fallow. (c) N.A. (ii) (a) Black clayey soil. (b) N.A. (iii) 8.12.1950. (iv) (a) 2 ploughings. (b) N.A. (c) 12500 sett/ac. (d) 3.25' between rows. (e) —. (v) As per treatments. (vi) CO.419 (mid-late). (vii) Irrigated. (viii) 4 weedings, interculturings by cultivators. (ix) 18.55". (x) Last week of February.

## 2. TREATMENTS :

All combinations of (1), (2), (3) and (4) + 6 extra treatments.

- (1) 2 levels of P<sub>2</sub>O<sub>5</sub> : P<sub>0</sub>=0, and P<sub>1</sub>=100 lb./ac.
- (2) 2 levels of N : N<sub>1</sub>=270 and N<sub>2</sub>=320 lb./ac.
- (3) 2 levels of F.Y.M. : F<sub>0</sub>=0, and F<sub>1</sub>=10 C.L./ac.
- (4) 3 ratios of A/S to G.N.C. : R<sub>1</sub>=1 : 1, R<sub>2</sub>=1 : 2 and R<sub>3</sub>=2 : 1.

6 extra treatments are :—

All combinations of (1) and (2)

(1) 2 levels of N :  $N_1=270$  and  $N_2=320$  lb./ac.

(2) 3 applications of  $K_2O$  and  $P_2O_5$  :  $T_0=0$ ,  $T_1=100$  lb./ac. of  $K_2O$  and  $T_2=100$  lb./ac. of  $K_2O+100$  lb./ac. of  $P_2O_5$ .

### 3. DESIGN :

(i) R.B.D. (ii) (a) 30. (b) N.A. (iii) 2. (iv) (a)  $42.5' \times 39'$ . (b)  $33.5' \times 32.5'$ . (v) 1 row on either side and 4.5' on either end. (vi) Yes.

### 4. GENERAL :

(i) Good. (ii) Slight attack of mealy bugs. (iii) Germination counts, height and yield of cane. (iv) (a) 1950—N.A. (b) 1st year of expt. (c) Nil. (v) (a) Nil. (b) N.A. (vi) and (vii) Nil.

### 5. RESULTS :

(i) 50.91 ton/ac.

(ii) 7.21 ton/ac.

(iii) None of the effects and interactions is significant.

(iv) Av. yield of sugarcane in ton/ac.

	$F_0$	$F_1$	Mean	$N_1$	$N_2$	$R_1$	$R_2$	$R_3$
$P_0$	48.41	51.83	50.12	48.98	51.26	51.97	48.27	50.12
$P_1$	50.30	53.24	51.77	50.36	53.18	49.76	50.19	55.36
Mean	49.35	52.53	50.91	49.67	52.22	50.86	49.23	52.74
$R_1$	46.99	54.73	50.86	48.82	52.91			
$R_2$	48.62	49.84	49.23	47.15	51.30			
$R_3$	52.45	53.04	52.74	53.04	52.44			
$N_1$	46.39	52.95	49.67					
$N_2$	52.32	52.12	52.22					

Two-way table for the 6 extra treatments :—

	$T_0$	$T_1$	$T_2$	Mean
$N_1$	48.59	51.20	56.92	52.24
$N_2$	49.66	49.35	47.50	48.84
Mean	49.12	50.28	52.21	50.54

S.E. of P, N or F marginal means = 1.47 ton/ac.

S.E. of R marginal mean = 1.80 ton/ac.

S.E. of body of PF, PN or NF table = 2.08 ton/ac.

S.E. of body of PR, FR or NR table = 2.55 ton/ac.

S.E. of T marginal mean = 3.61 ton/ac.

S.E. of N marginal (for NT table) = 2.94 ton/ac.

S.E. of body of NT table = 5.09 ton/ac.

Crop :- Sugarcane.

Ref :- Mh. 51(145).

Site :- Agri. Res. Stn., Kolhapur.

Type :- 'M'.

Object :—To study the ratio of A/S and G.N.C. for top dressing N for Sugarcane with varying quantities of basal manures.

## 1. BASAL CONDITIONS :

(i) (a) Sugarcane-ratoon-Paddy. (b) Paddy. (c) N.A. (ii) (a) Black clayey soil. (b) N.A. (iii) 17.11.1951. (iv) (a) 2 ploughings by tractor. (b) N.A. (c) 12,000 setts/ac. (d) 3.25' between rows. (e) —. (v) Nil. (vi) CO-419. (mid late). (vii) Irrigated. (viii) 3 weedings and 3 interculturings. (ix) 20.53%. (x) 31.12.1952.

## 2. TREATMENTS :

All combinations of (1), (2), (3) and (4)+6 extra treatments.

(1) 2 levels of  $P_2O_5$  :  $P_0=0$  and  $P_1=100$  lb./ac.

(2) 2 levels of N :  $N_1=270$  and  $N_2=320$  lb./ac.

(3) 2 levels of F.Y.M. :  $F_0=0$  and  $F_1=10$  C.L./ac.

(4) 3 ratios of A/S to G.N.C. :  $R_1=1 : 1$ ,  $R_2=1 : 2$  and  $R_3=2 : 1$ .

6 extra treatments are :—

All combinations of (1) and (2)

(1) 2 levels of N : (Factory schedules)  $N_1=270$  and  $N_2=320$  lb./ac.

(2) 3 treatments :  $T_0=0$ ,  $T_1=100$  lb./ac. of  $K_2O$  and  $T_2=100$  lb./ac. of  $K_2O+100$  lb./ac. of  $P_2O_5$ .

Time and method of application : N.A.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 30. (b) N.A. (iii) 2. (iv) (a) 42.5'×39'. (b) 33.5'×32.5'. (v) one row on either side and 4.5' on either end. (vi) Yes.

## 4. GENERAL :

(i) Satisfactory. (ii) Slight attack of mealy bugs noticed. (iii) No. of tillers, germination count and sugarcane yield. (iv) (a) 1950-51 to 1952-53. (b) No. (c) N.A. (v) (a) Not known. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 44.87 ton/ac.

(ii) 7.53 ton/ac.

(iii) None of the effects is significant.

(iv) Av. yield of sugarcane in ton/ac.

	$F_0$	$F_1$	Mean	$N_1$	$N_2$	$R_1$	$R_2$	$R_3$
$P_0$	43.91	43.13	43.52	42.71	44.33	43.20	44.08	43.33
$P_1$	44.43	47.60	46.02	45.19	46.84	43.38	48.04	46.61
Mean	44.17	45.36	44.87	43.95	45.59	43.26	46.07	44.97
$R_2$	42.88	43.64	43.26	41.37	45.15			
$R_3$	44.03	48.10	46.07	46.69	45.44			
$R_4$	45.60	44.34	44.97	43.79	46.15			
$N_1$	44.26	43.63	43.95					
$N_2$	44.08	47.09	45.59					

Two-way table for 6 extra treatments.

	T <sub>0</sub>	T <sub>1</sub>	T <sub>2</sub>	Mean
N <sub>1</sub>	47.86	44.57	40.56	44.33
N <sub>2</sub>	44.92	48.91	44.82	46.22
Mean	46.39	46.74	42.69	45.27

S.E. of P, N or F marginal mean	=1.54 ton/ac.
S.E. of R marginal mean	=1.88 ton/ac.
S.E. of body of PF, PN or NF table	=2.17 ton/ac.
S.E. of body of PR, FR or NR table	=2.66 ton/ac.
S.E. of T marginal mean	=3.76 ton/ac.
S.E. of N marginal mean (NT table)	=2.17 ton/ac.
S.E. of body of NT table	=5.32 ton/ac.

Crop :- Sugarcane.

Ref :- Mh. 52(177).

Site :- Agri. Res. Stn., Kolhapur.

Type :- 'M'.

Object :- To study the ratio of A/S to G.N.C. for top dressing of N for Sugarcane with varying quantities of basal manures.

#### 1. BASAL CONDITIONS :

(i) (a) Sugarcane-ratoor-fallow. (b) Paddy. (c) N.A. (ii) (a) Black clayey soil. (b) N.A. (iii) 5.11.1952. (iv) (a) 2 ploughing with tractor, clod crushing and discing. (b) N.A. (c) 468 setts/plot. (d) 3.25' between rows. (e) —. (v) Nil. (vi) CO. 419: (mid-late). (vii) 15 irrigations at 10 days interval. (viii) 3 weedings and 3 interculturings. (ix) 37.57". (x) 20.1.1954.

#### 2. TREATMENTS :

All combinations of (1), (2), (3) and (4)+6 extra treatments.

- (1) 2 levels of P<sub>2</sub>O<sub>5</sub> : P<sub>0</sub>=0, and P<sub>1</sub>=100 lb./ac.
- (2) 2 levels of N : N<sub>1</sub>=270 and N<sub>2</sub>=320 lb./ac.
- (3) 2 levels of F.Y.M. : F<sub>0</sub>=0 and F<sub>1</sub>=10 C.L./ac.
- (4) 3 ratios of A/S to G.N.C. : R<sub>1</sub>=1 : 1, R<sub>2</sub>=1 : 2 and R<sub>3</sub>=2 : 1.

6 extra treatments are :

All combinations of (1) and (2)

- (1) 2 levels of N (Factory schedules) : N<sub>1</sub>=270 and N<sub>2</sub>=320 lb./ac.
- (2) 3 treatments : T<sub>0</sub>=0, T<sub>1</sub>=100 lb./ac. of K<sub>2</sub>O and T<sub>2</sub>=100 lb./ac. of K<sub>2</sub>O+100 lb./ac. of P<sub>2</sub>O<sub>5</sub>.

Time and method of application—N.A.

#### 3. DESIGN :

(i) R.B.D. (ii) (a) 30. (b) N.A. (iii) 2. (iv) (a) 42.5'×39'. (b) 33.5'×32.5'. (v) 1 row on either side and 4.5' either end. (vi) Yes.

#### 4. GENERAL :

(i) Good. (ii) Slight attack of stem borer and mealy bugs. (iii) Germination and tillering counts. (iv) (a) 1950-51 to 1952-53. (b) No. (c) N.A. (v) (a) Not known. (b) N.A. (vi) and (vii) Nil.

#### 5. RESULTS :

- (i) 44.93 ton/ac.
- (ii) 5.64 ton/ac.
- (iii) None of the effects is significant.

(iv) Av. yield of sugarcane in ton/ac.

	F <sub>0</sub>	F <sub>1</sub>	Mean	N <sub>1</sub>	N <sub>2</sub>	R <sub>1</sub>	R <sub>2</sub>	R <sub>3</sub>
P <sub>0</sub>	44.35	43.47	43.91	45.14	42.68	44.33	44.46	42.93
P <sub>1</sub>	45.83	47.37	46.60	45.49	47.71	44.62	47.83	47.34
Mean	45.09	45.42	44.93	45.31	45.19	44.48	46.15	45.14
R <sub>1</sub>	43.82	45.13	44.48	45.35	43.60			
R <sub>2</sub>	44.62	47.67	46.15	46.96	45.32			
R <sub>3</sub>	46.83	43.44	45.14	43.62	46.66			
N <sub>1</sub>	44.92	45.71	45.31					
N <sub>2</sub>	45.26	45.13	45.19					

Two-way table for 6 extra treatments :—

	T <sub>0</sub>	T <sub>1</sub>	T <sub>2</sub>	Mean
N <sub>1</sub>	47.86	43.99	39.92	43.92
N <sub>2</sub>	42.70	44.62	42.54	43.29
Mean	45.28	44.30	41.23	43.60

S.E. of P, N or F marginal mean	=1.15 ton/ac.
S.E. of R marginal mean	=1.41 ton/ac.
S.E. of body of PF, PN or NF table	=1.63 ton/ac.
S.E. of body of PR, FR or NR table	=1.99 ton/ac.
S.E. of T marginal mean	=2.82 ton/ac.
S.E. of N marginal mean (NT table)	=2.30 ton/ac.
S.E. of body of NT table	=3.99 ton/ac.

Crop :- Sugarcane.

Ref :-Mh. 53(197).

Site :- Agri. Res. Stn., Kolhapur.

Type :-'M'.

Object :—To find out the ratio of A/S to G.N.C. for N top dressing with various quantities of basal and phosphatic manures.

**1. BASAL CONDITIONS :**

(i) (a) Sugarcane—Paddy. (b) Paddy. (c) 2 bags of paddy mixture. (ii) (a) Deep black soil. (b) N.A. (iii) 14.12.1953. (iv) (a) Ploughing by tractor, clod crushing, discing, opening ridges and furrows. (b) and (c) N.A. (d) 3.25' between rows. (e) —. (v) Compost at 10,000 lb./ac. (vi) CO-419 (mid-late). (vii) Irrigated. (viii) 3 weedings and 3 interculturings. (ix) 43.03%. (x) 7.1.1955.

**2. TREATMENTS :**

All combinations of (1), (2), (3) and (4) + 6 extra treatments.

- (1) 2 levels of P<sub>2</sub>O<sub>5</sub> : P<sub>0</sub>=0 and P<sub>1</sub>=100 lb./ac.
- (2) 2 levels of N : N<sub>1</sub>=270 and N<sub>2</sub>=320 lb./ac.
- (3) 2 levels of F.Y.M. : F<sub>0</sub>=0 and F<sub>1</sub>=10 C.L./ac.
- (4) 3 ratios of A/S to G.N.C. : R<sub>1</sub>=1 : 1, R<sub>2</sub>=1 : 2 and R<sub>3</sub>= 2 : 1.

6 extra treatments are :

All combinations of (1) and (2)

(1) 2 levels of N : (Factory schedules)  $N_1=270$  and  $N_2=320$  lb./ac.

(2) 3 treatments :  $T_0=0$ ,  $T_1=100$  lb./ac. of  $K_2O$  and  $T_2=100$  lb./ac. of  $K_2O+100$  lb./ac. of  $P_2O_5$ .

### 3. DESIGN :

(i) R.B.D. (ii) (a) 30. (b) N.A. (iii) 2. (iv) (a)  $42.5' \times 32'$ . (b)  $33.5' \times 32.5'$ . (v) 1 row on either side and 4.5' at either end. (vi) Yes.

### 4. GENERAL :

(i) Good. (ii) Little attack of top borers and mealy bugs was seen. No measures taken. (iii) Germination counts, no. of tillers and sugarcane yield. (iv) (a) 1950—N.A. (b) Yes (c) N.A. (v) (a) and (b) N.A. (vi) and (vii) Nil.

### 5. RESULTS :

(i) 36.27 ton/ac.

(ii) 5.53 ton/ac.

(iii) None of the effects is significant.

(iv) Av. yield of sugarcane in ton/ac.

	F <sub>0</sub>	F <sub>1</sub>	Mean	N <sub>1</sub>	N <sub>2</sub>	R <sub>1</sub>	R <sub>2</sub>	R <sub>3</sub>
P <sub>0</sub>	30.65	34.73	32.69	28.81	36.48	29.42	32.77	35.87
P <sub>1</sub>	41.16	41.10	41.13	41.24	41.31	43.48	39.80	40.53
Mean	35.90	37.91	36.91	35.02	38.90	36.45	36.29	38.20
R <sub>1</sub>	34.24	38.66	36.45	32.07	40.83			
R <sub>2</sub>	36.27	36.30	36.29	36.27	36.30			
R <sub>3</sub>	37.19	39.20	38.20	36.72	39.68			
N <sub>1</sub>	35.35	34.70	35.02					
N <sub>2</sub>	36.45	41.43	38.94					

Two way table for 6 extra treatments :

	T <sub>0</sub>	T <sub>1</sub>	T <sub>2</sub>	Mean
N <sub>1</sub>	26.06	25.53	36.89	29.49
N <sub>2</sub>	36.76	38.03	37.28	37.39
Mean	31.41	31.78	37.08	33.42

S.E. of P, N or F marginal mean	=1.125 ton/ac.
S.E. of R marginal mean	=1.385 ton/ac.
S.E. of body of PF, PN or NF table	=1.590 ton/ac.
S.E. of body of PR, FR or NR table	=1.950 ton/ac.
S.E. of T marginal mean	=2.815 ton/ac.
S.E. of N marginal mean (NT table)	=2.257 ton/ac.
S.E. of body of NT table	=3.910 ton/ac.

Crop :- Sugarcane.

Ref :- Mh. 51(61).

Site :- Agri. Res. Stn, Kolhapur.

Type :- 'M'.

Object :—To study the influence of N, P<sub>2</sub>O<sub>5</sub> and K<sub>2</sub>O on the growth of Sugarcane [with *dhaincha* as green manure.

## 1. BASAL CONDITIONS :

(i) (a) Sugarcane—*Ratoon*—Sugarcane. (b) Sugarcane. (c) 5 cwt./ac. of A/S + 1 ton/ac. of cake. (ii) (a) Black clayey soil. (b) N.A. (iii) 1st week of August 1951. *Ratooning* on 16.9.1951. (iv) (a) 2 ploughings, clodcrushing and discing. (b) N.A. (c) 12,500 setts/ac. (d) 3.25' between rows. (e) —. (v) 10 C.L./ac. of compost at the time of planting + 270 lb./ac. of N as A/S + G.N.C. in the ratio of 1 : 2. (vi) CO.419. (vii) Irrigated. (viii) 3 weedings and 3 interculturings. (ix) 20.83". (x) January, 1952.

## 2. TREATMENTS :

1. Control (no manure).
2. 100 lb./ac. of P<sub>2</sub>O<sub>5</sub> applied to sugarcane.
3. 100 lb./ac. of K<sub>2</sub>O applied to sugarcane.
4. 100 lb./ac. of P<sub>2</sub>O<sub>5</sub> + 100 lb./ac. of K<sub>2</sub>O applied to sugarcane.
5. 100 lb./ac. of P<sub>2</sub>O<sub>5</sub> applied to *dhaincha* G.M.
6. 100 lb./ac. of P<sub>2</sub>O<sub>5</sub> + 100 lb./ac. of K<sub>2</sub>O applied to *Dhaincha* G.M. (*Dhaincha* G.M. applied to sugarcane).

## 3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) 42'.9" × 39'. (b) 33.5' × 32.5'. (v) One row on either side. (vi) Yes.

## 4. GENERAL :

(i) The general condition of the crop was good. (ii) Slight attack of mealy bugs noticed. (iii) No. of tillers, height and sugarcane yield. (iv) (a) 1951 to 1953. (b) No. (c) N.A. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 33.07 ton/ac.  
 (ii) 5.96 ton/ac.  
 (iii) Treatments differ significantly.  
 (iii) Av. yield of sugarcane in ton/ac.

Treatment	Av. yield
1.	31.65
2.	33.19
3.	27.98
4.	26.67
5.	38.68
6.	40.26
S.E./mean	= 2.78 ton/ac.

Crop :- Sugarcane.

Ref :- Mh. 52(73).

Site :- Agri. Res. Stn., Kolhapur.

Type :- 'M'.

Object :—To study the influence of N, P<sub>2</sub>O<sub>5</sub> and K<sub>2</sub>O on the growth of Sugarcane. with *Dhaincha* as G.M.

## 1. BASAL CONDITIONS :

(i) (a) Sugarcane—*Paddy*. (b) *Paddy*. (c) 5 cwt./ac. of A/S + 1 ton/ac. of cake. (ii) (a) Black clayey soil. (b) N.A. (iii) 11.9.1952. (iv) (a) 2 ploughings, clod crushing and discing. (b) N.A. (c) 12,500 setts/ac. (d) 3.25' between rows. (e) —. (v) 10 C.L./ac. of compost at the time of planking + 270 lb./ac. of N as A/S + G.N.C. in the ratio of 1 : 2. (vi) CO. 419 (mid-late). (vii) Irrigated. (viii) 3 weedings and 3 interculturings. (ix) 37.57". (x) 23.12.1953.

## 2. TREATMENTS :

1. Control (no manure).
2. 100 lb./ac. of  $P_2O_5$  applied to sugarcane.
3. 100 lb./ac. of  $K_2O$  applied to sugarcane.
4. 100 lb./ac. of  $P_2O_5$ +100 lb./ac. of  $K_2O$  applied to sugarcane.
5. 100 lb./ac. of  $P_2O_5$  applied to *dhaincha* G.M.
6. 100 lb./ac. of  $P_2O_5$ +100 lb./ac. of  $K_2O$  applied to *dhaincha* G.M.  
*Dhaincha* G.M. applied to sugarcane.

## 3. DESIGN :

- (i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) 42'-9"×39'. (b) 33.5'×32.5'. (v) One row on either side 4.8' at either end. (vi) Yes.

## 4. GENERAL :

- (i) The general condition of the crop was good. (ii) Slight attack of mealy bugs noticed. (iii) Germination counts, no. of tillers, growth observation and sugarcane yield. (iv) (a) 1951 to 1953. (b) N.A. (c) N.A. (v) (a) Not known. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 34.04 ton/ac  
 (ii) 5.34 ton/ac.  
 (iii) Treatments differ highly significantly.  
 (iv) Av. yield of sugarcane in ton/ac.

Treatment	Av. yield
1.	37.93
2.	30.05
3.	35.51
4.	39.00
5.	33.48
6.	28.27
S.E./mean	=2.67 ton/ac.

Crop :-Sugarcane.

Site :-Agri. Res. Stn., Kolhapur.

Ref :-Mh. 53(143).

Type :-'M'.

Object :—To study the response of sugarcane to application of potash and phosphatic fertilisers with *Dhaincha* as green manure.

## 1. BASAL CONDITIONS :

- (i) (a) Sugarcane—*Ratoon*—Paddy. (b) Paddy. (c) 2 bags/ac. of manure mixture. (ii) (a) Deep black soil. (b) N.A. (iii) 7.9.1953. (iv) (a) Ploughing by tractor, clod crushing, harrowing etc. (b) N.A. (c) 12,500 setts/ac. (d) 3.25' between rows. (e) —. (v) 275 lb./ac. of N as A/S+G.N.C. in 1 : 2 ratio. (vi) CO-419 (mid-late). (vii) Irrigated. (viii) 3 weedings and 3 interculturings. (ix) 61.5°. (x) 16.12.1954.

## 2. TREATMENTS :

1. Control (no manure).
2. 100 lb./ac. of  $P_2O_5$  applied to sugarcane.
3. 100 lb./ac. of  $K_2O$  applied to sugarcane.
4. 100 lb./ac. of  $P_2O_5$ +100 lb./ac. of  $K_2O$  applied to sugarcane.
5. 100 lb./ac. of  $P_2O_5$  applied to *dhaincha* G.M.
6. 100 lb./ac. of  $P_2O_5$ +100 lb./ac. of  $K_2O$  applied to *dhaincha* G.M.  
*Dhaincha* G.M. applied to sugarcane. Time and method of application—N.A.

## 3. DESIGN

- (i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) 45.5'×39'. (b) 33.5'×32.5'. (v) N.A. (vi) Yes.



## 4. GENERAL :

(i) Good. (ii) Slight attack of mealy bugs noticed. (iii) Germination counts, no. of tillers, growth observation and yield data. (iv) (a) 1951—N.A. (b) No. (c) N.A. (v) (a) Not known. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 45.62 ton/ac.  
 (ii) 8.46 ton/ac.  
 (iii) Treatments do not differ significantly.  
 (iv) Av. yield of sugarcane in ton/ac.

Treatment	Av. yield
1.	38.45
2.	48.28
3.	43.10
4.	42.80
5.	50.58
6.	50.52
S.E./mean	=4.23 ton/ac.

Crop :- Sugarcane.

Ref :- Mh. 51(62).

Site :- Agri. Res. Stn., Kolhapur,

Type :- 'M'.

Object :- To study the effect of slaked lime and  $P_2O_5$  on growth of Sugarcane.

## 1. BASAL CONDITIONS :

(i) (a) Sugarcane—Paddy. (b) Paddy. (c) 5 cwt./ac. of A/S+1 ton/ac. of cake. (ii) (a) Black clayey soil. (b) N.A. (iii) October 1951. Date N.A. (iv) (a) 2 ploughings, 1 clod crushing and discing. (b) N.A. (c) 12,500 setts/ac. (d) 3.25' between rows. (e) —. (v) *Dhaincha* as G.M.+270 lb./ac. of N top-dressed in the form of A/S+G.N.C. in the ratio of 1 : 2 in 4 doses ; 8 to 10 weeks after earthing up. (vi) Co. 419 (mid-late). (vii) Irrigated. (viii) 3 hand-weedings and 3 interculturings. (ix) 37.5" (x) 20.12.1952.

## 2. TREATMENTS :

- Control (no manure).
- 560 lb./ac. of lime.
- 560 lb./ac. of lime+100 lb./ac. of  $P_2O_5$ .  
 $P_2O_5$  as Super.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 3. (b) N.A. (iii) 4. (iv) (a) 42.5' × 39'. (b) 33.5' × 32.5'. (v) 1 row on either side, 4.5' at either end. (vi) Yes.

## 4. GENERAL :

(i) Affected due to floods. (ii) Slight attack of mealy bugs noticed. (iii) Germination counts, tillers, growth observations and yield of sugarcane. (iv) (a) 1951—1954. (b) No. (c) N.A. (v) (a) N.A. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 51.12 ton/ac.  
 (ii) 7.11 ton/ac.  
 (iii) Treatments do not differ significantly.  
 (iv) Av. yield of sugarcane in ton/ac.

Treatment	Av. yield
1.	52.37
2.	47.87
3.	53.12
S.E./mean	= 3.55 ton/ac.

Crop :- Sugarcane.  
Site :- Agri. Res. Stn., Kolhapur.

Ref :- Mh. 53(137).  
Type :- 'M'.

Object :- To study the effect of lime and  $P_2O_5$  on the growth of Sugarcane.

#### 1. BASAL CONDITIONS :

(i) (a) Sugarcane—Paddy. (b) Paddy. (c) 5 cwt./ac. of A/S+1 ton/ac. of cake. (ii) (a) Black clayey soil. (b) N.A. (iii) 29.12.1953. (iv) (a) 1 ploughing, clod-crushing and discing. (b) N.A. (c) 12,500 setts/ac. (d) 3.25' between rows. (e) —. (v) *Dhaincha* as G.M.+270 lb./ac. of N top-dressed in the form of A/S+G.N.C. in ratio of 1 : 2 in 4 doses, 8 weeks after earthing up. (vi) CO. 419 (mid-late). (vii) Irrigated. (viii) 3 hand weedings and 3 interculturings. (ix) 61.5". (x) 31.12.1954.

#### 2. TREATMENTS :

1. Control (no manure).
2. 560 lb./ac. of lime.
3. 560 lb./ac. of lime+100 lb./ac. of  $P_2O_5$ .  
 $P_2O_5$  as Super ; Lime as slaked lime.

#### 3. DESIGN :

(i) R.B.D. (ii) (a) 3. (b) N.A. (iii) 4. (iv) (a) 42.9'×39'. (b) 33.5'×32.5'. (v) N.A. (vi) Yes.

#### 4. GENERAL :

(i) Normal. (ii) Slight attack of mealy bugs and attack of leaf spots noticed. (iii) Germination, tillering count, growth observation and sugarcane yield. (iv) (a) 1951 to 1954. (b) No. (c) N.A. (v) (a) Not known. (b) N.A. (vi) and (vii) Nil.

#### 5. RESULTS :

- (i) 34.48 ton/ac.
- (ii) 3.42 ton/ac.
- (iii) Treatments do not differ significantly.
- (iv) Av. yield of sugarcane in ton/ac.

Treatment	Av. yield
1.	32.98
2.	33.93
3.	36.54
S.E./mean	=1.71 ton/ac.

Crop :- Sugarcane.  
Site :- Agri. Res. Stn., Kopergaon.

Ref :-Mh. 50(123).  
Type :-'M'.

Object :- To study the effect of placement of varying doses of  $P_2O_5$  with two levels of N as top dressing for *Adsali*.

#### 1. BASAL CONDITIONS :

(i) (a) *Bajra+Tur*—Sugarcane. (b) *Bajra+Tur*. (c) Nil. (ii) (a) 'A' type. (b) Refer soil analysis, Kopergaon. (iii) 9.8.1950. (iv) (a) Ploughing 10" deep, harrowing. (b) N.A. (c) 10,000 setts/ac. (d) 4' (e) —. (v) 20 C.L./ac. of F.Y.M. (vi) CO.419. (vii) Irrigated. (viii) N.A. (ix) 21.26". (x) 1 to 31.1.1950.

#### 2. TREATMENTS :

##### Main-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 methods of application of  $P_2O_5$  :  $M_1$ =Applied on surface,  $M_2$ =Applied half way down the ridge and  $M_3$ =Applied at the bottom of the ridge.

##### Sub-plot treatments :

2 levels of N :  $N_1=450$  and  $N_2=600$  lb./ac.  
of N : A/S+G.N.C in ratio 1 : 2.

## 3. DESIGN :

(i) Split-plot. (ii) (a) 9 main-plots/replication and 2 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) 1.6 *guntha*. (b) 1 *guntha*. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) N.A. (iii) Sugarcane yield. (iv) (a) 1950 to 1954. (b) No. (c) N.A. (v) (a) Lakhmapur, Akluj and Deolali. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 61.27 ton/ac.  
 (ii) (a) 5.85 ton/ac.  
 (b) 4.30 ton/ac.  
 (iii) Main effect of N alone is significant.  
 (iv) Av. yield of sugarcane in ton/ac.

	N <sub>1</sub>	N <sub>2</sub>	Mean
P <sub>0</sub>	62.47	62.15	62.31
P <sub>1</sub> M <sub>1</sub>	59.52	51.43	55.48
P <sub>1</sub> M <sub>2</sub>	58.37	57.56	57.97
P <sub>1</sub> M <sub>3</sub>	62.73	64.23	63.48
P <sub>2</sub> M <sub>1</sub>	61.70	56.32	59.01
P <sub>2</sub> M <sub>2</sub>	70.93	60.62	65.68
P <sub>2</sub> M <sub>3</sub>	64.14	61.54	62.84
Mean	62.84	59.12	

S.E. of P <sub>0</sub> marginal mean	=1.38 ton/ac.
S.E. of any PM combination marginal mean	=2.39 ton/ac.
S.E. of N marginal mean	=0.827 ton/ac.
S.E. of difference of two	
1. means in same row (except 1st row)	=3.51 ton/ac.
2. means in the 1st row	=2.03 ton/ac.
3. means in the same column (except 1st row)	=4.19 ton/ac.
4. means in the same column one of the means being in 1st row	=2.81 ton/ac.

Crop :- Sugarcane (*Ratoon*).

Ref :- Mh. 51(98).

Site :- Agri. Res. Stn., Kopergaon.

Type :- 'M'.

Object :- To study the effect of placement of varying doses of P<sub>2</sub>O<sub>5</sub> with two levels of N as top dressing.

## 1. BASAL CONDITIONS :

(i) (a) Gram—Sugarcane *ratoon*. (b) Sugarcane. (c) As per treatments. (ii) (a) A type. (b) Refer soil analysis, Kopergaon. (iii) Last harvest as date of planting. (iv) (a) No operations as it is *ratoon* crop. (b) N.A. (c) 10,000 setts/ac. (d) 4' between rows. (e) —. (v) 300 lb./ac. of N in the form of A/S and G.N.C. in the ratio of 1 : 2. (vi) CO.419. (vii) Irrigated. (viii) 1 earthing up. (ix) 11.73". (x) 8.2.1953.

## 2. TREATMENTS :

## Main-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 methods of application of P<sub>2</sub>O<sub>5</sub> : M<sub>1</sub>=Applied on surface, M<sub>2</sub>=Applied half way down the ridge and M<sub>3</sub>=Applied at the bottom of the ridge.

## Sub-plot treatments :

2 levels of N : N<sub>1</sub>=450 and N<sub>2</sub>=600 lb./ac.

Source of N : A/S+G.N.C. in ratio 1 : 2. N top dressed.

**DESIGN :**

(i) Split-plot. (ii) (a) 9 main-plots/replication and 2 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) 1.6 *guntha*. (b) 1 *guntha* (dimensions N.A.). (v) N.A. (vi) Yes.

**4. GENERAL :**

(i) Normal. (ii) Nil. (iii) Sugarcane yield. (iv) (a) 1951—1954. (b) No. (c) N.A. (v) (a) Lakhamapur, Deolali and Akluj. (b) N.A. (vi) and (vii) Nil.

**5. RESULTS :**

- (i) 32.47 ton/ac.  
 (ii) (a) 2.64 ton/ac.  
 (b) 1.26 ton/ac.  
 (iii) Main effect of N and interaction main  $\times$  sub are significant.  
 (iv) Av. yield of sugarcane in ton/ac.

	N <sub>1</sub>	N <sub>2</sub>	Mean
P <sub>0</sub>	31.84	31.01	31.42
P <sub>1</sub> M <sub>1</sub>	31.82	30.87	31.35
P <sub>1</sub> M <sub>2</sub>	32.76	31.04	31.90
P <sub>1</sub> M <sub>3</sub>	32.55	33.80	33.17
P <sub>2</sub> M <sub>1</sub>	34.31	31.74	33.03
P <sub>2</sub> M <sub>2</sub>	36.68	33.50	35.09
P <sub>2</sub> M <sub>3</sub>	32.45	34.46	33.45
Mean	32.90	32.05	

S.E. of P <sub>0</sub> marginal mean	=0.62 ton/ac.
S.E. of any PM combination marginal mean	=1.08 ton/ac.
S.E. of N marginal mean	=0.24 ton/ac.
S.E. of difference of two	
1. means in the same row (except 1st row)	=1.02 ton/ac.
2. means in the 1st row	=0.59 ton/ac.
3. means in the same column (except 1st row)	=1.69 ton/ac.
4. means in the same column, one of the means being in 1st row	=0.84 ton/ac.

Crop :- Sugarcane.

Ref :- Mh. 52(91).

Site :- Agri. Res. Stn., Kopergaon.

Type :- 'M'.

Object :- To study the effect of placement of varying doses of P<sub>2</sub>O<sub>5</sub> with top-dressing of N.

**1. BASAL CONDITIONS :**

(i) (a) *Bajra Tur* mixture—Sugarcane. (b) *Bajra—Tur* mixture. (c) Nil. (ii) (a) 'A' type soil according to genetic classification of soil. (b) Refer soil analysis, Kopergaon. (iii) 6.8.1952. (iv) (a) 1 ploughing and 1 harrowing. (b) to (e) N.A. (v) 20 C.L./ac. of F.Y.M. before sowing. (vi) CO. 419. (vii) Irrigated. (viii) 6 weedings. (ix) 28.89°. (x) 5.1.1954.

**2. TREATMENTS :**

Main-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 methods of application of P<sub>2</sub>O<sub>5</sub> : M<sub>1</sub>=Applied in furrows, M<sub>2</sub>=Applied half way down the ridge and M<sub>3</sub>=Applied at the bottom of the ridge.

Sub-plot treatments :

2 levels of N : N<sub>1</sub>=450 and N<sub>2</sub>=600 lb./ac.

N as A/S and P<sub>2</sub>O<sub>5</sub> as super.

## 3. DESIGN

(i) Split-plot. (ii) (a) 9 main-plots/block and 2 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) Main-plot : 54.44'×64' ; Sub-plot : 54.44'×32'. (b) Sub-plot: 45.44'×24'. (v) 4.5'×4'. (vi) Yes.

## 4. GENERAL :

(i) Fair. (ii) Slight attack of black disease noticed. (iii) Germination count, tiller, borer counts, height and sugarcane yield. (iv) (a) 1952 to 1954. (b) Yes. (c) N.A. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 56.90 ton/ac.  
 (ii) (a) 6.76 ton/ac.  
 (b) 3.36 ton/ac.  
 (iii) None of the effects is significant.  
 (iv) Av. yield of sugarcane in ton/ac.

	N <sub>1</sub>	N <sub>2</sub>	Mean
P <sub>0</sub>	55.50	55.51	55.50
P <sub>1</sub> M <sub>1</sub>	54.05	56.37	55.21
P <sub>1</sub> M <sub>2</sub>	57.78	55.60	56.69
P <sub>1</sub> M <sub>3</sub>	55.98	56.95	56.47
P <sub>2</sub> M <sub>1</sub>	63.03	60.23	61.61
P <sub>2</sub> M <sub>2</sub>	51.17	59.16	57.16
P <sub>2</sub> M <sub>3</sub>	57.60	59.21	58.40
Mean	56.68	57.12	

S.E. of P <sub>0</sub> marginal mean	=1.59 ton/ac.
S.E. of any PM combination marginal mean	=2.76 ton/ac.
S.E. of N marginal mean	=0.64 ton/ac.
S.E. of difference of two	
1. means in the same row (except 1st row)	=2.74 ton/ac.
2. means in the 1st row	=1.58 ton/ac.
3. means in the same column (except 1st row)	=1.38 ton/ac.
4. means in the same column, one of the means being in 1st row	=1.12 ton/ac.

Crop :-Sugarcane.

Ref :-Mh. 53(138).

Site :-Agri. Res. Stn., Kopergaon.

Type :-'M'.

Object :-To study the effect of placement of varying doses of P<sub>2</sub>O<sub>5</sub> with top-dressing of N.

## 1. BASAL CONDITIONS :

(i) (a) *Bajra*—*Tur* mixture—Sugarcane. (b) *Bajra*—*Tur* mixture. (c) Nil. (ii) (a) 'A' type soil according to genetic classification. (b) Refer soil analysis, Kopergaon. (iii) 29.7.1953. (iv) (a) 1 ploughing and 1 harrowing. (b) to (d) N.A. (e) —. (v) F.Y.M. at 20 C.L./ac. (vi) CO. 419. (vii) Irrigated. (viii) Weeding and bunding. (ix) 1953—1954 17"-16 cents. 1954—1955 21"-76 cents. (x) 9.12.1955.

## 2. TREATMENTS :

Main-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 methods of application of P<sub>2</sub>O<sub>5</sub> : M<sub>1</sub>=Applied in furrow, M<sub>2</sub>=Applied half way down the ridge and M<sub>3</sub>=Applied at the bottom of the ridge.

Sub-plot treatments :

2 levels of N N<sub>1</sub>=450 and N<sub>2</sub>=600 lb./ac.

Source of N : A/S+G.N.C. in ratio 1 : 2.

## 3. DESIGN :

(i) Split-plot. (ii) (a) 9 main-plots/replication and 2 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) 54.44' x 32'. (b) 45.44' x 24'. (v) 4.5' x 4'. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Slight attack of black disease noticed. (iii) Sugarcane yield. (iv) (a) 1950-52 and 1953-55 (b) No. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 46.40 ton/ac.  
 (ii) (a) 4.90 ton/ac.  
 (b) 4.72 ton/ac.  
 (iii) None of the effects is significant.  
 (iv) Av. yield of sugarcane in ton/ac.

	N <sub>1</sub>	N <sub>2</sub>	Mean
P <sub>0</sub>	47.5	45.5	46.5
P <sub>1</sub> M <sub>1</sub>	45.6	43.2	44.4
P <sub>1</sub> M <sub>2</sub>	44.7	44.8	44.7
P <sub>1</sub> M <sub>3</sub>	43.9	48.7	46.3
P <sub>2</sub> M <sub>1</sub>	50.7	44.8	47.7
P <sub>2</sub> M <sub>2</sub>	47.2	45.4	46.3
P <sub>2</sub> M <sub>3</sub>	49.7	48.0	48.8
Mean	47.1	45.7	

S.E. of P <sub>0</sub> marginal mean	=1.16 ton/ac.
S.E. of any PM combination marginal mean	=2.00 ton/ac.
S.E. of N marginal mean	=0.91 ton/ac.
S.E. of difference of two	
1. means in the same row (except 1st row)	=3.85 ton/ac.
2. means in 1st row	=2.22 ton/ac.
3. means in the same column (except 1st row)	=3.93 ton/ac.
4. means in the same column, one of the means being in 1st row	=3.93 ton/ac.

Crop :- Sugarcane.

Ref. :- Mh. 51(99).

Site :- Agri. Res. Stn., Kopergaon.

Type :- 'M'.

Object :- To study the effect of placement of varying doses of P<sub>2</sub>O<sub>5</sub> with top-dressing of N.

## 1. BASAL CONDITIONS :

(i) (a) Gram-Sugarcane & ratoon. (b) Gram. (c) Nil. (ii) (a) 'A' type soil. (b) Refer soil analysis, Kopergaon. (iii) 18.7.1951. (iv) (a) 2 ploughings, 3 harrowings. (b) N.A. (c) 10,000 setts/ac. (d) 4' between rows. (e) N.A. (v) 20,000 lb./ac. of compost (vi) CO. 419. (vii) Irrigated. (viii) 3 weedings and 1 interculturing. (ix) 46.40%. (x) 4 to 31.1.1953.

## 2. TREATMENTS :

Main-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 methods of application of P<sub>2</sub>O<sub>5</sub> : M<sub>1</sub>=applied on surface, M<sub>2</sub>=applied in furrows, and M<sub>3</sub>=applied at bottom.

Sub-plot treatments :

2 levels of N : N<sub>1</sub>=450 and N<sub>2</sub>=600 lb./ac.

Source of N : A/S+G.N.C. in ratio 1 : 2.

## 3. DESIGN :

(i) Split-plot. (ii) (a) 9 main-plots/replication and 2 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) 54.44' × 32'. (b) 45.44' × 24'. (v) 1 row on either side and 4.5' at each end. (vi) Yes.

## 4. GENERAL :

(i) Normal. (ii) Nil. (iii) Germination count and sugarcane yield. (iv) (a) 1950 to 1954. (b) No. (c) N.A. (v) (a) Lakhamapur, Deolali and Akluj. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 68.19 ton/ac.  
 (ii) (a) 5.26 ton/ac.  
 (b) 3.82 ton/ac.  
 (iii) None of the effects is significant.  
 (iv) Av. yield of sugarcane in ton/ac.

	N <sub>1</sub>	N <sub>2</sub>	Mean
P <sub>0</sub>	68.74	67.81	68.28
P <sub>1</sub> M <sub>1</sub>	65.60	73.56	69.58
P <sub>1</sub> M <sub>2</sub>	68.94	72.01	70.48
P <sub>1</sub> M <sub>3</sub>	67.49	68.54	68.01
P <sub>2</sub> M <sub>1</sub>	60.49	67.01	63.75
P <sub>2</sub> M <sub>2</sub>	66.91	66.82	66.87
P <sub>2</sub> M <sub>3</sub>	71.76	68.59	70.18
Mean	67.49	68.88	68.19

S.E. of P<sub>0</sub> marginal mean = 1.24 ton/ac.  
 S.E. of any PM combination marginal mean = 2.15 ton/ac.  
 S.E. of N marginal mean = 0.73 ton/ac.  
 S.E. of difference of two  
 1. means in the same row (except 1st row) = 3.17 ton/ac.  
 2. means in the 1st row = 1.83 ton/ac.  
 3. means in the same column (except 1st row) = 3.76 ton/ac.  
 4. means in the same column, one of the means being in 1st row = 2.55 ton/ac.

Crop :- Sugarcane.

Ref :- Mh. 50(63).

Site :- Agri. Res. Stn., Kopergaon.

Type :- 'M'.

Object :- To find out the suitable ratio of A/S to G.N.C. for top dressing of N with varying doses of basal manure.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) N.A. (c) Nil. (ii) (a) 'A' type soil according to genetic classification. (b) Refer soil analysis, Kopergaon. (iii) 18.11.1950. (iv) (a) 2 ploughings and 3 harrowings. (b) N.A. (c) 10,000 setts/ac. (d) 4' between rows. (e) —. (v) As per treatments. (vi) CO. 475 (duration N.A.). (vii) Irrigated. (viii) N.A. (ix) 34.67". (x) 2nd and 3rd week of February 1952.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 2 levels of compost as B.D. : B<sub>1</sub>=20 and B<sub>2</sub>=40 C.L./ac.

(2) 4 ratios of A/S to G.N.C. : R<sub>1</sub>=A/S alone, R<sub>2</sub>=A/S to G.N.C. in 2 : 1, R<sub>3</sub>=A/S to G.N.C. in 1 : 2 and R<sub>4</sub>=G.N.C. alone.

Each source to supply 375 lb./ac. of N.

## 3. DESIGN :

(i) 4×2 Fact. in R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a) 42.5'×32'. (b) 34.04'×24' (v) 1 row on either side, 4.23' at either end. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Attack of stem borer and top borer noticed. (iii) Germination count, height, no. of tillers and sugarcane yield. (iv) (a) 1950 to 1954. (b) No. (c) N.A. (v) (a) Akluj, Lakhamapur and Deolali. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 50.11 ton/ac.  
 (ii) 3.04 ton/ac.  
 (iii) None of the effects is significant.  
 (iv) Av. yield of sugarcane in ton/ac.

	B <sub>1</sub>	B <sub>2</sub>	Mean
R <sub>1</sub>	48.21	48.02	48.12
R <sub>2</sub>	50.32	47.56	48.94
R <sub>3</sub>	51.20	51.62	51.41
R <sub>4</sub>	52.66	51.28	51.97
Mean	50.60	49.62	50.11

S.E. of B marginal mean = 0.76 ton/ac.  
 S.E. of R marginal mean = 1.07 ton/ac.  
 S.E. of body of table = 1.52 ton/ac.

Crop :- Sugarcane.

Ref :- Mh. 51(79).

Site :- Agri. Res. Stn., Kopergaon.

Type :- 'M'.

Object :- To find out the suitable ratio of A/S to G.N.C. for top-dressing of N with varying doses of basal manure.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) N.A. (c) N.A. (ii) (a) 'G' type. (b) Refer soil analysis, Kopergaon. (iii) 21.11.1951. (iv) (a) 2 ploughings and 3 harrowings. (b) N.A. (c) 10,000 setts/ac. (d) 4' between rows. (e) —. (v) As per treatments. (vi) CO. 419. (vii) Irrigated. (viii) 2 weedings. (ix) 11.73%. (x) 16 to 19.2.1953.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 2 levels of compost as B.D. : B<sub>1</sub>=20 and B<sub>2</sub>=40 C L./ac.

(2) 4 ratios of A/S to G.N.C. : R<sub>1</sub>=A/S alone, R<sub>2</sub>=A/S to G.N.C. in ratio 2 : 1, R<sub>3</sub>=A/S to G.N.C. in ratio 1 : 2 and R<sub>4</sub>=G.N.C. alone.

Each ratio to supply 375 lb./ac. of N. Compost applied before sowing and N top-dressed.

## 3. DESIGN :

(i) 4×2 Fact. in R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a) 32'×42.5'. (b) 24'×34.5'. (v) 4' ring round the net plot. (vi) Yes.

## 4. GENERAL :

(i) Normal. (ii) N.A. (iii) Height, no. of tillers, millable and unmillable sugarcane and sugarcane yield. (iv) (a) 1950—1954. (b) No. (c) N.A. (v) (a) Deolali and Lakhamapur. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 36.89 ton/ac.  
 (ii) 2.63 ton/ac.  
 (iii) Main effect of N alone is significant.



iv) Av. yield of sugarcane in ton/ac.

	B <sub>1</sub>	B <sub>2</sub>	Mean
R <sub>1</sub>	33.3	28.9	31.10
R <sub>2</sub>	34.5	36.2	35.35
R <sub>3</sub>	39.8	38.3	39.05
R <sub>4</sub>	42.1	42.02	42.06
Mean	37.42	36.35	36.89

S.E. of B marginal mean =0.65 ton/ac.  
 S.E. of R marginal mean =0.93 ton/ac.  
 S.E. of body of table =1.31 ton/ac.

Crop :- Sugarcane.

Ref :- Mh. 52(176).

Site :- Agri. Res. Stn., Kopergaon.

Type :- 'M'.

Object :- To find out the suitable ratio of A/S to G.N.C. for top-dressing of N with varying doses of basal manure.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) *Moong*. (c) Nil. (ii) (a) 'A' type. (b) Refer soil analysis, Kopergaon. (iii) 16.10.1952.  
 (iv) (a) N.A. (b) N.A. (c) 10,000 setts/ac. (d) 4' spacing. (e) —. (v) As per treatments. (vi) CO. 419 (mid-late). (vii) Irrigated. (viii) N.A. (ix) 17.22". (x) 12 to 17.2.1954.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 2 levels of F.Y.M. as B.D. : B<sub>1</sub>=20 and B<sub>2</sub>=40 C.L./ac.(2) 4 ratios of A/S to G.N.C. : R<sub>1</sub>=A/S alone, R<sub>2</sub>=A/S to G.N.C. in 2 : 1 ratio, R<sub>3</sub>=A/S to G.N.C. in 1 : 2 ratio and R<sub>4</sub>=G.N.C. alone.

Each ratio to supply 375 lb./ac. of N. N top-dressed.

## 3. DESIGN :

(i) 4×2 Fact. in R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a) 42.5'×32'. (b) 24'×34.5'. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) N.A. (iii) Sugarcane yield. (iv) (a) 1950-1952, to 1954-1956. (b) No (c) N.A. (v) (a) N.A. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 22.11 ton/ac.  
 (ii) 3.08 ton/ac.  
 (iii) Main effects of R and interaction are significant.  
 (iv) Av. yield of sugarcane in ton/ac.

	B <sub>1</sub>	B <sub>2</sub>	Mean
R <sub>1</sub>	19.55	22.18	20.86
R <sub>2</sub>	21.34	25.06	23.65
R <sub>3</sub>	27.97	25.93	26.95
R <sub>4</sub>	31.56	24.53	28.04
Mean	25.11	24.65	22.11

S.E. of B marginal mean =0.77 ton/ac.  
 S.E. of R marginal mean =1.08 ton/ac.  
 S.E. of body of table =1.54 ton/ac.

Crop :- Sugarcane.

Ref :- Mh. 53(160).

Site :- Agri. Res. Stn., Kopergaon.

Type :- 'M'.

Object :- To find out the suitable ratio of A/S to G.N.C. for top dressing of N with two doses of basal manure.

## 1. BASAL CONDITIONS :

(i) (a) *Bajra+Tur* mixture—Sugarcane. (b) *Bajra+Tur* mixture. (c) Nil. (ii) (a) 'A' type. (b) Refer soil analysis, Kopergaon. (iii) 13.11.1953. (iv) (a) 2 ploughings and 2 harrowings. (b) N.A. (c) 10,000 setts/ac. (d) 4' between rows. (e) —. (v) As per treatments. (vi) CO.419. (vii) Irrigated. (viii) 7 weedings and 1 bunding. (ix) 28.89". (x) 5.2.1955.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 2 levels of F.Y.M. as B.D. :  $B_1=20$  and  $B_2=40$  C.L./ac.

(2) 4 ratios of A/S to G.N.C. :  $R_1=A/S$  alone,  $R_2=A/S$  to G.N.C. in 2 : 1,  $R_3=A/S$  to G.N.C. in 1 : 2 and  $R_4=G.N.C.$  alone.

Each ratio to supply 375 lb./ac. of N.

## 3. DESIGN :

(i) 4×2 Fact. in R.B.D. (ii) 8. (b) N.A. (iii) 4. (iv) (a) 32'×42.5'. (b) 24'×34.5'. (v) 4' on either end. 1 row on either side. (vi) Yes.

## 4. GENERAL :

(i) Satisfactory. (ii) Attack of top-shoot and stem-borer and pyrilla only noticed. (iii) Germination count, tiller, borer count, height and sugarcane yield. (iv) (a) 1950—1954. (b) No. (c) N.A. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 33.23 ton/ac.  
(ii) 3.92 ton/ac.  
(iii) Effect of R is highly significant.  
(iv) Av. yield of sugarcane in ton/ac.

	B <sub>1</sub>	B <sub>2</sub>	Mean
R <sub>1</sub>	26.07	29.57	27.82
R <sub>2</sub>	28.45	34.61	31.53
R <sub>3</sub>	37.29	35.70	36.49
R <sub>4</sub>	42.08	32.11	37.09
Mean	33.47	33.00	33.23

S.E. of B marginal mean = 0.98 ton/ac.

S.E. of R marginal mean = 1.38 ton/ac.

S.E. of body of table = 1.96 ton/ac.

Crop :- Sugarcane.

Ref :- Mh. 50(74).

Site :- Agri. Res. Stn., Lakhmapur.

Type :- 'M'.

Obj ct :- To find out the suitable ratio of A/S and G.N.C. for top dressing of N with varying doses of basal manure.

## 1. BASAL CONDITIONS :

(i) (a) *Bajra+Tur*—Sugarcane. (b) *Bajra+Tur*. (c) Nil. (ii) (a) Shallow, 12" to 15" deep, light brown pH-8.1 F type. (b) Refer soil analysis, Lakhmapur. (iii) 12.11.1950. (iv) (a) 1 ploughing and 4 harrowings. (b) Setts planted by hand 1" to 2" deep. (c) 10,000 setts/ac. (d) 4' between rows and 4" to 6" between plants. (e) N.A. (v) Nil. (vi) CO.475 (medium). (vii) Irrigated. (viii) 2 to 3 hand weedings, 3 to 4 interculturings by tooth cultivator implement, 1 light earthing by *bahadur* plough and 1 final earthing by ridging. (ix) 17.75". (x) 1.3.1952.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 2 levels of compost as B.D. :  $B_1=20$  and  $B_2=40$  C.L./ac.

(2) 4 ratios of N as A/S and G.N.C. to give 450 lb./ac. of N :  $R_1=1:0$ ,  $R_2=2:1$ ,  $R_3=1:2$  and  $R_4=0:1$ .

N top dressed in 4 doses, at planting, 6 and 12 weeks after planting and at the time of earthing.

## 3. DESIGN :

(i)  $4 \times 2$  Fact. in R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 0.75 *guntha*. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) Normal. (ii) Major pest—top borer—cutting off affected shoots, collection, destroying of egg masses and moths. Slight rat rouble controlled by poison bait of zinc phosphate. (iii) Germination counts, monthly height observations, plant population, fortnightly maturity study and sugarcane yield. (iv) (a) 1950—1951. (b) No. (c) N.A. (v) (a) Akluj, Deolali and Kopergaon. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 30.95 ton/ac.

(ii) 3.08 ton/ac.

(iii) Main effects of R and the interaction  $R \times B$  are significant. Main effect of P, is not significant.

(iv) Av. yield of sugarcane in ton/ac.

	$B_1$	$B_2$	Mean
$R_1$	27.07	30.09	28.38
$R_2$	30.38	30.09	30.24
$R_3$	30.71	34.32	32.52
$R_4$	31.50	33.45	32.48
Mean	29.91	31.99	30.95

S.E. of marginal mean of B = 0.77 ton/ac.  
 S.E. of marginal mean of R = 1.09 ton/ac.  
 S.E. of body of table = 1.54 ton/ac.

Crop :- Sugarcane.

Ref :- Mh. 51(88).

Site :- Agri. Res. Stn., Lakhamapur.

Type :- 'M'.

Object :—To find out the suitable ratio of A/S and G.N.C. for top dressing of N with different doses of basal manure.

## 1. BASAL CONDITIONS :

(i) (a) *Bajra+Tur*—Sugarcane. (b) *Bajra+Tur*. (c) Nil. (ii) (a) Shallow, 12" to 15" deep, light brown, pH—8.1. 'F' type. (b) Refer soil analysis, Lakhamapur. (iii) 29th and 30.10.1951. (iv) (a) 2 ploughings and 2 harrowings. (b) Setts planted by hand 1" to 2" deep. (c) 10,000 setts/ac. (d) 4' between rows 4" to 6" between plants. (e) N.A. (v) As per treatments. (vi) CO. 475 (medium). (vii) Irrigated. (viii) Interculturing 2 to 3, one light earthing up by *Bahadur* plough, and one final earthing up by ridging. (ix) 10.46". (x) 20.1.1953.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 2 levels of F.Y.M. as B.D. :  $B_1=20$  and  $B_2=40$  C.L./ac.

(2) 4 ratios of A/S and G.N.C. to give 450 lb./ac. of N :  $R_1=1:0$ ,  $R_2=2:1$ ,  $R_3=1:2$  and  $R_4=0:1$ .

N top dressed in 4 doses ; at planting, 6 and 12 weeks after planting and at the time of earthing.

## 3. DESIGN

(i) 4×2 Fact. in R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a) 42.5'×32'. (b) 34'×24'. (v) 1 row each length wise and 4.25' breadth wise each side. (vi) Yes.

## 4. GENERAL :

(i) The general growth and the yield was below normal. (ii) Attack of stem borer. Gammaxene dusted (iii) Germination counts, height and no. of tillers. (iv) (a) 1950–1954. (b) No. (c) N.A. (v) (a) Akluj and Kopergaon. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 16.60 ton/ac.  
 (ii) 3.37 ton/ac.  
 (iii) None of the effects is significant.  
 (iv) Av. yield of sugarcane in ton/ac.

	B <sub>1</sub>	B <sub>2</sub>	Mean
R <sub>1</sub>	14.7	14.0	14.4
R <sub>2</sub>	18.3	17.4	17.8
R <sub>3</sub>	15.0	18.3	16.6
R <sub>4</sub>	16.7	18.8	17.7
Mean	16.1	17.1	16.6

S.E. of marginal mean of R = 1.19 ton/ac.  
 S.E. of marginal mean of B = 0.84 ton/ac.  
 S.E. of body of table = 1.68 ton/ac.

Crop :- Sugarcane.

Ref :- Mh. 52(115).

Site :- Agri. Res. Stn., Lakhamapur.

Type :- 'M'.

Object :- To find out the suitable ratio of A/S and G.N.C. with different doses of basal manure.

## 1. BASAL CONDITIONS :

(i) (a) No. (b) N.A. (c) Nil. (ii) (a) 'F' type, very shallow, 12" to 15" deep, light brown pH—8.1. (b) Refer soil analysis, Lakhamapur. (iii) N.A. (iv) (a) 2 ploughings. (b) Setts are planted by hand, 1" to 2" deep in the soil. (c) 10,000 setts/ac. (d) Between rows 4', between plants—4" to 6". (e) N.A. (v) According to treatments, half after 1st ploughing and half in furrows before planting. (vi) N.A. (vii) Irrigated. (viii) 2 to 3 hand weeding, 3 to 4 interculturings by tooth cultivator implement, one light earthing up by *Bahadur* plough, one final earthing up and ridging. (ix) 10" to 24". (x) N.A.

## 2. TREATMENTS:

All combinations of (1) and (2)

(1) 2 levels of F.Y.M. as B.D. : B<sub>1</sub>=20 and B<sub>2</sub>=40 C.L./ac.

(2) 4 ratios of A/S and G.N.C. to give 450 lb./ac. of N : R<sub>1</sub>=1 : 0, R<sub>2</sub>=2 : 1, R<sub>3</sub>=1 : 2 and R<sub>4</sub>=0 : 1.

N top dressed in 4 doses, at planting, 6 and 12 weeks after planting and at the time of earthing.

## 3. DESIGN :

(i) 4×2 Fact. in R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 0.75 *guntha*. (v) 3.75' each length wise and one row each breadth wise. (vi) Yes.

## 4. GENERAL :

(i) The general growth and the yield was normal. (ii) Major pest—Top borer—cutting off affected shoots, collection, destroying of egg masses and moths. Slight rat trouble controlled by poison bait of zinc phosphate. (iii) Germination counts, monthly height observations, plant population, and fortnightly maturity study. (iv) (a) 1950–1954. (b) No. (c) N.A. (v) (a) Akluj and Kopergaon. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS:

- (i) 26.67 ton/ac.
- (ii) 4.68 ton/ac.
- (iii) Main effect of R alone is highly significant.
- (iv) Av. yield of sugarcane in ton/ac.

	B <sub>1</sub>	B <sub>2</sub>	Mean
R <sub>1</sub>	20.85	22.38	21.61
R <sub>2</sub>	26.21	26.78	26.49
R <sub>3</sub>	22.34	31.45	26.89
R <sub>4</sub>	32.66	30.76	31.71
Mean	25.51	27.84	26.67

S.E. of marginal mean of R = 1.65 ton/ac.  
 S.E. of marginal mean of B = 1.17 ton/ac.  
 S.E. of body of table = 2.34 ton/ac.

Crop :- Sugarcane.

Site :- Agri. Res. Stn., Lakhamapur.

Ref :- Mh. 53(98).

Type :- 'M'.

Object :—To find the suitable ratio of A/S and G.N.C. for top-dressing of N with different doses of F.Y.M.

## 1. BASAL CONDITIONS :

(i) (a) No. (b) *Chinamug*. (c) 5 C.L./ac. of F.Y.M. (ii) (a) Shallow soil 6" to 9" deep with light brown colour. (b) Refer soil analysis, Lakhamapur. (iii) 24.10.1953. (iv) (a) 2 ploughings 10" deep with plough, clod crushings, opening ridges and furrows. (b) Wet planting. (c) 10,000 setts/ac. (d) N.A. (e) 3 budded sett. (v) As per treatments. (vi) CO. 419 (late). (vii) Irrigated. (viii) Interculturing with tooth cultivator twice. Light earthing up by a plough. Final earthing up by plough. (ix) 20" to 33". (x) 8 to 11.2.1955.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 2 levels of F.Y.M. as B.D. : B<sub>1</sub>=20 and B<sub>2</sub>=40 C.L./ac.

(2) 4 ratio of A/S and G.N.C. to give 450 lb./ac. of N : R<sub>1</sub>=1 : 0, R<sub>2</sub>=2 : 1, R<sub>3</sub>=1 : 2 and R<sub>4</sub>=0 : 1. N top-dressed in 4 doses—at planting, 6 and 12 weeks after planting and at the time of earthing.

## 3. DESIGN :

(i) 4×2 Fact. in R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a) 1.25 *guntha*. (b) 1.00 *guntha*, (v) 2 border rows. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Attack of stem borer and top shoot borer. Removal of affected plants. Attack of pyrilla. Spraying of 50% B.H.C. (iii) Germination, tillering and borer count and botanical observations. (iv) (a) 1950—1954. (b) No. (c) N.A. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS:

- (i) 29.54 ton/ac.
- (ii) 2.75 ton/ac.
- (iii) Main effect of R and interaction R × B are significant. Main effect of B is not significant.

(iv) Av. yield of sugarcane in ton/ac.

	B <sub>1</sub>	B <sub>2</sub>	Mean
R <sub>1</sub>	27.84	27.56	27.70
R <sub>2</sub>	30.79	30.03	30.41
R <sub>3</sub>	29.26	27.91	28.58
R <sub>4</sub>	30.72	32.21	31.46
Mean	29.65	29.42	29.54

S.E. of marginal mean of B = 0.68 ton/ac.  
 S.E. of marginal mean of R = 0.97 ton/ac.  
 S.E. of body of table = 1.37 ton/ac.

Crop :- Sugarcane.

Ref :- Mh. 50(76).

Site :- Agri. Res. Stn., Lakhamapur.

Type :- 'M'.

Object :- To study the effect of placement of varying doses of Super with two levels of N top-dressing.

## 1. BASAL CONDITIONS :

(i) (a) *Bajra—Tur—Sugarcane*. (b) *Bajra+Tur*. (c) Nil. (ii) (a) Very shallow, 12" to 15" deep, light brown, pH=8, 'F' type. (b) Refer soil analysis, Lakhamapur. (iii) 28.8.1950. (iv) (a) 4 harrowings and 1 ploughing. (b) Setts planted by hand 1" to 2" deep in the soil. (c) 10,000 setts/ac. (d) 4' between rows and 4" to 6" between plants. (e) —. (v) 20 C.L./ac. of F.Y.M. Half after 1st ploughing and half in furrows before planting. (vi) CO. 419 (mid-late). (vii) Irrigated. (viii) 2 to 3 hand weedings and 3—4 interculturations (ix) 10.46". (x) 21.1.1952.

## 2. TREATMENTS :

Main-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 methods of application of Super : M<sub>1</sub>=Placement at surface, M<sub>2</sub>=Half way down the ridge and M<sub>3</sub>=Placement at the base of the ridge.

Sub-plot treatments :

2 levels of N : N<sub>1</sub>=450 and N<sub>2</sub>=600 lb./ac.N as A/S+G.N.C. in 1 : 2 ratio. P<sub>2</sub>O<sub>5</sub> applied before planting, N applied in 4 equal doses—at planting, 6 weeks later, 12 weeks later and at the time of earthing up.

## 3. DESIGN :

(i) Split-plot. (ii) (a) 9 main-plots/block ; 2 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) 54.5'×33'. (b) 1 *guntha*. (v) 1 row each on length side and 4.5' on breadth side. (vi) Yes.

## 4. GENERAL :

(i) The general growth of the crop was normal. (ii) Attack of top borers, controlled by cutting of affected shoots ; collection and destroying of egg masses and moths. (iii) Sugarcane yield, germination counts and heights. (iv) (a) 1950—1953. (b) No. (c) N.A. (v) (a) Akluj and Kopergaon. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 41.40 ton/ac.

(ii) (a) 3.76 ton/ac.

(b) 4.12 ton/ac.

(iii) Main-plot treatment, sub-plot treatment, and their interaction are not significant.

(iv) Av. yield of sugarcane in ton/ac.

	N <sub>1</sub>	N <sub>2</sub>	Mean
P <sub>0</sub>	42.07	41.86	41.96
P <sub>1</sub> M <sub>1</sub>	44.05	40.56	42.31
P <sub>1</sub> M <sub>2</sub>	38.23	40.80	39.51
P <sub>1</sub> M <sub>3</sub>	43.44	43.72	43.58
P <sub>2</sub> M <sub>1</sub>	41.12	45.39	43.25
P <sub>2</sub> M <sub>2</sub>	39.53	37.63	38.58
P <sub>2</sub> M <sub>3</sub>	38.32	40.57	39.45
Mean	41.21	41.58	

S.E. of P<sub>0</sub> marginal mean

=0.89 ton/ac.

S.E. of any PM marginal mean

=1.53 ton/ac.

S.E. of N marginal mean

=0.79 ton/ac.

S.E. of difference of two

1. means in the same row (except 1st row)

=3.36 ton/ac.

2. means in the same column (except 1st row)

=3.22 ton/ac.

Crop :- Sugarcane.

Ref :- Mh. 51(89).

Site :- Agri. Res. Stn., Lakhamapur.

Type :- 'M'.

Object :- To study the effect of placement of super with two levels of N top dressing.

## 1. BASAL CONDITIONS :

(i) (a) *Bajra+Tur*- Sugarcane. (b) *Bajra+Tur*. (c) Nil. (ii) (a) 'F' type ; very shallow 12" to 15" deep light brown, pH=8.1. (b) Refer soil analysis, Lakhamapur. (iii) 22, 24.8.1951. (iv) (a) 4 harrowings 1 ploughing. (b) Setts planted by hand, 1" to 2" deep. (c) 10,000 setts/ac. (d) 4' between rows ; 4" to 6" between plants. (e) N.A. (v) 20 C.L./ac. of compost, half after 1st ploughing and half in furrows before planting. (vi) CO. 419 (medium). (vii) Irrigated. (viii) 2 to 3 interculturings and 5 weedings. (ix) 10.46". (x) 6 to 13.1.1953.

## 2. TREATMENTS :

Main-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 methods of application of P<sub>2</sub>O<sub>5</sub> : M<sub>1</sub>=applied in furrows, M<sub>2</sub>=applied half way down the ridge and M<sub>3</sub>=applied at the bottom of the ridge.

Sub-plot treatments :

2 levels of N : N<sub>1</sub>=450 and N<sub>2</sub>=600 lb./ac.

N as A/S+G.N.C. in 1 : 2 ratio.

## 3. DESIGN :

(i) Split-plot (ii) (a) 9 main-plots/block, 2 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) 40'×43.5'. (b) 32'×34'. (v) 1 row each on length side and 4.75' on breadth side. (vi) Yes.

## 4. GENERAL :

(i) Normal. (ii) Attack of stem borer and top-shoot borer observed, controlled by cutting of affected shoots, collection and destroying of egg masses and moths. (iii) Sugarcane yield, germination counts and heights. (iv) (a) 1950 to 1953. (b) No. (c) N.A. (v) (a) Akluj, Kopergaon, Deolali. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 14.15 ton/ac.

(ii) (a) 2.77 ton/ac.

(b) 3.62 ton/ac.

(iii) None of the effects is significant.

(iv) Av. yield of sugarcane in ton/ac.

	N <sub>1</sub>	N <sub>2</sub>	Mean
P <sub>0</sub>	14.57	16.40	15.49
P <sub>1</sub> M <sub>1</sub>	11.43	11.46	11.44
P <sub>1</sub> M <sub>2</sub>	11.92	15.84	13.88
P <sub>1</sub> M <sub>3</sub>	12.53	13.80	13.16
P <sub>2</sub> M <sub>1</sub>	13.38	15.37	14.37
P <sub>2</sub> M <sub>2</sub>	17.64	13.00	15.32
P <sub>2</sub> M <sub>3</sub>	15.14	10.28	12.71
Mean	13.97	14.33	

S.E. of P <sub>0</sub> marginal mean	=0.65 ton/ac.
S.E. of any PM marginal mean	=1.13 ton/ac.
S.E. of N marginal mean	=0.69 ton/ac.
S.E. of difference of two	
1. means in the same row (except. 1st row)	=2.95 ton/ac.
2. means in the same column (except 1st row)	=2.63 ton/ac.

Crop :- Sugarcane.

Ref :- Mh. 52(150).

Site :- Agri. Res. Stn., Lakhmapur.

Type :- 'M'.

Object :—To study the effect of placement of Super with two levels of N top dressing.

## 1. BASAL CONDITIONS :

(i) (a) No. (b) N.A. (c) Nil. (ii) (a) 'F' type, very shallow, 12" to 15" deep, light brown, pH=8.1. (b) Refer soil analysis, Lakhmapur. (iii) 22.8.1952. (iv) (a) 2 ploughings. (b) Setts planted by hand, 1" to 2" deep in the soil. (c) 10,000 setts/ac. (d) Between rows 4'; between plants 4" to 6". (e) N.A. (v) 10 C.L./ac. compost after first ploughing and 10 C.L./ac. compost in furrows before planting. (vi) N.A. (vii) Irrigated. (viii) 2 to 3 hand weeding, 3 to 4 interculturings, 1 light earthing up and 1 final earthing up. (ix) 10" to 24". (x) 26.1.1954.

## 2. TREATMENTS :

## Main-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 methods of application of P<sub>2</sub>O<sub>5</sub> : M<sub>1</sub>=applied in furrows, M<sub>2</sub>=applied half way down the ridge and M<sub>3</sub>=applied at the bottom of the ridge.

## Sub-plot treatments :

2 levels of N : N<sub>1</sub>=450 and N<sub>2</sub>=600 lb./ac.

N as A/S+G.N.C. in 1 : 2 ratio.

## 3. DESIGN :

(i) Split-plot. (ii) (a) 9 main-plots/block ; 2 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) 1.6 *guntha*. (b) 1 *guntha*. (v) 4.75' each on length wise and one row each on breadth wise. (vi) Yes.

## 4. GENERAL :

(i) The general growth and yield was normal. (ii) Major pest—top borer ; controlled by cutting of affected shoots, collection, destroying of egg masses and moths, slight rat trouble controlled by poison baits of zinc phosphate. (iii) Germination counts, monthly height observation, plant population, fortnightly maturity study. (iv) (a) 1952 to 1955. (b) No. (c) N.A. (v) (a) Akluj and Kopergaon. (b) N.A. (vi) and (vii) Nil.



## 5. RESULTS :

- (i) 26.69 ton/ac.  
 (ii) (a) 3.58 ton/ac.  
      (b) 2.84 ton/ac.  
 (iii) None of the effects is significant.  
 (iv) Av. yield of sugarcane in ton/ac.

	N <sub>1</sub>	N <sub>2</sub>	Mean
P <sub>0</sub>	27.19	28.84	28.01
P <sub>1</sub> M <sub>1</sub>	25.93	24.34	25.13
P <sub>1</sub> M <sub>2</sub>	27.25	25.43	26.34
P M <sub>3</sub>	23.12	28.26	25.69
P <sub>2</sub> M <sub>1</sub>	25.62	25.82	25.72
P <sub>2</sub> M <sub>2</sub>	26.03	26.72	26.38
P <sub>2</sub> M <sub>3</sub>	25.21	28.50	26.86
Mean	26.08	27.29	

S.E. of P <sub>0</sub> marginal mean	=0.84 ton/ac.
S.E. of any PM marginal mean	=1.46 ton/ac.
S.E. of N marginal mean	=0.55 ton/ac.
S.E. of difference of two	
1. means in the same row (except 1st row)	=2.31 ton/ac.
2. means in the same column (except 1st row)	=2.64 ton/ac.

Crop :- Sugarcane (*Ratoon*).

Ref. :-Mh. 52(151).

Site :- Agri. Res. Stn., Lakhamapur.

Type :- 'M'.

Object :-To study the effect of placement of Super with two levels of N top dressing on Sugarcane (*ratoon*).

## 1. BASAL CONDITIONS :

- (i) (a) No. (b) N.A. (c) Nil. (ii) (a) 'F' type, very shallow, 12" to 15" deep and light brown, pH=8.1.  
 (b) Refer soil analysis, Lakhamapur. (iii) N.A. (iv) (a) 2 ploughings. (b) Setts planted by hand 1" to 2" deep in the soil. (c) 10,000 setts/ac. (d) Between rows - 4' and between plants 4" to 6". (e) N.A. (v) 20 C.L./ac. of F.Y.M., 10 C.L./ac. after first ploughing and 10 C.L./ac. in furrows before planting. (vi) N.A. (vii) Irrigated. (viii) 2-3 hand weedings, 3-4 interculturings by tooth cultivators, 1 light earthing up by *bahadur* plough and final earthing up by ridger. (ix) 10.46" to 24.12". (x) N.A.

## 2. TREATMENTS :

Main-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 methods of application of P<sub>2</sub>O<sub>5</sub> : M<sub>1</sub>=applied in furrows, M<sub>2</sub>=applied half way down the ridge and M<sub>3</sub>=applied at the bottom of the ridge.

Sub-plot treatments :

2 levels of N : N<sub>1</sub>=450 and N<sub>2</sub>=600 lb./ac.

N as A/S+G.N.C. in 1 : 2 ratio.

## 3. DESIGN :

- (i) Split-plot. (ii) (a) 9 main-plots/block and 2 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) 1.6 *guntha*. (b) 1 *guntha*. (v) 4.75' length wise and 1 row breadth wise. (vi) Yes.

## 4. GENERAL :

(i) The general growth and the yield was below normal. (ii) Major pest—top borer, controlled by cutting off affected shoots, collection and destroying of egg masses and moths ; slight rat trouble ; controlled by poison bait and zinc phosphate. (iii) Germination counts, monthly height observation, plant population and fortnightly maturity study. (iv) (a) 1952—1955. (b) No. (c) N.A. (v) (a) Akluj, Kopergaon and Deolali. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 19.80 ton/ac.  
 (ii) (a) 2.82 ton/ac.  
 (b) 2.15 ton/ac.  
 (iii) Effect of main-plot treatments alone is significant.  
 (iv) Av. yield of sugarcane in ton/ac.

	N <sub>1</sub>	N <sub>2</sub>	Mean
P <sub>0</sub>	21.7	21.7	21.7
P <sub>1</sub> M <sub>1</sub>	23.8	21.2	22.5
P <sub>1</sub> M <sub>2</sub>	16.8	18.3	17.5
P <sub>1</sub> M <sub>3</sub>	15.9	17.6	16.7
P <sub>2</sub> M <sub>1</sub>	17.0	13.8	15.4
P <sub>2</sub> M <sub>2</sub>	20.8	21.3	21.0
P <sub>2</sub> M <sub>3</sub>	19.8	19.7	19.8
Mean	19.9	19.7	

S.E. of P <sub>0</sub> marginal mean	=0.66 ton/ac.
S.E. of any PM marginal mean	=1.15 ton/ac.
S.E. of N marginal mean	=0.41 ton/ac.
S.E. of difference of two	
1. means in the same row (except 1st row)	=1.76 ton/ac.
2. means in the same column (except 1st row)	=2.05 ton/ac.

Crop :- Sugarcane.

Ref :- Mh. 53(284).

Site :- Agri. Res. Stn., Lakhmapur.

Type :- 'M'.

Object :- To find out the effect of placement of Super with two levels of N top dressing.

## 1. BASAL CONDITIONS :

(i) (a) Bajra+Tura—Sugarcane (Adsali). (b) Bajra+Tur. (c) 2 md./ac. of manure mixture. (ii) (a) Shallow soil, 6" to 5" deep with light brown colour. (b) Refer soil analysis, Lakhmapur. (iii) 16.8.1953. (iv) (a) 2 ploughings 10" deep, clod crushing and opening ridges, furrows. (b) Wet planting. (c) 10,000 setts/ac. (d) and (e) N.A. (v) 20 C.L./ac. of compost at preparatory tillage. (vi) CO. 419 (late). (vii) Irrigated. (viii) Interculturing with tooth cultivators twice, light earthing up by plough, weeding twice and final earthing up by plough. (ix) 20" to 33". (x) 19 to 27.1.1955.

## 2. TREATMENTS :

Main-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 methods of application of Super : M<sub>1</sub>=Placement at surface, M<sub>2</sub>=Placement at half way down the ridge and M<sub>3</sub>=Placement at the base of the ridge.

Sub-plot treatments :

2 levels of N : N<sub>1</sub>=450 and N<sub>2</sub>=600 lb./ac.

N as A/S+G.N.C. in 1 : 2 ratio.

## 3. DESIGN :

(i) Split-plot. (ii) (a) 9 main-plots/block ; 2 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) 1.6 *guntha*. (b) 1.0 *guntha*. (v) 2 rows along the border. (vi) Yes.

## 4. GENERAL :

(i) Heavy lodging during last week of Sept. 1954 due to heavy rains. (ii) Attack of stem borer. Incidence 1 to 12%, removing affected plants. Top shoot borer 2 to 11% attack, collection of egg mas. Medium attack of pyrilla, spraying 50% B.H.C. (iii) Height, tillering, germination counts and sugarcane yield. (iv) (a) 19 0—1953. (b) Treatments assigned to the same plot in a block after every 4th year. (c) N.A. (v) (a) and (b) N.A. (vi) Nil. (vii) Since the plot wise yield data are not available analysis could not be carried out.

## 5. RESULTS :

(i) 40.86 ton/ac.  
 (ii) (a) N.A.  
 (b) 3.43 ton/ac.  
 (iii) N.A.  
 (iv) Av. yield of sugarcane in ton/ac.

	N <sub>1</sub>	N <sub>2</sub>	Mean
P <sub>0</sub>	39.40	39.73	39.56
P <sub>1</sub> M <sub>1</sub>	47.98	40.67	44.32
P <sub>1</sub> M <sub>2</sub>	38.41	42.33	40.37
P <sub>1</sub> M <sub>3</sub>	41.55	42.83	42.34
P <sub>2</sub> M <sub>1</sub>	41.53	36.80	39.16
P <sub>2</sub> M <sub>2</sub>	47.19	38.37	42.78
P <sub>2</sub> M <sub>3</sub>	41.65	38.68	40.16
Mean	41.83	39.87	

Other S.E.'s—N.A.

Crop :- Sugarcane.

Site :- Agri. Res. Stn., Padegaon.

Ref :- Mh. 48(58).

Type :- 'M'.

Object :—To find the optimum ratio of A/S and G.N.C. for top dressing N with basal manuring of compost.

## 1. BASAL CONDITIONS :

(i) (a) Sugarcane—*Jowar*—Groundnut. (b) Groundnut. (c) Nil. (ii) (a) 'B' type. (b) Refer soil analysis, Padegaon. (iii) 21.1.1948. (iv) (a) N.A. (b) N.A. (c) 10,000 setts/ac. (d) 4' apart. (e) N.A. (v) Nil (vi) CO. 419 (mid-late). (vii) Irrigated. (viii) 2 interculturings, 2 weedings and 1 earthing up. (ix) 22.47" (x) 9.2.1949.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 2 levels of compost as B.D. : B<sub>0</sub>=0 and B<sub>1</sub>=20 C.L./ac.

(2) 6 ratios of A/S and G.N.C. to give 300 lb./ac. of N : R<sub>0</sub>=0, R<sub>1</sub>=G.N.C. alone, R<sub>2</sub>=A/S alone, R<sub>3</sub>=A/S+G.N.C. in 1 : 1, R<sub>4</sub>=A/S+G.N.C. in 1 : 2 and R<sub>5</sub>=A/S+G.N.C. in 2 : 1 ratio.

## 3. DESIGN :

(i) 2×6 Fact. in R.B.D. (ii) (a) 12. (b) N.A. (iii) 4. (iv) (a) 54.44'×32'. (b) 45.44'×24'. (v) 4.5' length wise and 4' breadth wise. (vi) Yes.

## 4. GENERAL :

(i) Normal. (ii) N.A. (iii) Sucrose, glucose, fibre % and sugarcane yield. (iv) (a) 1939—continued. (b) No. (c) N.A. (v) (a) Akluj and Kopergaon. (b) N.A. (vi) Nil. (vii)  $R_0$  plots gave low yield and hence not included in statistical analysis.

## 5. RESULTS :

- (i) 41.15 ton/ac.  
 (ii) 4.10 ton/ac.  
 (iii) Main effects of R, B and their interaction are highly significant.  
 (iv) Av. yield of sugarcane in ton/ac.  
 (See (vii) under General)

	$B_0$	$B_1$	Mean
$R_1$	40.20	51.18	45.69
$R_2$	14.09	48.92	31.51
$R_3$	32.20	53.77	42.99
$R_4$	36.33	54.28	45.31
$R_5$	26.52	53.97	40.25
Mean	29.87	52.42	41.15

S.E. of marginal mean of B = 0.92 ton/ac.  
 S.E. of marginal mean of R = 1.45 ton/ac.  
 S.E. of body of table = 2.05 ton/ac.

Crop :- Sugarcane.

Ref :- Mh. 50(95).

Site :- Agri. Res. Stn., Padegaon.

Type :- 'M'.

Object :- To find the optimum ratio of A/S and Safflower Cake for top dressing N with basal manuring of compost.

## 1. BASAL CONDITIONS :

(i) (a) Sugarcane—*Jowar*—Groundnut. (b) *Jowar*. (c) Nil. (ii) (a) 'B' type. (b) Refer soil analysis, Padegaon. (iii) 15.1.1950. (iv) (a) N.A. (b) N.A. (c) 10,000 setts/ac. (d) 4' apart. (e) N.A. (v) Nil. (vi) CO. 419 (medium). (vii) Irrigated. (viii) 2 interculturings, 2 weedings and 1 earthing. (ix) 22 91°. (x) 14.2.1951.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 2 levels of compost as B.D. ;  $B_0=0$  and  $B_1=20$  C.L./ac.

(2) 6 ratios of A/S and Safflower cake to give 300 lb./ac. of N :  $R_0=0$ ,  $R_1$ =Cake alone,  $R_2$ =A/S alone,  $R_3$ =A/S and Cake in 1 : 1,  $R_4$ =A/S and Cake in 1 : 2 and  $R_5$ =A/S and Cake in 2 : 1 ratio.

## 3. DESIGN :

(i) 2×6 Fact. in R.B.D. (ii) (a) 12. (b) N.A. (iii) 4. (iv) (a) 54.44'×32'. (b) 45.44'×24'. (v) 4.5' length wise and 4' breadth wise. (vi) Yes.

## 4. GENERAL :

(i) Normal. (ii) N.A. (iii) Brix, sucrose in juice, fibre and Sugarcane yield. (iv) (a) 1939— contd. (b) No. (c) N.A. (v) (a) Akluj and Kopergaon. (b) N.A. (vi) Nil. (vii)  $R_0$  plots gave low yield and hence not included in statistical analysis.

## 5. RESULTS :

- (i) 38.23 ton/ac.  
 (ii) 5.40 ton/ac.  
 (iii) Main effects of R, B and interaction  $R \times B$  are significant.

- (iv) Av. yield of sugarcane in ton/ac.  
(See (vii) under General)

	B <sub>0</sub>	B <sub>1</sub>	Mean
R <sub>1</sub>	39.88	49.74	44.81
R <sub>2</sub>	29.18	37.77	33.47
R <sub>3</sub>	32.60	37.46	35.40
R <sub>4</sub>	37.80	48.49	43.14
R <sub>5</sub>	27.70	41.70	34.70
Mean	33.43	43.03	38.23

S.E. of marginal mean of B = 1.21 ton/ac.  
S.E. of marginal mean of R = 1.90 ton/ac.  
S.E. of body of table = 2.70 ton/ac.

Crop :- Sugarcane.

Ref :- Mh. 51(134).

Site :- Agri. Res. Stn., Padegaon.

Type :- 'M'

Object :- To find the optimum ratio of A/S and cake for top dressing N with basal manuring of compost.

#### 1. BASAL CONDITIONS :

- (i) (a) Sugarcane—*Jowar*. (b) *Jowar*. (c) Nil. (ii) (a) 'D' type. (b) Refer soil analysis, Padegaon. (iii) 17.1.1951. (iv) (a) and (b) N.A. (c) 10,000 setts/ac. (d) 4' apart. (e) N.A. (v) Nil. (vi) CO. 419 (mid-late). (vii) Irrigated. (viii) 2 intercroppings, 2 weedings and 1 earthing up. (ix) 14.68°. (x) 14.4.1952.

#### 2. TREATMENTS :

All combinations of (1) and (2)

- (1) 3 levels of compost as B.D. : B<sub>0</sub>=No compost, B<sub>1</sub>=Compost at 20 C.L./ac. and B<sub>2</sub>=Artificial compost i.e. 120 lb./ac. of N+120 lb./ac. of P<sub>2</sub>O<sub>5</sub>+650 lb./ac. of K<sub>2</sub>O.  
(2) 6 ratios of A/S and Cake to give 300 lb./ac. of N : R<sub>0</sub>=0, R<sub>1</sub>=Cake alone, R<sub>2</sub>=A/S alone, R<sub>3</sub>=A/S and Cake in 1 : 1, R<sub>4</sub>=A/S and Cake in 1 : 2 and R<sub>5</sub>=A/S and Cake in 2 : 1 ratio.

#### 3. DESIGN :

- (i) 6×3 Fact. in R.B.D. (ii) (a) 18. (b) N.A. (iii) 4. (iv) (a) 54.44'×16'. (b) 45.44'×8'. (v) 4.5' length wise and 4' breadth wise. (vi) Yes.

#### 4. GENERAL :

- (i) Normal. (ii) N.A. (iii) Sucrose, glucose, fibre % and sugarcane yield. (iv) (a) 1939—continued. (b) No. (c) N.A. (v) (a) Akluj and Kopergaon. (b) N.A. (vi) Nil. (vii) R<sub>0</sub> plots gave low yield and hence not included in statistical analysis.

#### 5. RESULTS :

- (i) 35.82 ton/ac.  
(ii) 4.36 ton/ac.  
(iii) Main effects of R and B and their interaction are significant.  
(iv) Av. yield of sugarcane in ton/ac.  
(See (vii) under General)

	B <sub>0</sub>	B <sub>1</sub>	B <sub>2</sub>	Mean
R <sub>1</sub>	37.32	41.25	47.95	42.17
R <sub>2</sub>	12.87	28.92	42.42	28.07
R <sub>3</sub>	30.45	36.88	42.92	36.75
R <sub>4</sub>	34.15	40.28	45.76	40.06
R <sub>5</sub>	21.24	33.00	41.87	32.04
Mean	27.21	36.07	44.18	35.82

S.E. of marginal mean of B = 0.97 ton/ac.  
S.E. of marginal mean of R = 1.26 ton/ac.  
S.E. of body of table = 2.18 ton/ac.

Crop :- Sugarcane.  
Site :- Agri. Res. Stn., Padegaon.

Ref :- Mh. 52(161).  
Type :- 'M'.

Object :- To find the optimum ratio of A/S and cake for top dressing N with a basal dressing of compost.

1. BASAL CONDITIONS :

(i) (a) Sugarcane—*Jowar*, (b) *Jowar*. (c) Nil; (ii) (a) 'B' type. (b) Refer soil analysis, Padegaon. (iii) 20.1.1952. (iv) (a) and (b) N.A. (c) 10,000 setts/ac. (d) 4' apart. (e) N.A. (v) Nil. (vi) CO. 419 (medium). (vii) Irrigated. (viii) 2 interculturings, 2 weedings and 1 earthing up. (ix) 11.01". (x) 18.3.1953.

2. TREATMENTS :

All combinations of (1) and (2)

(1) 3 levels of compost as B.D. :  $B_0$ =No compost,  $B_1$ =Compost at 20 C.L./ac. and  $B_2$ =Artificial compost. i.e. 120 lb./ac. of N+120 lb./ac. of  $P_2O_5$ +650 lb./ac. of  $K_2O$ .

(2) 6 ratios of A/S and Cake to give 300 lb./ac. of N. :  $R_0=0$ ,  $R_1$ =Cake alone,  $R_2$ =A/S alone,  $R_3$ =A/S and Cake in 1 : 1,  $R_4$ =A/S and Cake in 1 : 2 and  $R_5$ =A/S and Cake in 2 : 1 ratio.

3. DESIGN :

(i) 6×3 Fact in R.B.D. (ii) (a) 18. (b) N.A. (iii) 4. (iv) (a) 54.44'×16'. (b) 45.44'×8'. (v) 4.5' length wise and 4' breadth wise. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) N.A. (iii) Sucrose, glucose, fibre% and sugarcane yield. (iv) a) 1939—continued. (b) No. (c) N.A. (v) (a) Akluj and Kopergaon. (b) N.A. (vi) Nil. (vii)  $R_0$  plots gave low yield and not included in statistical analysis.

5. RESULTS :

- (i) 33.14 ton/ac.  
(ii) 3.42 ton/ac.  
(iii) Main effects of R and B and their interaction are significant.  
(iv) Av. yield of sugarcane in ton/ac.  
(See (vii) under General).

	$B_0$	$B_1$	$B_2$	Mean
$R_1$	33.41	37.15	41.43	37.33
$R_2$	15.09	21.77	38.14	25.00
$R_3$	29.72	32.50	39.44	33.89
$R_4$	31.04	37.85	41.54	36.81
$R_5$	26.60	33.88	37.51	32.66
Mean	27.17	32.63	39.61	33.14

S.E. of marginal mean of B = 0.77 ton/ac.  
S.E. of marginal mean of R = 0.99 ton/ac.  
S.E. of body of table = 1.71 ton/ac.

Crop :- Sugarcane.  
Site :- Agri. Res. Stn. Padegaon.

Ref :- Mh. 53(241).  
Type :- 'M'.

Object :- To find the optimum ratio of A/S and cake for top dressing N with basal dressing of compost.

1. BASAL CONDITIONS :

(i) (a) Sugarcane—*Rabi Jowar*—Groundnut. (b) Groundnut. (c) Nil. (ii) (a) 'B' type soil. (b) Refer soil analysis, Padegaon. (iii) 15.1.1953. (iv) (a) Deep ploughing 9" to 10" deep. (b) N.A. (c) 10,000 setts/ac. (d) 4' between rows. (e) N.A. (v) Nil. (vi) CO.419 (medium). (vii) Irrigated. (viii) 2 to 3 hand weedings and 2 to 3 interculturings 8 to 10 weeks after planting and 4 earthing up after a period of 5 to 6 months. (ix) 15.35". (x) 19.4.1954.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 3 levels of compost as B.D. :  $B_0$ =No compost,  $B_1$ =compost at 20 C.L./ac. and  $B_2$ =Artificial compost i.e. 120 lb./ac. of N + 120 lb./ac. of  $P_2O_5$ +650 lb./ac. of  $K_2O$ .(2) 6 ratios of A/S and cake to give 300 lb./ac. of N :  $R_0=0$ ,  $R_1$ =Cake alone,  $R_2$ =A/S alone,  $R_3$ =A/S and cake in 1 : 1,  $R_4$ =A/S and cake in 1 : 2 and  $R_5$ =A/S and cake in 2 : 1 ratio.

## 3. DESIGN :

(i) 6×3 Fact. in R.B.D. (ii) (a) 18. (b) N.A. (iii) 4. (iv) (a) 54.44'×16'. (b) 45.44'×8'. (v) 4.5' length wise and 4' breadth wise. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Attack of stem and top-shoot borers, weekly collection of eggmasses; hand picking and light trapping of moth fortnightly and removal of dead hearts. (iii) Germination counts, tillering counts, botanical observation, milleable and non milleable sugarcane counts and sugarcane yield. (iv) (a) 1939—contd. (b) No. (c) N.A. (v) (a) Akluj and Kopergaon. (b) N.A. (vi) Nil. (vii)  $R_0$  plots gave low yield and hence not taken for statistical analysis.

## 5. RESULTS :

- (i) 45.99 ton/ac.  
(ii) 5.16 ton/ac.  
(iii) Main effects of R, B and their interaction are significant.  
(iv) Av. yield of sugarcane in ton/ac.

(See (vii) under General)

	$B_0$	$B_1$	$B_2$	Mean
$R_1$	42.33	54.56	56.11	51.00
$R_2$	25.56	37.06	50.62	37.75
$R_3$	37.33	48.09	51.50	45.64
$R_4$	41.57	57.62	57.58	52.26
$R_5$	28.50	48.81	52.52	43.28
Mean	35.06	49.23	53.69	45.99

S.E. of marginal mean of B = 1.15 ton/ac.  
S.E. of marginal mean of R = 1.49 ton/ac.  
S.E. of body of table = 2.58 ton/ac.

Crop :- Sugarcane.

Site :- Agri. Res. Stn., Padegaon.

Ref :- Mh. 50(93).

Type :- 'M'.

Object :- To find out the optimum ratio of A/S and cake for top dressing N with basal manuring of compost.

## 1. BASAL CONDITIONS :

- (i) (a) Nil. (b) and (c) Nil. (ii) (a) 'B' type. (b) Refer soil analysis, Padegaon. (iii) 24.1.1950. (iv) (a) and (b) N.A. (c) 10,000 setts/ac (d) 4' apart. (e) N.A. (v) Nil. (vi) CO.419 (mid-late). (vii) Irrigated. (viii) 2 weedings, 2 interculturings and 1 earthing up. (ix) 22.91'. (x) 25.2.1951.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 3 levels of compost as B.D. :  $B_1=20$ ,  $B_2=30$  and  $B_3=40$  C.L./ac.(2) 4 ratios of A/S and cake to give 375 lb./ac. of N :  $R_1$ =Cake alone,  $R_2$ =A/S and Cake in 1 : 1,  $R_3$ =A/S and Cake in 1 : 2 and  $R_4$ =A/S and cake in 2 : 1 ratio.

**3. DESIGN :**

(i) 4×3 Fact. in R.B.D. (ii) (a) 12. (b) N.A. (iii) 5. (iv) (a) N.A. (b) 1/40 ac. (v) N.A. (vi) Yes.

**4. GENERAL :**

(i) Normal. (ii) Nil. (iii) Brix, sucrose, juice %, fibre % and sugarcane yield. (iv) (a) to (c) No. (v) (a) and (b) Nil. (vi) Nil. (vii) As the experiments was taken in an area newly brought under sugarcane cultivation the block variation was very high which has resulted in high error.

**5. RESULTS :**

- (i) 42.3 ton/ac.  
 (ii) 10.7 ton/ac.  
 (iii) Main effects of R and B and their interaction are significant.  
 (iv) Av. yield of sugarcane in ton/ac.

	B <sub>1</sub>	B <sub>2</sub>	B <sub>3</sub>	Mean
R <sub>1</sub>	44.68	45.60	42.10	44.13
R <sub>2</sub>	37.50	43.60	42.70	41.30
R <sub>3</sub>	42.60	44.80	41.20	42.86
R <sub>4</sub>	37.46	40.90	44.80	41.05
Mean	40.56	43.72	42.70	42.33

S.E. of marginal mean of B =2.40 ton/ac.  
 S.E. of marginal mean of R =2.70 ton/ac.  
 S.E. of body of table =4.80 ton/ac.

Crop :- Sugarcane.

Ref :-Mh. 50(94).

Site :-Agri. Res. Stn., Padegaon.

Type :-'M'.

Object : To find the optimum ratio of A/S and G.N.C. for top dressing N with basal manuring of compost.

**1. BASAL CONDITIONS :**

(i) (a) Sugarcane-Jowar. (b) N.A. (c) N.A. (ii) (a) 'B' type. (b) Refer soil analysis, Padegaon. (iii) 10.12.1950. (iv) (a) N.A. (b) N.A. (c) 10,000 setts/ac. (d) 4' apart. (e) N.A. (v) Nil. (vi) CO. 475 (early). (vii) Irrigated. (viii) 2 weedings, 2 interculturings and 1 earthing up. (ix) 22.91". (x) 11.2.1952.

**2. TREATMENTS :**

All combinations of (1) and (2)

(1) 3 levels of compost as B.D. : B<sub>1</sub>=20, B<sub>2</sub>=30 and B<sub>3</sub>=40 C.L./ac.

(2) 5 ratio of A/S and G.N.C. to give 375 lb./ac. of N : R<sub>1</sub>=G.N.C. alone, R<sub>2</sub>=A/S alone, R<sub>3</sub>=A/S and G.N.C. in 1 : 1, R<sub>4</sub>=A/S and G.N.C. in 1 : 2, and R<sub>5</sub>=A/S and G.N.C. in 2 : 1 ratio.

**3. DESIGN :**

(i) 5×3 Fact. in R.B.D. (ii) (a) 15. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 1/40 ac. (v) N.A. (vi) Yes.

**4. GENERAL ;**

(i) Normal. (ii) Nil. (iii) Brix, sucrose, glucose, fibre % and sugarcane yield. (iv) (a) 1950 to 1951. (b) No. (c) No. (v) (a) Nil. (b) Nil. (vi) and (vii) Nil.

**5. RESULTS :**

- (i) 49.05 ton/ac.  
 (ii) 6.50 ton/ac.  
 (iii) Main effects of R and B and their interaction are not significant.



(iv) Av. yield of sugarcane in ton/ac.

	B <sub>1</sub>	B <sub>2</sub>	B <sub>3</sub>	Mean
R <sub>1</sub>	46.81	51.94	51.44	50.06
R <sub>2</sub>	49.55	45.48	45.74	46.92
R <sub>3</sub>	50.21	49.83	48.51	49.52
R <sub>4</sub>	43.09	48.82	52.04	47.98
R <sub>5</sub>	46.87	52.39	53.12	50.79
Mean	47.31	49.69	50.17	49.05

S.E. of marginal mean of B

= 1.45 ton/ac.

S.E. of marginal mean of R

= 1.87 ton/ac.

S.E. of body of table

= 3.25 ton/ac.

Crop :- Sugarcane.

Ref :- Mh. 51(129).

Site :- Agri. Res. Stn., Padegaon.

Type :- 'M'.

Object :- To find the ratio of A/S and cake for top dressing N with basal manuring of compost.

## 1. BASAL CONDITIONS :

(i) (a) Sugarcane-Jowar. (b) Jowar. (c) Nil. (ii) (a) 'B' type. (b) Refer soil analysis, Padegaon. (iii) 28.10.1951. (iv) (a) N.A. (b) N.A. (c) 10,000 setts/ac. (d) 4' apart. (e) N.A. (v) Nil. (vi) CO. 475 (early). (vii) Irrigated. (viii) 2 interculturings, 2 weedings and 1 earthing up. (ix) 14.68%. (x) 20.2.1953.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 3 levels of compost as B.D. : B<sub>1</sub>=20, B<sub>2</sub>=30 and B<sub>3</sub>=40 C.L./ac.(2) 5 ratios of A/S and cake to give 375 lb./ac. of N : R<sub>1</sub>=Cake alone, R<sub>2</sub>=A/S alone, R<sub>3</sub>=A/S and Cake in 1 : 1, R<sub>4</sub>=A/S and Cake in 1 : 2, and R<sub>5</sub>=A/S and Cake in 2 : 1 ratio.

## 3. DESIGN :

(i) 5 × 3 Fact. in R.B.D. (ii) (a) 15. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 1/40 ac. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) Normal. (ii) Nil. (iii) Sucrose, glucose, fibre % and sugarcane yield. (iv) (a) 1950 to 1951. (b) No. (c) N.A. (v) (a) Nil. (b) Nil. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 45.31 ton/ac.

(ii) 8.75 ton/ac.

(iii) Main effect of B and interaction R × B are significant ; while main effect of R is not significant.

(iv) Av. yield of sugarcane in ton/ac.

	B <sub>1</sub>	B <sub>2</sub>	B <sub>3</sub>	Mean
R <sub>1</sub>	44.00	47.57	38.92	43.50
R <sub>2</sub>	41.97	44.76	43.79	43.51
R <sub>3</sub>	46.88	43.02	39.70	43.20
R <sub>4</sub>	49.35	55.84	44.61	49.93
R <sub>5</sub>	45.61	53.25	40.26	46.39
Mean	45.57	48.89	41.46	45.31

S.E. of marginal mean of B

= 1.96 ton/ac.

S.E. of marginal mean of R

= 2.53 ton/ac.

S.E. of body of table

= 4.38 ton/ac.

Crop :- Sugarcane.

Ref :- Mh. 50(101).

Site :- Agri. Res. Stn., Padegaon.

Type :- 'M'.

Object :- To find the optimum ratio of A/S and cake for top dressing N with basal manuring of compost.

## 1. BASAL CONDITIONS :

(i) (a) Sugarcane—*Jowar*. (b) Nil. (c) Nil. (ii) (a) 'B' type. (b) Refer soil analysis, Padegaon. (iii) N.A. (iv) (a) N.A. (b) N.A. (c) 10,000 setts/ac. (d) 4' apart. (e) N.A. (v) Nil. (vi) CO. 419 (mid-late). (vii) Irrigated. (viii) 2 interculturings, 2 weedings and 1 earthing. (ix) 22.91". (x) N.A.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 3 levels of compost as B.D :  $B_1=20$ ,  $B_2=40$  and  $B_3=60$  C.L./ac.(2) 5 ratios of A/S and cake to give 450 lb./ac. of N :  $R_1$ =Cake alone,  $R_2$ =A/S alone,  $R_3$ =A/S and Cake in 1 : 1,  $R_4$ =A/S and Cake in 1 : 2 and  $R_5$ =A/S and Cake in 2 : 1 ratio.

## 3. DESIGN :

(i)  $5 \times 3$  Fact in R.B.D. (ii) (a) 15. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 1/40 ac. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Nil. (iii) Brix, sucrose %, fibre % and sugarcane yield. (iv) (a) 1950—1954. (b) No. (c) N.A. (v) (a), (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 64.68 ton/ac.

(ii) 9.00 ton/ac.

(iii) Main effects of R and B and their interaction are significant.

(iv) Av yield of sugarcane in ton/ac.

	$B_1$	$B_2$	$B_3$	Mean
$R_1$	69.20	69.54	60.23	66.32
$R_2$	59.78	61.93	54.20	58.64
$R_3$	54.98	68.35	73.12	65.48
$R_4$	68.53	68.80	69.77	69.03
$R_5$	54.87	68.43	68.43	63.91
Mean	61.47	67.41	65.15	64.68

S.E. of marginal mean of B

=2.01 ton/ac.

S.E. of marginal mean of R

=2.59 ton/ac.

S.E. of body of table

=4.50 ton/ac.

Crop :- Sugarcane.

Ref :- Mh. 52(165).

Site :- Agri. Res. Stn., Padegaon.

Type :- 'M'.

Object :- To find the ratio of A/S and cake for top dressing N with basal manuring of compost.

## 1. BASAL CONDITIONS :

(i) (a) Sugarcane—*Ratoon*. (b) Sugarcane (*Adsali*). (c) As per treatments. (ii) (a) 'B' type. (b) Refer soil analysis, Padegaon. (iii) Ratooning on 12.2.1952. (iv) (a) N.A. (b) N.A. (c) 10,000 setts/ac. (d) 4' apart. (e) N.A. (v) Nil. (vi) CO. 419 (mid-late). (vii) Irrigated. (viii) 2 interculturings, 2 weedings and earthing up once. (ix) 11.01". (x) 28.3.1953.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 3 levels of compost as B.D. :  $B_1=20$ ,  $B_2=40$  and  $B_3=60$  C.L./ac.

(2) 5 ratios of A/S and cake to give 450 lb./ac. of N :  $R_1$ =Cake alone,  $R_2$ =A/S alone,  $R_3$ =A/S and Cake in 1 : 1,  $R_4$ =A/S and cake in 1 : 2 and  $R_5$ =A/S and Cake in 2 : 1 ratio.

Manures applied to last year's sugarcane crop.

## 3. DESIGN :

(i)  $5 \times 3$  Fact. in R.B.D. (ii) (a) 15. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 1/40 ac. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) Normal. (ii) Nil. (iii) Brix, glucose, sucrose %, and sugarcane yield. (iv) (a) 1950-1955. (b) Yes. (c) N.A. (v) (a), (b) N.A. (vi) Nil. (vii) This years *ratoon* crop received 300 lb./ac. of N as A/S and Cake in 2 : 1 ratio ; no basal dressing of compost was given.

## 5. RESULTS :

- (i) 52.32 ton/ac.  
 (ii) 7.77 ton/ac.  
 (iii) Main effects of R and B and their interaction are not significant.  
 (iv) Av. yield of sugarcane in ton/ac.

	$B_1$	$B_2$	$B_3$	Mean
$R_1$	54.59	56.53	54.13	55.08
$R_2$	49.12	48.14	39.59	45.61
$R_3$	51.78	57.50	53.45	54.24
$R_4$	59.78	52.32	51.71	54.60
$R_5$	47.78	54.38	53.94	52.03
Mean	52.61	53.83	50.56	52.32

S.E. of marginal mean of B = 1.74 ton/ac.

S.E. of marginal mean of R = 2.24 ton/ac.

S.E. of body of table = 3.88 ton/ac.

Crop :- Sugarcane.

Type :- Agri. Res. Stn., Padegaon.

Ref :- Mh. 52(13).

Type :- 'M'.

Object :- To find the optimum ratio of A/S and G.N.C. for top-dressing N with basal manuring of bulky manures.

## 1. BASAL CONDITIONS :

- (i) (a) Sugarcane (*Adsali*)—*Ratoon*—*Bajra* and Gram. (b) *Bajra* and Gram. (c) Nil. (ii) (a) 'B' type. (b) Refer soil analysis, Padegaon. (iii) 31.8.1952. (iv) (a) Deep ploughing 9" to 10" deep. (b) The buds of the sugarcane are exposed and allowed to germinate under soil. (c) to (e) N.A. (v) Nil. (vi) CO. 419. (vii) Irrigated. (viii) 2 to 3 hand weedings, 2 to 3 interculturings by tooth cultivators 8 to 10 weeks after planting. Partial tilling (*tagarni*) by *sabul* plough. Earthing up after a period of 5 to 5½ months. (ix) 15.35". (x) 20.1.1954.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 3 levels of compost as B.D. :  $B_1=20$ ,  $B_2=40$  and  $B_3=60$  C.L./ac.

(2) 5 ratios of A/S and G.N.C. to give 450 lb/ac. of N :  $R_1$ =G.N.C. alone,  $R_2$ =A/S alone,  $R_3$ =A/S and G.N.C. in 1 : 1,  $R_4$ =A/S and G.N.C. in 1 : 2 and  $R_5$ =A/S and G.N.C. in 2 : 1 ratio.

## 3. DESIGN :

(i) 5×3 Fact. in R.B.D. (ii) (a) 15. (b) N.A. (iii) 4. (iv) (a) 49'×36'. (b) 38.89'×28'. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) Good. Lodged during 2nd fortnight of May and August. (ii) Attack of stem and top shoot borers ; weekly collection of egg-masses of the borers, hand picking of moth with nets, trapping of moth and fortnightly removal of dead hearts. (iii) Germination counts, tillering counts, milleable and non-milleable sugarcane counts, botanical observations and sugarcane yield. (iv) (a) 1951-55: (b) and (c) No. (v) (a) and (b) No. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 72.15 ton/ac.  
 (ii) 7.85 ton/ac.  
 (iii) Main effect of R and B and their interaction are significant.  
 (iv) Av. yield of sugarcane in ton/ac.

	B <sub>1</sub>	B <sub>2</sub>	B <sub>3</sub>	Mean
R <sub>1</sub>	70.59	75.63	79.23	75.15
R <sub>2</sub>	58.09	67.56	72.19	65.94
R <sub>3</sub>	68.97	72.53	80.48	74.00
R <sub>4</sub>	70.58	80.39	73.77	74.91
R <sub>5</sub>	61.81	67.74	80.71	70.79
Mean	66.01	72.77	77.27	72.15

S.E. of marginal mean of B = 1.75 ton/ac.

S.E. of marginal mean of R = 3.27 ton/ac.

S.E. of body of table = 3.93 ton/ac.

Crop :-Sugarcane (*Ad sali*).

Ref :-Mh. 53(262).

Site :-Agri. Res. Stn., Padegaon.

Type :-'M'.

Object : -To find the optimum ratio of A/S and G.N.C. for top-dressing N with basal manuring of F.Y.M.

## 1. BASAL CONDITIONS :

(i) (a) Sugarcane (*Ad sali*)—Ratoon—Paddy—Gram and Bajra. (b) Gram and Bajra. (c) N.A. (ii) (a) Medium black. (b) Refer soil analysis, Padegaon. (iii) 22.7.1953. (iv) (a) Deep ploughing 1, 2 ploughings across the first 9" to 10" deep. (b) N.A. (c) 10,000 setts/ac. of 3 buds. (d) and (e) N.A. (v) Nil. (vi) CO. 419. (vii) Irrigated. (viii) 2 to 3 hand weedings, 2 to 3 interculturings by tooth cultivators 8 to 10 weeks after planting, partial tilling. Earthing up after a period of 5 to 5½ months. (ix) 20.16". (x) 6, 12.12.1954.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 3 levels of F.Y.M. as B.D. : B<sub>1</sub>=20, B<sub>2</sub>=40 and B<sub>3</sub>=60 C.L./ac.

(2) 5 ratios of N as A/S and G.N.C. : R<sub>1</sub>=0 : 1, R<sub>2</sub>=1 : 1, R<sub>3</sub>=1 : 2, R<sub>4</sub>=2 : 1 and R<sub>5</sub>=1 : 0.

N at 450 lb./ac. applied as top-dressing.

## 3. DESIGN :

(i) 3×5 Fact. in R.B.D. (ii) (a) 15. (b) N.A. (iii) 4. (iv) (a) 54.44'×32'. (b) 45.44'×24'. (v) Two rows all round the net plot. (vi) Yes.

## 4. GENERAL :

(i) Good, crop lodged by the end of June. (ii) Attack of stem and top shoot borers; weekly collection of egg-masses, hand picking, light trapping of moth and fortnightly removal of dead hearts. (iii) Yield of sugarcane. (iv) (a) 1951-55. (b) and (c) No. (v) (a) and (b) No. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 64.67 ton/ac.  
 (ii) 6.22 ton/ac.  
 (iii) Main effects of B and R are significant while their interaction is not significant.  
 (iv) Av. yield of sugarcane in ton/ac.

	B <sub>1</sub>	B <sub>2</sub>	B <sub>3</sub>	Mean
R <sub>1</sub>	66.14	73.82	67.34	69.10
R <sub>2</sub>	60.90	69.58	65.38	65.29
R <sub>3</sub>	63.68	65.95	69.55	66.39
R <sub>4</sub>	58.30	61.79	60.86	60.32
R <sub>5</sub>	56.76	65.61	64.39	62.25
Mean	61.16	67.35	65.50	64.67

S.E. of marginal mean of B = 1.38 ton/ac.

S.E. of marginal mean of R = 1.78 ton/ac.

S.E. of body of table = 3.09 ton/ac.

Crop :- Sugarcane (*Adsali*).

Ref :- Mh. 51(139).

Site :- Agri. Res. Stn., Padegaon.

Type :- 'M'.

Object :- To find the optimum ratio of A/S and Cake for top dressing N with basal manuring of compost.

## 1. BASAL CONDITIONS :

(i) (a) Sugarcane—*Jowar*. (b) *Jowar*. (c) Nil. (ii) (a) 'B' type. (b) Refer soil analysis, Padegaon. (iii) 30.8.1951. (iv) (a) N.A. (b) N.A. (c) 10,000 setts/ac. (d) 4' apart. (e) N.A. (v) Nil. (vi) CO. 419 (mid-late). (vii) Irrigated. (viii) 2 interculturings, 2 weedings and 1 earthing up. (ix) 11.01° (x) 28.1.1953.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 3 levels of compost as B.D. : B<sub>1</sub>=20, B<sub>2</sub>=40 and B<sub>3</sub>=60 C.L./ac.

(2) 5 ratios of A/S and Cake to give 450 lb./ac. of N: R<sub>1</sub>=Cake alone, R<sub>2</sub>=A/S alone, R<sub>3</sub>=A/S and Cake in 1 : 1, R<sub>4</sub>=A/S and Cake in 1 : 2 and R<sub>5</sub>=A/S and Cake in 2 : 1 ratio.

## 3. DESIGN :

(i) 3×5 Fact. in R.B.D. (ii) (a) 15. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 1/40 ac. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Nil. (iii) Brix, sucrose, glucose % and sugarcane yield. (iv) (a) 1950-1954. (b) No. (c) N.A. (v) (a), (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 70.62 ton/ac.  
 (ii) 10.47 ton/ac.  
 (iii) Main effect of R and interaction R×B are significant while the main effect of B is not significant.

(iv) Av. yield of sugarcane in ton/ac.

	B <sub>1</sub>	B <sub>2</sub>	B <sub>3</sub>	Mean
R <sub>1</sub>	69.39	66.38	64.68	66.82
R <sub>2</sub>	62.18	64.65	63.64	63.49
R <sub>3</sub>	73.25	79.00	71.61	74.62
R <sub>4</sub>	71.01	76.87	79.21	75.69
R <sub>5</sub>	68.25	81.83	67.31	72.46
Mean	68.81	73.75	69.29	70.62

S.E. of marginal mean of B = 2.34 ton/ac.  
 S.E. of marginal mean of R = 3.02 ton/ac.  
 S.E. of body of table = 5.23 ton/ac.

Crop :- Sugarcane.

Ref :- Mh. 53(245).

Site :- Agri. Res. Stn., Padegaon.

Type :- 'M'.

Object :—To find the optimum combination of A/S and G.N.C. for top dressing N with basal manuring of compost.

## 1. BASAL CONDITIONS :

(i) (a) Sugarcane—*Ratoon*. (b) *Adsali* sugarcane. (c) As per treatments. (ii) (a) 'B' type. (b) Refer soil analysis, Padegaon. (iii) *ratoon*, 28.1.1953. (iv) (a) N.A. (b) N.A. (c) 10,000 setts/ac. (d) 4' apart. (e) N.A. (v) Nil. (vi) CO. 419 (mid-late). (vii) Irrigated. (viii) 2 interculturings, 2 weedings and 1 earthing up. (ix) 16.35". (x) 18.5.1954.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 3 levels of compost as B.D. : B<sub>1</sub>=20, B<sub>2</sub>=40 and B<sub>3</sub>=60 C.L./ac.(2) 5 ratios of A/S and cake to give 450 lb./ac. of N : R<sub>1</sub>=Cake alone, R<sub>2</sub>=A/S alone, R<sub>3</sub>=A/S and Cake in 1 : 1, R<sub>4</sub>=A/S and Cake in 1 : 2 and R<sub>5</sub>=A/S and Cake in 2 : 1 ratio.These were applied to last year's *adsali* crop.

## 3. DESIGN :

(i) 5×3 Fact. in R.B.D. (ii) (a) 15. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 1/40 ac. (v) N.A. (vi) Yes

## 4. GENERAL :

(i) Normal. (ii) Nil. (iii) Brix, sucrose, glucose % and sugarcane yield. (iv) (a) 1950—1955. (b) Yes. (c) N.A. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 50.32 ton/ac.

(ii) 6.63 ton/ac.

(iii) Main effect of B alone is significant.

(iv) Av. yield of sugarcane in ton/ac.

	B <sub>1</sub>	B <sub>2</sub>	B <sub>3</sub>	Mean
R <sub>1</sub>	49.13	52.87	57.01	53.00
R <sub>2</sub>	43.55	47.71	52.02	47.76
R <sub>3</sub>	46.86	48.75	50.28	48.63
R <sub>4</sub>	53.23	53.94	54.47	53.88
R <sub>5</sub>	48.18	49.09	47.69	48.32
Mean	48.19	50.47	52.29	50.32

S.E. of marginal mean of B = 1.48 ton/ac.  
 S.E. of marginal mean of R = 1.91 ton/ac.  
 S.E. of body of table = 3.31 ton/ac.

Crop :- Sugarcane.  
Site :- Agri. Res. Stn., Padegaon.

Ref :- Mh. 52(162).  
Type :- 'M'.

Object :—To study the effect of C/N and A/S along with G.N.C. on growth and maturity of Sugarcane.

1. BASAL CONDITIONS :

(i) (a) Sugarcane-Jowar. (b) Jowar. (c) Nil. (ii) (a) 'B' type. (b) Refer soil analysis, Padegaon. (iii) 2.2.1952. (iv) (a) N.A. (b) N.A. (c) 10,000 setts/ac. (d) 4' apart. (e) N.A. (v) Nil. (vi) CO. 419 (mid-late). (vii) Irrigated. (viii) 2 inerculturings, 2 weedings and 1 earthing up. (ix) 11.01°. (x) 20.2.1953.

2. TREATMENTS :

300 lb./ac. of N applied as follows :—

1. C/N and A/S in 1 : 2 ratio.
2. A/S and G.N.C. in 1 : 2 ratio.
3. C/N and G.N.C. in 1 : 1 ratio.
4. A/S and G.N.C. in 1 : 1 ratio.
5. C/N and G.N.C. + A/S in 1 : 1 : 2 ratio applied at one time.
6. C/N and G.N.C. + A/S in 1 : 1 : 2 ratio with A/S applied at planting and C/N and G.N.C. at earthing up,

3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 192 sq. ft. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Not satisfactory. (ii) Nil. (iii) Sucrose, glucose, fibre % and sugarcane yield. (iv) (a) 1952 to 1954. (b) No. (c) N.A. (v) (a) N.A. (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

- (i) 31.81 ton/ac.  
(ii) 7.20 ton/ac.  
(iii) Treatments do not differ significantly.  
(iv) Av. yield of sugarcane in ton/ac.

Treatment	Av. yield
1.	35.55
2.	30.76
3.	33.93
4.	33.50
5.	30.66
6.	26.46
S.E./mean	=3.60 ton/ac.

Crop :- Sugarcane.  
Site :- Agri. Res. Stn., Padegaon.

Ref :- Mh. 53(242).  
Type :- 'M'.

Object :—To study the effect of C/N and A/S along with G.N.C. on growth and maturity of Sugarcane.

1. BASAL CONDITIONS :

(i) (a) Sugarcane-Jowar. (b) Jowar. (c) Nil. (ii) (a) 'B' type. (b) Refer soil analysis, Padegaon. (iii) 8.2.1953. (iv) (a) to (e) N.A. (v) 20 C.L./ac. of F.Y.M. (vi) CO. 419 (mid-late). (vii) Irrigated. (viii) 2 inerculturings, 2 weedings and 1 earthing up. (ix) 16.35°. (x) 11.5.1954.

2. TREATMENTS :

300 lb./ac. of N applied as follows :—

1. A/S+G.N.C. in 1 : 2 ratio.
2. C/N+G.N.C. in 1 : 2 ratio.
3. A/S+G.N.C. in 1 : 1 ratio.
4. C/N+G.N.C. in 1 : 1 ratio.
5. A/S+G.N.C.+C/N in 1 : 1 : 2 ratio.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 4. (iv) (a) 30'×32'. (b) 26'×24'. (v) 2' length wise and 4' breadth wise. (vi) Yes.

## 4. GENERAL :

(i) Good (ii) Nil. (iii) Sucrose, glucose, fibre % and sugarcane yield. (iv) (a) 1952 to 1954. (b) No. (c) N.A. (v) (a) N.A. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 55.51 ton./ac.

(ii) 9.10 ton/ac.

(iii) Treatments do not differ significantly.

(iv) Av. yield of sugarcane in ton/ac.

Treatment	Av. yield
1.	60.33
2.	55.65
3.	57.04
4.	52.90
5.	51.64
S.E./mean	=4.55 ton/ac.

Crop :- Sugarcane

Site :- Agri. Res. Stn., Padegaon.

Ref :- Mh. 50(100).

Type :- 'M'.

Object :—To study the effect of placement of  $P_2O_5$  with *Sann* as basal manuring on Sugarcane yield.

## 1. BASAL CONDITIONS :

(i) (a) Sugarcane-*Jowar*. (b) N.A. (c) N.A. (ii) (a) 'B' type ; medium deep. (b) Refer soil analysis, Padegaon. (iii) 14.12.1950. (iv) (a) N.A. (b) N.A. (c) 10,000 setts/ac. (d) 4' apart. (e) N.A. (v) *Sann* as G.M. 375 lb./ac. of N top dressed as A/S and cake in 1 : 2 ratio. (vi) CO. 419 (mid-late). (vii) Irrigated. (viii) 2 interculturings, 2 weedings and 1 earthing up. (ix) 14.68". (x) 15.4.1952.

## 2. TREATMENTS :

1. No  $P_2O_5$ .

2. 100 lb./ac. of  $P_2O_5$  at surface.

3. 100 lb./ac. of  $P_2O_5$  half way down the ridge.

4. 100 lb./ac. of  $P_2O_5$  at the base of the ridge.

5. 100 lb./ac. of  $P_2O_5$  applied to *sann* crop while sowing.

6. 50 lb./ac. of  $P_2O_5$  at sowing of *sgnn* and 50 lb./ac. of  $P_2O_5$  in furrows at planting of sugarcane.

7. 100 lb./ac. of  $P_2O_5$  at the time of burrying *sann*.

8. 100 lb./ac. of  $P_2O_5$  and 100 lb./ac. of  $K_2O$  to Sugarcane crop at surface,

For treatments 2, 3, 4 and 8,  $P_2O_5$  applied before planting of sugarcane.  $P_2O_5$  applied as Super and  $K_2O$  as Pot. Sul.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 8. (b) N.A. (iii) 5. (iv) (a) N.A. (b) 1/40 ac. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) Normal. (ii) Nil. (iii) Brix, sucrose %, fibre % and sugarcane [yield. (iv) (a) 1950—contd. (modified in 1954). (b) and (c) No. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 45.11 ton/ac.

(ii) 3.08 ton/ac.

(iii) Treatment differences are significant.



## (iv) Av. yield of sugarcane in ton./ac.

Treatment	Av. yield
1.	41.71
2.	48.06
3.	50.64
4.	44.56
5.	46.28
6.	46.33
7.	39.80
8.	43.47
S.E./mean	= 1.37 ton./ac.

Crop :- Sugarcane.

Ref :- Mh. 51(138).

Site :- Agri. Res. Stn., Padegaon.

Type :- 'M'.

Object :- To study the effect of placement of  $P_2O_5$  with *Sann* as basal manuring on Sugarcane yield.

## 1. BASAL CONDITIONS :

(i) (a) Sugarcane—*Jowar*. (b) *Jowar*. (c) Nil. (ii) (a) Medium soil, 'B' type. (b) Refer soil analysis, Padegaon. (iii) 16.11.1951. (iv) (a) and (b) N.A. (c) 10,000 sett/ac. (d) 4' apart. (e) N.A. (v) *Sann* was burried in June. (vi) CO.419 (mid-late). (vii) Unirrigated. (viii) 2 interculturings, 2 weedings and 1 earthing up. (ix) 11.01". (x) 23 2.1953.

## 2. TREATMENTS :

1. No  $P_2O_5$ .
2. 100 lb./ac. of  $P_2O_5$  at surface.
3. 100 lb./ac. of  $P_2O_5$  half way down the ridge.
4. 100 lb./ac. of  $P_2O_5$  at the base of the ridge.
5. 100 lb./ac. of  $P_2O_5$  applied to *sann* crop while sowing.
6. 50 lb./ac. of  $P_2O_5$  at the time of sowing *sann* +50 lb./ac. of  $P_2O_5$  in furrows at planting of sugarcane.
7. 100 lb./ac. of  $P_2O_5$  at the time of burrying *sann*.
8. 100 lb./ac. of  $P_2O_5$  + 100 lb./ac. of  $K_2O$  at surface.

## 3. DESIGN :

(i) R.B.D. (ii) 8. (b) N.A. (iii) 5. (iv) (a) N.A. (b) 1/40th of an acre. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) Normal. (ii) Nil. (iii) Brix, sucrose, glucose% and sugarcane yield. (iv) (a) 1950—contd. (Modified in 1954). (b) and (c) No. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 50.62 ton/ac.
- (ii) 4.92 ton/ac.
- (iii) Treatments differ significantly.
- (iv) Av. yield of sugarcane in ton/ac.

Treatment	Av. yield
1.	41.92
2.	48.44
3.	56.09
4.	53.71
5.	49.78
6.	51.13
7.	50.62
8.	53.29
S.E./mean	= 2.19 ton/ac.

Crop :- Sugarcane.  
Site :- Agri. Res. Stn., Padegaon.

Ref :- Mh. 52(14).  
Type :- 'M'.

Object :—To study effect of placement of  $P_2O_5$  with *Sann* as basal manuring on Sugarcane yield.

1. BASAL CONDITIONS :

(i) (a) Sugarcane—*Rabi Jowar—Sann*. (b) *Sann*. (c) As per treatments. (ii) (a) 'B' type. (b) Refer soil analysis, Padegaon. (iii) 26.11.1952. (iv) (a) Deep ploughing 9" to 10" deep. (b) The buds of the sugarcane are exposed and allowed to germinate under soil. (c) to (e) N.A. (v) 375 lb./ac. of N as A/S and G.N.C. in 1 : 2 ratio. (vi) CO.419. (vii) Irrigated. (viii) 2 to 3 hand weedings, 2 to 3 interculturings by tooth cultivators, 8 to 10 weeks after planting, partial tilling and earthing up after a period of 5 to 5½ months. (ix) 15.35". (x) 9.3.1954.

2. TREATMENTS :

1. No  $P_2O_5$ .
2. 100 lb./ac. of  $P_2O_5$  on the surface.
3. 100 lb./ac. of  $P_2O_5$  half way down the ridge.
4. 100 lb./ac. of  $P_2O_5$  at the base of the ridge.
5. 100 lb./ac. of  $P_2O_5$  applied to *Sann* crop while sowing.
6. 50 lb./ac. of  $P_2O_5$  at the time of sowing of *Sann* and 50 lb./ac. in furrows at the time of planting of sugarcane.
7. 100 lb./ac. of  $P_2O_5$  at the time of burrying *Sann*.
8. 100 lb./ac. of  $P_2O_5$  + 100 lb./ac. of  $K_2O$  at the time of planting.

3. DESIGN :

(i) R.B.D. (ii) (a) 8. (b) N.A. (iii) 5. (iv) (a) 54.44' × 32'. (b) 45.44' × 24'. (v) Two rows. (vi) Yes.

4. GENERAL :

(i) Good, crop lodged during the 2nd fortnight of October. (ii) Attack of stem and top shoot borers, collection of egg-masses, hand picking of moths with nets, light trapping of moths and fortnightly removal of dead hearts. (iii) Germination counts, tillering count, botanical observations, millable and non-millable sugarcane counts and cane yield. (iv) (a) 1950—N.A. (b) No. (c) N.A. (v) (a) and (b) No. (vi) and (vii) Nil.

5. RESULTS :

- (i) 58.86 ton/ac.  
(ii) 5.10 ton/ac.  
(iii) Treatments do not differ significantly.  
(iv) Av. yield of sugarcane in ton/ac.

Treatment	Av. yield
1.	55.58
2.	59.44
3.	61.47
4.	58.05
5.	57.91
6.	58.65
7.	61.04
8.	58.75
S.E./mean	= 2.28 ton/ac.

Crop :- Sugarcane.  
Site :- Agri. Res. Stn., Padegaon.

Ref :- Mh. 53(183).  
Type :- 'M'.

Object :—To study the time and the method of application of  $P_2O_5$  with basal manuring of *Sann* on Sugarcane yield.

1. BASAL CONDITIONS :

(i) (a) Sugarcane—*Rabi Jowar—Sann*. (b) *Sann*. (c) As per treatments. (ii) (a) Medium black. (b) Refer soil analysis, Padegaon. (iii) 16.11.1953. (iv) (a) Deep ploughing and 2nd ploughing across the first 9" and 10" deep harrowing. (b) N.A. (c) 10,000 setts/ac. of 3 buds. (d) and (e) N.A. (v) 375 lb./ac. of N as A/S and G.N.C. in 1 : 2 ratio. (vi) CO.419. (vii) Irrigated. (viii) 2 to 3 weedings, 2 to 3 interculturings by tooth cultivators, 8 to 10 weeks after planting and partial tilling. Earthing up after a period of 5 to 5½ months. (ix) 20.16". (x) 3 to 5.2.1955.

## 2. TREATMENTS :

1. No  $P_2O_5$ .
2. 100 lb./ac. of  $P_2O_5$  at surface.
3. 100 lb./ac. of  $P_2O_5$  half way down the ridge.
4. 100 lb./ac. of  $P_2O_5$  at the base of the ridge.
5. 100 lb./ac. of  $P_2O_5$  applied to *Sann* crop while sowing.
6. 50 lb./ac. of  $P_2O_5$  at the time of sowing of *Sann* and 50 lb./ac. in furrows at the time of planting.
7. 100 lb./ac. of  $P_2O_5$  at the time of burrying *Sann*.
8. 100 lb./ac. of  $P_2O_5$  + 100 lb./ac. of  $K_2O$  at the time of planting of sugarcane.  
 $P_2O_5$  as Super and  $K_2O$  as Mur. of Pot.

## 3. DESIGN :

- (i) R.B.D. (ii) (a) 8. (b) N.A. (iii) 5. (iv) 54.44' × 32'. (b) 45.44' × 24'. (v) 2 rows all round the net plot. (vi) Yes.

## 4. GENERAL :

- (i) Good, crop lodged during the 2nd fortnight of October. (ii) Atrack of stem and top shoot borers, collection of egg masses, hand picking of moths with nets, light trapping of moths and fortnightly removal of dead hearts. (iii) Sugarcane yield. (iv) (a) 1953—N.A. (b) No. (c) N.A. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 57.10 ton/ac.  
(ii) 4.00 ton/ac.  
(iii) Treatments do not differ significantly.  
(iv) Av. yield of sugarcane in ton/ac.

Treatment	Av. yield
1.	53.90
2.	57.60
3.	55.80
4.	55.70
5.	60.10
6.	59.10
7.	56.30
8.	57.90
S.E./mean	= 1.79 ton/ac.

Crop :- Sugarcane (*Adsali*).

Ref :- Mh. 51(137).

Site :- Agri Res. Stn., Padegaon.

Type :- 'M'.

Object :- To study the effect of placement of  $P_2O_5$  in combination with varying doses of N on yield of Sugarcane.

## 1. BASAL CONDITIONS :

- (i) (a) Sugarcane—*Jowar*. (b) *Jowar*. (c) Nil. (ii) (a) Deep soil of alluvial nature. (b) Refer soil analysis, Padegaon. (iii) 14.8.1951. (iv) (a) and (b) N.A. (c) 10,000 setts/ac. (d) 4' apart. (e) N.A. (v) Nil. (vi) CO. 419 (mid-late). (vii) Irrigated. (viii) 2 interculturings, 2 weedings and 1 earthing up. (ix) 14.68°. (x) 7.2.1953.

## 2. TREATMENTS :

## Main-plot treatments :

All combinations of (1) and (2) + One extra treatment

- (1) 3 levels of  $P_2O_5$  as Super :  $P_0=0$ ,  $P_1=75$  and  $P_2=150$  lb./ac.  
(2) 3 methods of application of Super :  $M_1$ =Placement at surface,  $M_2$ =Placement 3" below the surface and  $M_3$ =Placement 6" below the surface.

## Extra treatment is :

150 lb./ac. of  $P_2O_5$  applied in two doses half at planting and half at earthing up.

## Sub-plot treatments :

2 levels of N :  $N_1=450$  lb./ac. of N as A/S and G.N.C. in 1 : 2 ratio and  $N_2=600$  lb./ac. of N as A/S and G.N.C. in 1 : 2 ratio.

## 3. DESIGN :

(i) Split-plot. (ii) (a) 10 main-plots/block ; 2 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 1 *guntha*. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Nil. (iii) Sugarcane yield. (iv) (a) 1950—1953. (b) No. (c) N.A. (v) (a) Kopergaon and Akluj. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 60.08 ton/ac.  
 (ii) (a) 7.88 ton/ac.  
 (b) 9.08 ton/ac.  
 (iii) None of the effects and their interaction are significant.  
 (iv) Av yield of sugarcane in ton/ac.

	N <sub>1</sub>	N <sub>2</sub>	Mean
P <sub>0</sub>	60.13	58.33	59.23
P <sub>1</sub> M <sub>1</sub>	64.00	58.90	61.45
P <sub>2</sub> M <sub>1</sub>	61.40	61.90	61.65
P <sub>1</sub> M <sub>2</sub>	52.20	58.60	55.40
P <sub>2</sub> M <sub>2</sub>	61.10	56.40	58.75
P <sub>1</sub> M <sub>3</sub>	62.50	57.30	59.90
P <sub>2</sub> M <sub>3</sub>	66.40	63.60	65.00
Extra treatment	53.10	68.70	60.90
Mean	60.10	60.04	

S.E. of P <sub>0</sub> marginal mean	=1.61 ton/ac.
S.E. of any other main-plot marginal mean	=2.79 ton/ac.
S.E. of N <sub>1</sub> marginal mean	=1.44 ton/ac.
S.E. of difference of two	
1. means in the same row (except first row)	=6.42 ton/ac.
2. means in the same column (except P <sub>0</sub> )	=6.01 ton/ac.

Crop :-Sugarcane.

Ref :-Mh. 52(164).

Site :-Agri. Res. Stn., Padegaon.

Type :-'M'.

Object :—To study the effect of placement of P<sub>2</sub>O<sub>5</sub> in combination with different doses of N on Sugarcane crop.

## i. BASAL CONDITIONS :

(i) (a) Sugarcane—*Rabi Jowar*. (b) *Rabi Jowar*. (c) Nil. (ii) (a) Alluvial type ; deep soil. (b) Refer soil analysis, Padegaon. (iii) 29.7.1952. (iv) (a) Deep ploughing 9" to 10" deep. (b) N.A. (c) 10,000 setts/ac. (d) 4' apart. (e) N.A. (v) 20 C.L. of compost at the time of opening of furrows. (vi) CO. 419 (mid-late). (vii) Irrigated. (viii) 2 to 3 interculturings by tooth cultivators 8 to 10 weeks after planting, 2 to 3 hand weedings. Partial tilling by *sabul* plough after a period of 3½ to 4 months. Earthing up after a period of 5 to 5½ months. (ix) 15.35". (x) 6.1.1954.

## 2. TREATMENTS :

Main-plot treatments :

All combinations of (1) and (2) + one extra treatment.

(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 methods of application of Super : M<sub>1</sub>=Placement at surface, M<sub>2</sub>=Placement at 3" below surface and M<sub>3</sub>=Placement at 6" below surface.

## Extra treatment :

150 lb./ac. of  $P_2O_5$  applied in two doses half at planting and half at earthing up.

## Sub-plot treatments :

2 levels of N :  $N_1=450$  lb./ac. of N as A/S and G.N.C. in 1: 2 ratio and  $N_2=600$  lb./ac. of N as A/S and G.N.C. in 1: 2 ratio.

## 3. DESIGN :

(i) Split-plot. (ii) (a) 10 main-plots/block ; 2 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 54.44' x 32'. (b) 45.44' x 24'. (v) Two rows on either side. (vi) Yes.

## 4. GENERAL :

(i) Good ; lodging in 2nd fortnight of May. (ii) Attack of stem and top-shoot borers ; weekly collection of egg-masses of the borer, hand picking with nets, light trapping and fortnightly removal of dead hearts. (iii) Germination counts, tillering counts, botanical observations milled and non-milled sugarcane counts. (iv) (a) 1950—53. (b) No. (c) N.A. (v) (a) Kopergaon and Akluj. (b) Nil (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 79.39 ton/ac.  
 (ii) (a) 10.13 ton/ac.  
 (b) 7.47 ton/ac.  
 (iii) None of the effects and their interaction are significant.  
 (iv) Av. yield of sugarcane in ton/ac.

	$N_1$	$N_2$	Mean
$P_0$	77.19	72.06	74.62
$P_1M_1$	81.34	83.76	82.50
$P_2M_1$	78.33	81.22	79.77
$P_1M_2$	74.33	76.20	75.27
$P_2M_2$	78.62	83.13	80.87
$P_1M_3$	80.62	86.82	83.72
$P_2M_3$	82.75	86.76	84.76
Extra treatment	83.25	83.05	83.15
Mean	79.08	79.71	

S.E. of  $P_0$  marginal mean = 2.07 ton/ac.

S.E. of any other main-plot marginal mean = 3.58 ton/ac.

S.E. of N marginal mean = 1.18 ton/ac.

S.E. of difference of two

1. means in the same row (except 1st row) = 5.28 ton/ac

2. means in the same column (except  $P_0$ ) = 6.29 ton/ac.

Crop :- Sugarcane (*Adsali*).

Ref :- Mh. 53(243).

Site :- Agri. Res. Stn., Padegaon.

Type :- 'M'.

Object—To study the effect of placement of super in combination with different doses of N.

## 1. BASAL CONDITIONS :

(i) (a) *Adsali* sugarcane — *Rabi Jowar*. (b) *Rabi Jowar*. (c) Nil. (ii) (a) Alluvial type ; deep soil. (b) Refer soil analysis, Padegaon. (iii) 21.8.1953. (iv) (a) deep ploughing 9" to 10" deep. (b) N.A. (c) 10,000 setts/ac. (d) 4' apart. (e) N.A. (v) Nil (vi) CO. 419. (vii) Irrigated: (viii) 2 to 3 hand weeding 2 to 3 interculturings by tooth cultivators 8 to 10 week after planting, partial tillering (*tagarni*) by *sabul* plough after 3½ to 4 months. Earthing up after a period of 5 to 5½ months. (ix) 20.16". (x) 20, 27.12.1954.

## 2. TREATMENTS :

## Main-plot treatments :

All combinations of (1) and (2) + one extra treatment.

(1) 3 levels of  $P_2O_5$  :  $P_0=0$ ,  $P_1=75$  and  $P_2=150$  lb./ac.

(2) 3 methods of application of Super :  $M_1$ =placement at surface,  $M_2$ =Placement at 3" below surface and  $M_3$ =Placement at 6" below surface.

## Extra treatment :

150 lb./ac. of  $P_2O_5$  applied in two doses half at planting and half at earthing up.

## Sub-plot treatments :

2 levels of N :  $N_1=450$  lb./ac. of N as A/S and G.N.C. and  $N_2=600$  lb./ac. of N as A/S and G.N.C. in 1 : 2 ratio.

## 3. DESIGN :

(i) Split-plot. (ii) (a) 10 main-plots/block ; 2 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 54.44' x 32'. (b) 45.44' x 24'. (v) Two rows (one on either side). (vi) Yes.

## 4. GENERAL :

(i) Good, crop lodged by 2nd fortnight of June and August. (ii) Attack of stem and top-shoot borer, weekly collection of egg-masses of the borer, hand picking with nets, light trapping and fortnightly removal of dead hearts. (iii) Germination counts, tillering counts, botanical observations mileable and non-milleable Sugarcane count sugarcane yield. (iv) (a) 1950—1953. (b) No. (c) N.A. (v) (a) Kopergaon and Akluj. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 54.50 ton/ac.

(ii) (a) 7.75 ton/ac.

(b) 5.90 ton/ac.

(iii) None of the effects and their interaction are significant.

(iv) Av. yield of sugarcane in ton/ac.

	$N_1$	$N_2$	Mean
$P_0$	53.15	52.50	52.82
$P_1M_1$	48.59	53.74	51.16
$P_2M_1$	58.21	51.63	54.92
$P_1M_2$	55.78	52.38	54.08
$P_2M_2$	53.74	50.02	51.88
$P_1M_3$	59.68	56.38	58.03
$P_2M_3$	58.73	60.45	59.59
Extra treatment	57.44	56.18	56.81
Mean	55.16	53.83	

S.E. of  $P_0$  marginal mean

=1.50 ton/ac.

S.E. of any other main-plot marginal mean

=2.74 ton/ac.

S.E. of N marginal mean

=0.93 ton/ac.

S.E. of difference of two

1. means in the same row (except 1st row)

=4.17 ton/ac.

2. means in the same column (except  $P_0$ )

=4.87 ton/ac.

Crop :- Sugarcane (*Adsali*).

Ref :- Mh. 50(120).

Site Agri. Res. Stn., Padegaon.

Type :- 'M'.

Object :—To find the optimum dose of N and K and method of placement of Super with and without compost.

## 1. BASAL CONDITIONS :

(i) (a) Sugarcane—*Jowar*. (b) *Jowar*. (c) Nil. (ii) (a) 'B' type. (b) Refer soil analysis, Padegaon. (iii) 2.12.1950. (iv) (a) 1 ploughing and 1 harrowing. (b) N.A. (c) 10,000 setts/ac. (d) 4' apart. (e) N.A. (v) Nil. (vi) CQ. 4.19 (mid-late). (vii) Irrigated. (viii) 3 interculturations, 4 weedings and 1 earthing up. (ix) 14.68" in 1951-1952. (x) 2.4.1952.

## 2. TREATMENTS :

All combinations of (1), (2), (3) and (4)

(1) 2 levels of compost :  $C_0=0$  and  $C_1=20$  C.L./ac.

(2) 2 sources of N :  $S_1=A/S$ ,  $S_2=A/S+Cake$  in 1 : 2. ratio N top dressed at 375 lb./ac. of N.

(3) 2 levels of K :  $K_0=0$  and  $K_1=100$  lb./ac.

(4) 4 methods of application of  $P_2O_5$  :  $M_0=No P_2O_5$ ,  $M_1=100$  lb./ac. of  $P_2O_5$  at surface,  $M_2=100$  lb./ac. of  $P_2O_5$  at half way down the ridge and  $M_3=100$  lb./ac. of  $P_2O_5$  at the base of the ridge.

$P_2O_5$  as Super and  $K_2O$  as Pot. Sul.

## 3. DESIGN :

(i)  $2^3 \times 4$  Fact. in R.B.D. (ii) (a) 32. (b) N.A. (iii) 3. (iv) (a) N.A. (b) 1/40 ac. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Nil. (iii) Brix, sucrose, glucose, fibre % and sugarcane yield. (iv) (a) 1950—N.A. (b) and (c) No. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 54.17 ton/ac.

(ii) 5.94 ton/ac.

(iii) Main effect of M and interaction  $M \times C$ ,  $S \times C$ ,  $S \times M$  and  $M \times K$  are significant. Other effects and interactions are not significant.

(iv) Av. yield of sugarcane in ton/ac.

	$M_0$	$M_1$	$M_2$	$M_3$	$S_1$	$S_2$	$K_0$	$K_1$	Mean
$C_0$	49.39	55.81	55.57	52.76	51.08	55.69	55.43	54.50	53.38
$C_1$	54.32	56.09	57.93	51.52	55.22	54.71	52.40	54.36	54.97
Mean	51.85	55.95	56.75	52.14	53.15	55.20	53.91	54.43	54.17
$K_0$	51.72	55.13	57.64	51.14	53.24	54.58			
$K_1$	51.98	56.77	55.86	53.14	53.06	55.82			
$S_1$	50.94	54.01	55.59	52.06					
$S_2$	52.76	57.90	57.91	52.22					

S.E. of marginal mean of S, C or K = 0.86 ton/ac.

S.E. of marginal mean of M = 1.22 ton/ac.

S.E. of body of  $S \times M$ ,  $C \times M$  or  $K \times M$  table = 1.72 ton/ac.

S.E. of body of  $S \times C$ ,  $S \times K$  or  $C \times K$  table = 1.22 ton/ac.

Crop :- Sugarcane.

Site :- Agri Res. Stn., Padegaon.

Ref :- Mh. 51 (163)

Type :- 'M'.

Object :- To find the optimum doses of N and K and method of placement of Super with and without compost.

## 1. BASAL CONDITIONS :

(i) (a) Sugarcane—Jowar. (b) Jowar. (c) Nil. (ii) (a) 'B' type. (b) Refer soil analysis, Padegaon. (iii) 14-11-51. (iv) (a) 1 Ploughing, and harrowing. (b) N.A. (c) 10,000 setts/ac. (d) 4' apart. (e) N.A. (v) Nil. (vi) CO. 419 (mid-late). (vii) Irrigated. (viii) 3 weedings, 3 interculturings and 1 earthing up. (ix) 11.01" in 1952-53. (x) 26.2.1953

## 2. TREATMENTS :

All combinations of (1), (2), (3) and (4)

(1) Two levels of compost :  $C_0=0$  and  $C_1=20$  C.L./ac.

(2) Two sources of N :  $S_1=A/S$ ,  $S_2=A/S$  and Cake in 1 : 2 ratio. N top dressed at 375 lb./ac. of N.

(3) Two levels of K :  $K_0=0$ ,  $K_1=100$  lb./ac. of  $K_2O$ .

(4) 4 methods of application of  $P_2O_5$  :  $M_0=No$   $P_2O_5$ ,  $M_1=100$  lb./ac.  $P_2O_5$  at surface,  $M_2=100$  lb./ac. of  $P_2O_5$  at half way down the ridge and  $M_3=100$  lb./ac. of  $P_2O_5$  at the base of the ridge.

$P_2O_5$  as Super and  $K_2O$  as Pot. Sul.

## 3. DESIGN :

(i)  $2 \times 2 \times 2 \times 4$  Fact. in R.B.D. (ii) (a) 32. (b) N.A. (iii) 3. (iv) (a) N.A. (b) 1/40 ac. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Nil. (iii) Sucrose, Glucose, fibre % and sugarcane yield. (iv) (a) 1950—N.A. (b) No. (c) N.A. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 44.41 ton/ac.

(ii) 6.87 ton/ac.

(iii) Only the main effects of S, M and interactions  $S \times K$ ,  $S \times M$ ,  $M \times K$ ,  $S \times C$ ,  $M \times C$  are significant. Others are not significant.

(iv) Av. yield of sugarcane in ton/ac.

	$M_0$	$M_1$	$M_2$	$M_3$	$S_1$	$S_2$	$K_0$	$K_1$	Mean
$C_0$	39.61	44.31	47.88	41.95	40.34	46.55	43.00	43.90	43.45
$C_1$	41.20	47.61	49.14	43.56	42.64	48.11	44.08	46.66	45.37
Mean	40.41	45.96	48.51	42.75	41.49	47.33	43.54	45.28	44.41
$K_0$	39.97	44.44	47.29	42.42	42.00	45.08			
$K_1$	40.85	47.48	49.73	43.08	40.98	49.58			
$S_1$	35.43	42.90	45.70	41.91					
$S_2$	45.39	49.02	51.32	43.59					

S.E. of marginal mean of S, K or C

=0.99 ton/ac.

S.E. of marginal mean of M

=1.40 ton/ac.

S.E. of body of  $S \times K$ , or  $S \times C$  or  $K \times C$  table

=1.40 ton/ac.

S.E. of body of  $M \times S$  or  $M \times C$  or  $M \times K$  table

=1.98 ton/ac.

Crop :- Sugarcane.

Ref :- Mh. 52(75)

Site :- Agri. Res. Stn., Padegaon.

Type :- 'M'.

Object :- To find the optimum dose of N and K and the method of placement of Super with and without compost,

## 1. BASAL CONDITIONS :

(i) (a) Sugarcane—Jowar—Chinamug. (b) Chinamug. (c) Nil. (ii) (a) 'B' type. (b) Refer soil analysis, Padegaon. (iii) 13.11.52 (iv) (a) Ploughing 9" to 10" deep. (b) The buds of the Sugarcane are exposed and allowed to germinate under soil. (c), (d) and (e) N.A. (v) Nil. (vi) CO. 419. (vii) Irrigated (viii) 2 to 3 hand weedings, 2 to 3 interculturings 8 to 10 weeks after planting, partial tilling and earthing up after a period of 5 to 5½ months. (ix) 15.35%. (x) 6th April 1954.



## 2 TREATMENTS:

All combinations of (1), (2), (3) and (4)

- (1) 2 levels of compost :  $C_0=0$ ,  $C_1=5$  C.L./ac.
- (2) 2 sources of N :  $S_1=A/S$  and  $S_2=A/S$  and G.N.C. in 1 : 2 ratio. N top dressed at 375 lb./ac. of N.
- (3) 2 levels of K :  $K_0=0$  and  $K_2=100$  lb./ac. of  $K_2O$
- (4) 4 methods of application of  $P_2O_5$  :  $M_0=No$   $P_2O_5$ ,  $M_1=100$  lb./ac. of  $P_2O_5$  at surface,  $M_2=100$  lb./ac. of  $P_2O_5$  at half way down the ridge and  $M_3=100$  lb./ac. of  $P_2O_5$  at the base of the ridge.  $P_2O_5$  as Super and  $K_2O$  as Pot. Sul.

## 3. DESIGN :

- (i)  $2^3 \times 4$  Fact. (ii) (a) 32. (b) N.A. (iii) 3. (iv) (a)  $54.44' \times 32'$ . (b)  $45.44' \times 24'$ . (v) Three rows on either side. (vi) Yes.

## 4. GENERAL :

- (i) Good. (ii) Attack of stem and top-shoot borers ; weekly collection of egg-masses, hand picking of moths and light trapping etc. were done as control measures. (iii) Germination counts, tillering counts, botanical observations, milleable and nonmilleable sugarcane counts, maturing tests and cane yield. (iv) (a) 1950-continued. (b) No. (c) N.A. (v) (a), (b) No. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 47.43 ton/ac.  
 (ii) 6.37 ton/ac.  
 (iii) Main effect of S, M and interactions  $S \times M$ ,  $M \times K$ ,  $S \times K$ ,  $M \times C$ ,  $K \times C$  and  $S \times C$  are significant. Main effect of K is not significant.  
 (iv) Av. yield of sugarcane in ton/ac.

	$M_0$	$M_1$	$M_2$	$M_3$	$S_1$	$S_2$	$K_0$	$K_1$	Mean
$C_0$	40.40	47.97	51.02	45.90	43.28	49.36	48.26	50.04	46.32
$C_1$	46.87	48.62	50.64	50.47	47.14	51.16	45.12	47.46	49.15
Mean	43.64	48.29	50.83	48.18	45.21	50.26	46.70	48.75	47.73
$K_0$	43.87	45.27	49.15	48.50	44.28	49.11			
$K_1$	43.40	51.32	52.41	47.87	46.14	51.42			
$S_1$	39.35	47.67	48.22	45.60					
$S_2$	47.92	48.92	53.44	50.77					

S.E. of marginal mean of S, K or C	=0.92 ton/ac.
S.E. of marginal mean of M	=1.30 ton/ac.
S.E. of body of $M \times S$ or $M \times K$ or $M \times C$ table	=1.84 ton/ac.
S.E. of body of $S \times K$ or $S \times C$ or $C \times K$ table	=1.30 ton/ac.

Crop :- Sugarcane (*Adsali*).

Ref :- Mh. 53(181).

Site :- Agri. Res. Stn., Padegaon.

Type :- 'M'.

Object :- To find the optimum dose of N and K and method of placement of Super with and without compost.

## 1. BASAL CONDITIONS :

- (i) (a) Sugarcane-Kali Jowar-Chinamug. (b) Chinamug. (c) Nil. (ii) (a) 'B' type. (b) Refer soil analysis, Padegaon. (iii) {25.11.1953. (iv) (a) Ploughing 9" to 10" deep. (b) N.A. (c) 10,000 setts/ac. (d) 4' between rows. (e) N.A. (v) Nil. (vi) CO.419 (mid-late). (viii) Irrigated. (viii) 2 to 3 hand weedings, 2 to 3 interculturings by tooth cultivators 8 to 10 weeks after planting, partial tilling (*tagarni*) and earthing up after a period of 5 to 5½ month. (ix) 20.16". (x) 5 to 14.2.1955.

## 2. TREATMENTS :

All combinations of (1), (2), (3) and (4)

- (1) 2 levels of compost :  $C_0=0$ ,  $C_1=2$  C.L./ac.  
 (2) 2 sources of N :  $S_1=A/S$  and  $S_2=A/S$  and Cake in 1 : 2 ratio.  
 N top dressed at 375 lb./ac. of N.  
 (3) 2 levels of K :  $K_0=0$  and  $K_1=100$  lb./ac. of  $K_2O$ .  
 (4) 4 methods of application of  $P_2O_5$  :  $M_0=No$   $P_2O_5$ ,  $M_1=100$  lb./ac. of  $P_2O_5$  at surface,  $M_2=100$  lb./ac. of  $P_2O_5$  half way down the ridge and  $M_3=100$  lb./ac. of  $P_2O_5$  at the base of the ridge.

$P_2O_5$  as Super and  $K_2O$  as Pot. Sul.

## 3. DESIGN :

- (i)  $2^3 \times 4$  Fact. in R.B.D. (ii) (a) 32. (b) N.A. (iii) 3. (iv)  $54.44' \times 32'$ . (b)  $45.44' \times 24'$ . (v) 1 row on either side. (vi) Yes.

## 4. GENERAL :

- (i) Good. (ii) Attack of stem and top-shoot borers ; control measures N.A. (iii) Germination count, height, no. of tillers, and sugarcane yield. (iv) (a) 1954—continued. (b) No. (c) N.A. (v) (a) and (b) No. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 52.00 ton/ac.  
 (ii) 5.43 ton/ac.  
 (iii) Main effects of S, M and K and interactions  $S \times M$ ,  $S \times K$ ,  $M \times K$ ,  $M \times C$  and  $K \times C$  are significant, while interaction  $S \times C$  is highly significant. Main effect of C is not significant.  
 (iv) Av. yield of sugarcane in ton/ac.

	$M_0$	$M_1$	$M_2$	$M_3$	$S_1$	$S_2$	$K_0$	$K_1$	Mean
$C_0$	41.31	55.10	54.80	54.70	45.90	57.10	49.80	53.20	51.50
$C_1$	45.90	59.40	52.40	52.50	49.80	55.20	51.70	53.30	52.50
Mean	43.62	57.25	53.60	53.60	47.85	56.15	50.75	53.25	52.00
$K_0$	42.90	56.30	53.01	50.80	46.90	54.60			
$K_1$	44.34	58.20	54.20	56.40	48.80	57.70			
$S_1$	35.42	57.50	48.50	53.00					
$S_2$	51.82	57.00	58.70	57.20					

S.E. of marginal mean of S, K or C

=0.78 ton/ac.

S.E. of marginal mean of M

=1.10 ton/ac.

S.E. of body of  $M \times K$ ,  $M \times S$  or  $M \times C$  table

=1.57 ton/ac.

S.E. of body of  $S \times K$ ,  $S \times C$  or  $K \times C$  table

=1.10 ton/ac.

Crop :- Sugarcane.

Ref :- Mh. 52(155).

Site :- Agri. Res. Stn., Padegaon.

Type :- 'M'.

Object :- To study the effect of *Mohwa* cake and G.N.C. on yield of Sugarcane.

## 1. BASAL CONDITIONS :

- (i) (a) Nil. (b) and (c) N.A. (ii) (a) 'B' type. (b) Refer soil analysis, Padegaon. (iii) 2.2.1952. (iv) (a) 1 deep ploughing. (b) N.A. (c) 10,000 setts/ac. (d) 4' apart. (e) N.A. (v) Nil. (vi) CO.419 (medium). (vii) Irrigated. (viii) 2 interculturings, 2 weedings and 1 earthing up. (ix) 11.10". (x) 20.2.1953.

**2. TREATMENTS :**

300 lb./ac. of N applied as follows :

1. *Mohwa* cake alone.
2. G.N.C. alone.
3. A/S+*Mohwa* cake in 1 : 2.
4. A/S+G.N.C. in 1 : 2.
5. A/S+G.N.C.+*Mohwa* cake in 1 : 1 : 1.
6. A/S+*Mohwa* cake in 1 : 2. *Mohwa* cake previously decomposed before planting.

**3. DESIGN :**

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 0.5875 *guntha*. (v) N.A. (vi) Yes.

**4. GENERAL :**

(i) Normal. (ii) N.A. (iii) Sucrose, glucose, fibre % and sugarcane yield. (iv) (a) 1952—1954. (b) and (c) No. (v) (a) and (b) Nil. (vi) and (vii) Nil.

**5. RESULTS :**

- (i) 42.32 ton/ac.
- (ii) 14.30 ton/ac.
- (iii) Treatments do not differ significantly.
- (iv) Av. yield of sugarcane in ton/ac.

Treatment	Av. yield
1.	35.95
2.	54.55
3.	44.52
4.	38.22
5.	41.33
6.	39.36
S.E./mean	= 7.15 ton/ac.

Crop :- Sugarcane.

Ref :- Mh. 53(240).

Site :- Agri. Res. Stn., Padegaon.

Type :- 'M'.

Object :- To study the effect of *Mohwa* cake and G.N.C. on the yield of Sugarcane.

**1. BASAL CONDITIONS :**

(i) (a) No. (b) N.A. (c) N.A. (ii) (a) B type. (b) Refer soil analysis, Padegaon. (iii) 8.2.1953. (iv) (a) Deep ploughing (b) N.A. (c) 10,000 setts/ac. (d) 4'. (e) N.A. (v) 20 C.L./ac. of F.Y.M. (vi) CO. 419 (mid-late). (vii) Irrigated. (viii) 2 interculturings and 2 weedings. (ix) 16.35%. (x) 7.5.1954.

**2. TREATMENTS :**

300 lb./ac. of N applied as follows :

1. *Mohwa* cake alone.
2. G.N.C. alone.
3. A/S+G.N.C. in 1 : 2.
4. A/S+*Mohwa* cake in 1 : 2.
5. A/S+*Mohwa* cake+G.N.C. in 1 : 1 : 1.
6. A/S+*Mohwa* cake in 1 : 2 ; *Mohwa* cake previously decomposed before planting.

**3. DESIGN :**

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) 32'×32'. (b) 26'×24'. (v) One row on either side, 3' at either end. (vi) Yes.

**4. GENERAL :**

(i) Normal. (ii) N.A. (iii) Germination counts, heights, sucrose, glucose % and sugarcane yield. (iv) (a) 1952—1954. (b) and (c) No. (v) (a) and (b) Nil. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 48.57 ton/ac.  
 (ii) 6.65 ton/ac.  
 (iii) Treatments differ significantly.  
 (iv) Av. yield of sugarcane in ton/ac.

Treatment	Av. yield
1.	37.59
2.	55.09
3.	51.87
4.	47.07
5.	50.23
6.	49.56
S.E./mean	=3.32 ton/ac.

Crop :- Sugarcane.

Ref :- Mh. 51(127).

Site :- Agri. Res. Stn., Padegaon.

Type :- 'M'.

Object :—To study the effect of inter-cropping Maize with Sugarcane.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) N.A. (c) N.A. (ii) (a) B type. (b) Refer soil analysis, Padegaon. (iii) 20.12.1951. (iv) (a) N.A. (b) N.A. (c) 10,000 setts/ac. (d) 4' apart. (e) N.A. (v) 20,000 lb./ac. of compost, 375 lb./ac. of N as A/S+cake in 1 : 2 ratio. (vi) CO. 419 (mid-late). (vii) Irrigated. (viii) 2 interculturings, 2 weedings and 1 earthing up. (ix) 16.35". (x) 10.3.1953.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 2 levels of manuring :  $M_0$ =Normal manure and  $M_1$ =Normal manure+50 lb./ac. of N.(2) Maize drilled at :  $D_0$ =No maize crop,  $D_1$ =1',  $D_2$ =2' and  $D_3$ =3' apart.

Normal manuring as under basal conditions.

## 3. DESIGN :

(i) 2×4 Fact. in R.B.D. (ii) (a) 8. (b) N.A. (iii) 3. (iv) (a) N.A. (b) 34.03'×8'. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) Normal. (ii) Attack of borers. (iii) Brix %, sucrose, glucose % and sugarcane yield. (iv) (a) 1950—1952, (b) and (c) No. (v) (a) and (b) Nil. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 50.35 ton/ac.  
 (ii) 3.52 ton/ac.  
 (iii) Main effects of M and D and their interaction are not significant.  
 (iv) Av. yield of sugarcane in ton/ac.

	$M_0$	$M_1$	Mean
$D_0$	53.02	50.55	51.78
$D_1$	46.55	48.86	47.75
$D_2$	51.04	49.90	50.47
$D_3$	51.83	51.07	51.45
Mean	50.61	50.10	

S.E. of marginal mean of M =1.02 ton/ac.

S.E. of marginal mean of D =1.44 ton/ac.

S.E. of body of table =2.03 ton/ac.

Crop :- Sugarcane (*Ratoon*).  
Site :- Agri. Res. Stn., Deolali.

Ref. :- Mh. 48(53).  
Type :- 'CV'.

Object :- To study the different varieties with different times of planting.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) G type soil. (b) N.A. (iii) As per treatments. (iv) (a) and (b) N.A. (c) 10,000 setts./ac. (d) 4' between rows. (e) —. (v) N.A. (vi) As per treatments. (vii) Irrigated. (viii) N.A. (ix) 39.21". (x) N.A.

2. TREATMENTS :

Main-plot treatments.

3 dates of planting :  $D_1$  = July 1948,  $D_2$  = October 1948 and  $D_3$  = January 1949.

Sub-plot treatments.

3 varieties :  $V_1$  = CO. 419,  $V_2$  = CO. 454 and  $V_3$  = CO. 475.

3. DESIGN :

(i) Split-plot. (ii) (a) 3 main-plots/block ; 3 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 0.75 *guntha*. (v) N.A. (vi) Yes.

4. GENERAL :

(i) N.A. (ii) N.A. (iii) Sugarcane yield. (iv) (a) 1949-1950. (b) N.A. (c) N.A. (v) (a) and (b) N.A. (vi) & (vii) Nil.

5. RESULTS :

(i) 25.79 ton./ac.  
(ii) (a) 4.74 ton./ac.  
      b) 3.87 ton./ac.  
(iii) No effect is significant.  
(iv) Av. yield of sugarcane in ton./ac.

	$D_1$	$D_2$	$D_3$	Mean
$V_1$	27.17	22.92	26.11	25.40
$V_2$	22.75	27.17	25.95	25.29
$V_3$	25.58	27.83	26.62	26.67
Mean	25.16	25.97	26.22	25.79

S.E. of difference of two

1. main-plot marginal means = 1.84 ton./ac.
2. sub-plot marginal means = 1.58 ton./ac.
3. sub-plot means at the same level of main-plot = 2.74 ton./ac.
4. main-plot means at the same level of sub-plot = 2.95 ton./ac.

Crop :- Sugarcane (*Ratoon*).  
Site :- Agri. Res. Stn., Deolali.

Ref. :- Mh. 49(78).  
Type :- 'CV'.

Object :- To study the different varieties with different times of planting.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) 'G' type soil. (b) N.A. (iii) As per treatments. (iv) (a) and (b) N.A. (c) 10,000 setts./ac. (d) 4' spacing between rows. (e) —. (v) N.A. (vi) As per treatments. (vii) Irrigated. (viii) N.A. (ix) 27.71". (x) N.A.

**2. TREATMENTS :****Main-plot treatments.**3 dates of planting :  $D_1$  = July 1949,  $D_2$  = October 1949 and  $D_3$  = Jan. 1950.**Sub-plot treatments :**3 varieties :  $V_1$  = CO. 419,  $V_2$  = CO. 454 and  $V_3$  = CO. 475.**3. DESIGN :**(i) Split-plot. (ii) (a) 3 main-plots/block : 3 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 0.75 *guntha*. (v) N.A. (vi) Yes.**4. GENERAL :**

(i) N.A. (ii) N.A. (iii) Sugarcane yield. (iv) (a) 1949–1950. (b) and (c) N.A. (v) (a) and (b) N.A. (vi) and (vii) Nil.

**5. RESULTS :**

- (i) 33.59 ton/ac.  
 (ii) (a) 3.69 ton/ac.  
 (b) 2.94 ton/ac.  
 (iii) Varieties are significant while others are not significant.  
 (iv) Av. yield of Sugarcane in ton/ac.

	$D_1$	$D_2$	$D_3$	Mean
$V_1$	34.36	34.68	34.78	34.61
$V_2$	28.86	31.26	29.23	29.78
$V_3$	35.96	38.04	35.12	36.37
Mean	33.06	34.66	33.04	33.59

**S.E. of difference of two**

- |                                   |               |
|-----------------------------------|---------------|
| 1. D marginal means               | =1.51 ton/ac. |
| 2. V marginal means               | =1.20 ton/ac. |
| 3. V means at the same level of D | =2.08 ton/ac. |
| 4. D means at the same level of V | =2.27 ton/ac. |

**Crop :-Sugarcane.****Ref :-Mh. 49(77).****Site :-Agri. Res. Stn., Deolali.****Type :-'CV'.****Object :-To study the effect of different times of planting on different varieties of Sugarcane.****1. BASAL CONDITIONS :**

(i) (a) to (c) N.A. (ii) (a) G type soil. (b) N.A. (iii) As per treatments. (iv) (a) 2 ploughings and 1 harrowing. (b) N.A. (c) 10,000 setts/ac. (d) 4' between rows. (e) —. (v) N.A. (vi) As per treatments. (vii) Irrigated. (viii) N.A. (ix) 26.52°. (x) N.A.

**2. TREATMENTS :****Main-plot treatments :**3 dates of planting :  $D_1$ =July 1949,  $D_2$ =October 1949 and  $D_3$ =January 1950.**Sub-plot treatments :**3 varieties :  $V_1$ =CO. 419,  $V_2$ =CO. 454 and  $V_3$ =CO. 475.**3. DESIGN :**(i) Split-plot. (ii) (a) 3 main-plots/block ; 3 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 0.75 *guntha*. (v) N.A. (vi) Yes.**4. GENERAL :**

(i) N.A. (ii) N.A. (iii) Sugarcane yield. (iv) (a) 1949–1950. (b) and (c) N.A. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 42.84 ton/ac.  
 (ii) (a) 5.73 ton/ac.  
 (b) 4.58 ton/ac.  
 (iii) V and D effects 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>	Mean
V <sub>1</sub>	52.65	40.99	35.05	42.89
V <sub>2</sub>	50.49	37.90	32.27	40.22
V <sub>3</sub>	61.24	38.45	36.47	45.38
Mean	54.79	39.11	34.59	42.84

## S.E. of difference of two

1. D marginal means = 2.33 ton/ac.
2. V marginal means = 1.87 ton/ac.
3. V means at the same level of D = 3.24 ton/ac.
4. D means at the same level of V = 3.53 ton/ac.

Crop :-Sugarcane.

Ref :-Mh. 49(89).

Site :-Agri. Res. Stn., Kopergaon.

Type :-'CV'.

Object :—To study the effect of different times of planting on different varieties of Sugarcane.

## 1. BASAL CONDITIONS :

- (i) (a) to (c) N.A. (ii) (a) A type. (b) Refer soil analysis, Kopergaon. (iii) As per treatments. (iv) (a) and (b) N.A. (c) 10,000 setts/ac. (d) 4' apart. (e) —. (v) 20,000 lb./ac. of compost. Top dressing with 375 lb./ac. of N for July planting and 300 lb./ac. of N for January planting. (vi) As per treatments. (vii) Irrigated. (viii) N.A. (ix) 21.26°. (x) 12 to 19.3.1951.

## 2. TREATMENTS :

Main-plot treatments :

3 dates of planting : D<sub>1</sub>=July 1949, D<sub>2</sub>=October 1949 and D<sub>3</sub>=January, 1950.

Sub-plot treatments :

3 varieties : V<sub>1</sub>=CO. 419, V<sub>2</sub>=CO. 454 and V<sub>3</sub>=CO. 475.

## 3. DESIGN :

- (i) Split-plot. (ii) (a) 3 main-plots/block ; 3 sub-plots/main.plot. (b) N.A. (iii) 4. (iv) (a) 1.25 *guntha*. (b) 0.75 *guntha*. (v) N.A. (vi) Yes.

GENERAL :

- (i) N.A. (ii) N.A. (iii) Yield of sugarcane. (iv) (a) N.A. (b) N.A. (c) N.A. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 47.36 ton/ac.  
 (ii) (a) 6.12 ton/ac.  
 (b) 5.53 ton/ac.  
 (iii) V and D effects are highly significant, while V × D is 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>	58.96	47.74	36.81	47.83
V <sub>2</sub>	56.59	42.02	34.78	44.46
V <sub>3</sub>	62.75	46.32	40.24	49.77
Mean	59.43	45.36	37.27	47.36

S.E. of difference of two

1. D marginal means = 2.50 ton/ac.
2. V marginal means = 2.26 ton/ac.
3. V means at the same level of D = 3.91 ton/ac.
4. D means at the same level of V = 4.06 ton/ac.

Crop :- Sugarcane (*Ratoon*).

Ref :- Mh. 50(102).

Site :- Agri. Res. Stn., Kopergaon.

Type :- 'CV'.

Object :- To study the effect of different times of planting on different varieties.

## 1. BASAL CONDITIONS :

- (i) (a) Nil. (b) Sugarcane. (c) 375 lb./ac. of N for July planting and 300 lb./ac. of N for other plantings.  
(ii) (a) A type. (b) Refer soil analysis, Kopergaon. (iii) As per treatments. (iv) (a) and (b) N.A. (c) 10,000 setts/ac. (d) 4' apart. (e) N.A. (v) Top dressing 225 lb./ac. of N as mixture of G.N.C. and A/Sin 2 : 1 ratio. (vi) As per treatments. (vii) Irrigated. (viii) N.A. (ix) 21.26". (x) 20 to 25.3.1951.

## 2. TREATMENTS :

Main-plot treatments :

3 dates of planting: D<sub>1</sub>=July 1950, D<sub>2</sub>=October 1950 and D<sub>3</sub>=January 1951.

Sub-plot treatments :

3 varieties : V<sub>1</sub>=CO.419, V<sub>2</sub>=CO.454 and V<sub>3</sub>=CO.475.

## 3. DESIGN :

- (i) Split-plot. (ii) (a) 3 main-plots/block and 3 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 37.8' x 36'.  
(b) 29.17' x 28'. (v) N.A. (vi) Yes.

## 4. GENERAL :

- (i) N.A. (ii) N.A. (iii) Sugarcane yield. (iv) (a) N.A. (b) Yes. (c) N.A. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 34.30 ton/ac.  
(ii) (a) 4.03 ton/ac.  
(b) 2.63 ton/ac.  
(iii) Only V effect 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>	35.96	34.53	38.10	36.19
V <sub>2</sub>	31.56	29.06	29.39	30.00
V <sub>3</sub>	36.61	36.19	36.96	36.58
Mean	34.71	33.26	34.82	34.30

S.E. of difference of two

1. D marginal means = 1.64 ton/ac.
2. V marginal means = 1.07 ton/ac.
3. V means at the same level of D = 1.86 ton/ac.
4. D means at the same level of V = 2.24 ton/ac.



Crop :- Sugarcane.

Ref :- Mh. 49(47).

Site :- Agri. Res. Stn., Lakhamapur.

Type :- 'CV'.

Object :- To find out the best planting period for different varieties of Sugarcane.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) and (c) N.A. (ii) (a) 'F' type-very shallow 12" to 14"-deep light brown-pH=8.1. (b) Refer soil analysis, Lakhamapur. (iii) As per treatments. (iv) (a) 2 ploughings. (b) N.A. (c) 10,000 setts/ac. (d) 4' between rows and 4" to 6" between plants. (e) —. (v) 10 C.L./ac. of compost after 1st ploughing and 10 C.L./ac. of compost in furrows before planting. (vi) As per treatments. (vii) Irrigated. (viii) 2 to 3 hand weedings, 3-4 interculturings and 1 light earthing up. (ix) N.A. (x) N.A.

## 2. TREATMENTS :

Main-plot treatments :

3 times of planting : D<sub>1</sub>=July 1949, D<sub>2</sub>=October 1949 and D<sub>3</sub>=January 1950.

Sub-plot treatments :

3 varieties : V<sub>1</sub>=CO.419, V<sub>2</sub>=CO.454 and V<sub>3</sub>=CO.475.

## 3. DESIGN :

(i) Split-plot. (ii) (a) 3 main-plots/block and 3 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 0.75 guntha. (v) 3.75' each length wise and 1 row each breadth wise. (vi) Yes.

## 4. GENERAL :

(i) Below normal. (ii) Attack of top borer : controlled by cutting off affected shoots, collection and destroying of egg-masses and moths. (iii) Sugarcane yield. (iv) (a) 1940—1942, 1942-43 (again started from 1947-48 to 1950-51 with varieties changed). (b) No. (c) N.A. (v) (a) Akluj, Kopergaon and Deolali. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 19.28 ton/ac.

(ii) (a) 2.94 ton/ac.

(b) 3.08 ton/ac.

(iii) V and D effects are highly 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>	Mean
V <sub>1</sub>	29.30	21.20	20.40	23.63
V <sub>2</sub>	19.00	10.40	14.20	14.53
V <sub>3</sub>	24.50	16.00	18.50	19.66
Mean	24.27	15.87	17.70	19.28

S.E. of difference of two

1. D marginal means =1.20 ton/ac.
2. V marginal means =1.26 ton/ac.
3. V means at the same level of D =2.15 ton/ac.
4. D means at the same level of V =2.18 ton/ac.

Crop :-Sugarcane.

Ref :-Mh. 50(75).

Site :-Agri. Res. Stn., Lakhamapur.

Type :-'CV'.

Object :-To find out the best planting period for different varieties of Sugarcane.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) and (c) N.A. (ii) (a) F type ; very shallow ; 12"—15"—deep light brown ; pH=8.1. (b) Refer soil analysis, Lakhamapur. (iii) As per treatments. (iv) (a) 2 ploughings. (b) N.A. (c) 10,000 setts/ac. (d) 4' between rows and 4" to 6" between plants. (e) —. (v) 10 C.L./ac. of compost after 1st ploughing, 10 C.L./ac. of compost in furrows before planting. (vi) As per treatments. (vii) Irrigated. (viii) 2 to 3 hand weedings, 3 to 4 interculturings and 1 light earthing up. (ix) N.A. (x) N.A.

## 2. TREATMENTS :

Main-plot treatments :

3 times of planting : D<sub>1</sub>=July 1950, D<sub>2</sub>=October 1950 and D<sub>3</sub>=January 1951.

Sub-plot treatments :

3 varieties : V<sub>1</sub>=CO. 419, V<sub>2</sub>=CO. 454 and V<sub>3</sub>=CO. 475.

## 3. DESIGN :

(i) Split-plot. (ii) (a) 3 main-plots/block ; 3 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 0.75 *guntha*. (v) 3.75' each length wise and one row each breadth wise. (vi) Yes.

## 4. GENERAL :

(i) Below normal. (ii) Attack of top borers ; controlled by cutting off attacked shoots ; collection and destroying of egg-masses and moths. (iii) Germination counts, height, fortnightly maturity study. (iv) (a) 1947—1950. (b) No. (c) N.A. (v) (a) Akluj, Kopergaon and Deolali. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 11.42 ton/ac.  
 (ii) (a) 1.73 ton/ac.  
 (b) 4.78 ton/ac.  
 (iii) D effect is significant and V effect is highly 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>	Mean
V <sub>1</sub>	17.60	14.40	13.40	15.13
V <sub>2</sub>	7.40	7.70	5.60	6.90
V <sub>3</sub>	14.70	10.13	11.90	12.24
Mean	13.23	10.74	10.30	11.42

S.E. of difference of two

- |                                   |               |
|-----------------------------------|---------------|
| 1. D marginal means               | =0.71 ton/ac. |
| 2. V marginal means               | =1.95 ton/ac. |
| 3. V means at the same level of D | =2.85 ton/ac. |
| 4. D means at the same level of V | =3.38 ton/ac. |

Crop :-Sugarcane.

Ref :-Mh. 51(115).

Site :-Agri. Res. Stn., Akluj.

Type :-'CM'.

Object :—To study the effect of different levels of N in combination with different spacings on Sugarcane yield.

## 1. BASAL CONDITIONS :

(i) (a) Sugarcane—*Bajra*—*Tur* (mixed)—Sugarcane. (b) *Bajra* and *Tur* (mixed). (c) Nil. (ii) (a) D type. (b) Refer soil analysis, Akluj. (iii) 12.8.1951. (iv) (a) 2 ploughings and harrowings and opening ridges. (b) and (c) N.A. (d) As per treatments. (e) —. (v) 20 C.L./ac. of F.Y.M. spread in furrows before planting. (vi) CO. 419. (vii) Irrigated. (viii) 3 weedings, one light *tagarani* and earthing up. (ix) 19" (1951) and 12" (1952). (x) 20.1.1953.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 3 spacings between rows : S<sub>1</sub>=3½', S<sub>2</sub>=4' and S<sub>3</sub>=4½'.

(2) 3 levels of N : N<sub>1</sub>=450, N<sub>2</sub>=525 and N<sub>3</sub>=600 lb./ac.

Other details N.A.

## 3. DESIGN :

(i) 3×3 Fact. in R.B.D. (ii) (a) 9. (b) N.A. (iii) 4. (iv) (a) 1.25 *guntha*. (b) 0.75 *guntha*. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) Growth normal. Crop lodged in May. (ii) Stem borer 15%, top borer 10%. (iii) Yield of sugarcane. (iv) (a) 1950—1955. (b) No. (c) N.A. (v) (a) Padegaon, Lakhamapur, Deolali and Kopergaon. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 76.97 ton/ac.  
 (ii) 6.31 ton/ac.  
 (iii) Main effect of N and its interaction with S are significant. S effect is not significant.

(iv) Av. yield of sugarcane in ton/ac.

	S <sub>1</sub>	S <sub>2</sub>	S <sub>3</sub>	Mean
N <sub>1</sub>	77.50	76.60	77.20	76.90
N <sub>2</sub>	80.60	72.90	69.10	74.20
N <sub>3</sub>	79.60	83.10	76.00	79.50
Mean	79.20	77.50	74.10	76.97

S.E. of marginal mean of N or S = 1.82 ton/ac.  
 S.E. of body of table = 3.16 ton/ac.

Crop :- Sugarcane.

Ref :- Mh. 52(12).

Site :- Agri. Res. Stn., Akluj.

Type :- 'CM'.

Object :- To study the effect of different spacings and different doses of N on the yield of Sugarcane.

## 1. BASAL CONDITIONS :

(i) (a) *Adsali* sugarcane—*Bajra* and *tur* mixture—*Adsali* sugarcane. (b) Wheat. (c) Nil. (ii) (a) D type. (b) Refer soil analysis, Akluj. (iii) 19.7.1952. (iv) (a) 2 ploughings, clod crushing, harrowing and ridging. (b) The buds of the sugarcane are exposed and allowed to germinate under soil. (c) N.A. (d) As per treatments. (e) —. (v) 20,000 lb./ac. of compost spread in furrows before planting. (vi) CO. 419. (vii) Irrigated. (viii) 1 light *tagarani*, earthing up and 2 weedings. (ix) 18.04". (x) 4 to 29.1.1954.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 3 spacings : S<sub>1</sub>=3½', S<sub>2</sub>=4' and S<sub>3</sub>=4½' row to row.(2) 3 levels of N : N<sub>1</sub>=450, N<sub>2</sub>=525 and N<sub>3</sub>=600 lb./ac.

Double planting in 4½' spacing.

## 3. DESIGN :

(i) 3×3 Fact. in R.B.D. (ii) (a) 9. (b) N.A. (iii) 4. (iv) (a) 31½'×42½' for 3½' and 4' spacing and 32'×42½' for 4½' spacing. (b) 24.5'×33.35' for 3½' spacing, 24'×34' for 4' spacing and 22.5'×36.3' for 4½' spacing. (v) 1 row on each side of the plot : 3½', 4' and 4½' at each end of the plot of 3½', 4' and 4½' spacings respectively. (vi) Yes.

## 4. GENERAL :

(i) Crop growth was normal. Crop lodged in May. (ii) There was a severe attack of top shoot and stem-borer totalling up to 15%. (iii) Germination, tillering, borer counts, height, girth, internodes, etc. (iv) (a) 1950—1953. (b) No. (c) N.A. (v) (a) Padegaon, Lakhmapur, Deolali and Kopergaon. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 71.91 ton/ac.

(ii) 5.82 ton/ac.

(iii) No effect is significant.

(iv) Av. yield of sugarcane in ton/ac.

	S <sub>1</sub>	S <sub>2</sub>	S <sub>3</sub>	Mean
N <sub>1</sub>	71.83	69.45	65.04	68.77
N <sub>2</sub>	72.68	71.97	68.68	71.11
N <sub>3</sub>	79.58	74.62	73.34	75.85
Mean	74.70	72.01	69.02	71.91

S.E. of marginal mean of N or S = 1.68 ton/ac.  
 S.E. of body of table = 2.91 ton/ac.

Crop :- Sugarcane (*Adsali*).

Ref :- Mh. 53(204).

Site :- Agri. Res. Stn., Akluj.

Type :- 'CM'.

Object :- To study the effect of different spacings and different N doses on the yield of Sugarcane.

## 1. BASAL CONDITIONS :

(i) (a) *Adsali* sugarcane—*Bajra* and *tur* (mixed). (b) *Bajra* and *tur* (mixed). (c) Nil. (ii) (a) D type. (b) Refer soil analysis, Akluj. (iii) 20.7.1953. (iv) (a) 2 ploughings, clod crushing, harrowing and ridging. (b) The buds of the sugarcane are exposed and allowed to germinate under soil. (c) N.A. (d) As per treatments. (e) —. (v) 20,000 lb./ac. of compost spread in furrows. (vi) CO.419. (vii) Irrigated. (viii) 1 light tagarani, 1 tagarani, earthing up and 3 weedings. (ix) 19.19". (x) 5 to 25.1.1955.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 3 spacings :  $S_1=3\frac{1}{2}'$ ,  $S_2=4'$  and  $S_3=4\frac{1}{2}'$  row to row.(2) 3 levels of N :  $N_1=450$ ,  $N_2=525$  and  $N_3=600$  lb./ac.Double planting in  $4\frac{1}{2}'$  spacing. N as A/S.

## 3. DESIGN :

(i)  $3 \times 3$  Fact. in R.B.D. (ii) (a) 9. (b) N.A. (iii) 4. (iv) (a)  $31\frac{1}{2}' \times 42\frac{1}{2}'$  for  $3\frac{1}{2}'$  spacing and  $4\frac{1}{2}'$  spacing and  $32' \times 42\frac{1}{2}'$  for  $4\frac{1}{2}'$  spacing. (b)  $24\frac{1}{2}' \times 33.35'$  for  $3\frac{1}{2}'$  spacing,  $24' \times 34'$  for  $4'$  spacing and  $22\frac{1}{2}' \times 36.31'$  for  $4\frac{1}{2}'$  spacing. (v) 1 row on each side of the plot and  $3\frac{1}{2}'$ ,  $4'$  and  $4\frac{1}{2}'$  at each end of the plot with  $3\frac{1}{2}'$ ,  $4'$  and  $4\frac{1}{2}'$  spacings respectively. (vi) Yes.

## 4. GENERAL :

(i) Growth normal. (ii) There were much dead sugarcanes and water shoots. Crop lodged in May 1954. (iii) There was attack of stem borer to the extent of 15% and top shoot borer to the extent of 18%. Affected shoots were cut and destroyed. (iii) Germination, tillering, borer counts, height, girth, internodes etc. (iv) (a) 1950—1953. (b) No. (c) N.A. (v) (a) Padegaon, Lakhmapur, Deolali and Kopergaon. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 78.44 ton/ac.

(ii) 4.02 ton/ac.

(iii) Effect of S is significant. Others are not significant.

(iv) Av. yield of sugarcane in ton/ac.

	$S_1$	$S_2$	$S_3$	Mean
$N_1$	79.91	77.66	75.59	77.72
$N_2$	81.34	77.38	76.07	78.26
$N_3$	82.29	76.30	79.47	79.35
Mean	81.18	77.11	77.04	78.44

S.E. of marginal mean of S or N = 1.16 ton/ac.  
S.E. of body of table = 2.01 ton/ac.

Crop :- Sugarcane.

Ref :- Mh. 51(84).

Site :- Agri. Res. Stn., Deolali.

Type :- 'CM'.

Object :- To study the effect of different doses of manures in combination with different spacings on *Adsali* Sugarcane.

## 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) G type, deep brown in colour, with depth 1' to 1.5'. (b) N.A. (iii) 14.8.1951. (iv) (a) 2 ploughings and 1 harrowing. (b) Planting in furrows. (c) According to spacings. (d) As per treatments. (e) —. (v) 20 C.L./ac. of F.Y.M. (vi) CO. 419 (mid-late). (vii) Irrigated. (viii) N.A. (ix) 36.2". (x) 15.1.1953.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 3 spacings :  $S_1=3\frac{1}{2}'$ ,  $S_2=4'$  and  $S_3=4\frac{1}{2}'$  between rows.

(2) 3 levels of N :  $N_1=450$ ,  $N_2=525$  and  $N_3=600$  lb./ac.

N as A/S+G.N.C. in 1 : 2 ratio. Time and method of application of treatments N.A.

## 3. DESIGN :

(i)  $3 \times 3$  Fact. in R.B.D. (ii) (a) 9. (b) N.A. (iii) 4. (iv) (a)  $42.5' \times 32'$ . (b)  $34' \times 24'$ . (v) 1 row on either side and  $4.25'$  at either end. (vi) Yes.

## 4. GENERAL :

(i) Normal. (ii) N.A. (iii) Germination counts, and cane yield. (iv) (a) 1951—1955. (b) No. (c) No. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 39.81 ton/ac.  
 (ii) 6.72 ton/ac.  
 (iii) Main effects of N, S and their interaction are not significant.  
 (iv) Av. yield of sugarcane in ton/ac.

	$S_1$	$S_2$	$S_3$	Mean
$N_1$	38.04	37.52	38.26	37.94
$N_2$	40.33	43.15	42.90	42.12
$N_3$	43.10	36.65	38.39	39.38
Mean	40.49	39.11	39.85	39.81

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

=1.93 ton/ac.  
 =3.36 ton/ac.

Crop :- Sugarcane.

Site :- Agri. Res. Stn., Deolali.

Ref :- Mh. 52(9).

Type :- 'CM'.

Object :- To determine the optimum spacing and manure for *Adsali* Sugarcane.

## 1. BASAL CONDITIONS :

(i) (a) *Adsali* Sugarcane—*Bajra* and *Tur* (mixed)—Sugarcane. (b) *Bajra* and *Tur* (mixed). (c) Nil. (ii) (a) G type. (b) N.A. (iii) 24.7.1952. (iv) (a) 2 ploughing, clod crushing, harrowing, opening ridges and furrows planting, manuring, earthing, etc. (b) Planting in furrows. (c) According to spacings. (d) As per treatments. (e) —. (v) Basal dose of 20,000 lb./ac. of compost given in furrows and mixed before planting. (vi) *Adsali*, CO.419, sugarcane. (vii) Irrigated. (viii) Watering, weeding, application of manurial doses and mixing, earthing up, etc. (ix) 25.68". (x) 27.1.1954.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 3 spacings :  $S_1=3\frac{1}{2}'$ ,  $S_2=4'$  and  $S_3=4\frac{1}{2}'$  between rows.

(2) 3 levels of N :  $N_1=450$ ,  $N_2=525$  and  $N_3=600$  lb./ac. of N.

N applied as mixture of A/S and G.N.C. mixed in the ratio 1 : 2 and applied in 4 doses, seed-rate 10,000 setts/ac. for  $3\frac{1}{2}'$  and  $4'$  and 15,000 setts for  $4\frac{1}{2}'$  spacing.

## 3. DESIGN :

(i)  $3 \times 3$  Fact. in R.B.D. (ii) (a) 9. (b) N.A. (iii) 4. (iv) (a)  $43.2' \times 31.5'$ . (b)  $33.35' \times 24.5'$  for  $3.5'$  spacing,  $34.72' \times 23.5'$  for  $4.0'$  spacing and  $36.26' \times 22.5'$  for  $4.5'$  spacing. (v) One row on each side and  $4\frac{1}{2}'$  at either end. (vi) Yes.

## 4. GENERAL :

(i) No lodging. (ii) Mild attack of top-shoot borer, stemborer, pyrilla and mealy-bugs. (iii) Germination counts, tillering, borer growth observation, ripeness studies, yield of sugarcane and millable sugarcane count. (iv) (a) 1951- 1955 (3 *Adsali* crops). (b) No. (c) N.A. (v) (a) Akluj, Lakhmapura, Padegaon and Kopergaon. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 49.39 ton/ac.  
(ii) 5.53 ton/ac.  
(iii) Main effects and interaction are not significant.  
(iv) Av. yield of sugarcane in ton/ac.

	S <sub>1</sub>	S <sub>2</sub>	S <sub>3</sub>	Mean
N <sub>1</sub>	49.62	47.50	47.45	48.19
N <sub>2</sub>	50.61	53.21	46.41	50.07
N <sub>3</sub>	49.23	53.35	47.15	49.91
Mean	49.82	51.35	47.00	49.39

S.E. of marginal mean of N or S =1.60 ton/ac.  
S.E. of body of table =2.76 ton/ac.

Crop :-Sugarcane.

Ref :-Mh. 53(202).

Site :-Agri. Res. Stn., Deolali.

Type :-'CM'.

Object :-To determine the optimum spacing and manure for *Adsali* Sugarcane.

## 1. BASAL CONDITIONS :

- (i) (a) Sugarcane - *Bajra*-*Tur* (mixed)-Sugarcane. (b) *Bajra*-*Tur* (mixed). (c) Nil. (ii) (a) G type. (b) N.A. (iii) 16.7.1953. (iv) (a) 2 ploughings, clod crushing, harrowing, opening ridges and furrows, earthing, etc. (b) The buds of the sugarcane are exposed and allowed to germinate under soil. (c) and (d) As per treatments. (e) —. (v) 20,000 lb. compost was given in furrows mixed before planting. (vi) CO. 419. (vii) Irrigated. (viii) Watering, weeding, light earthing and earthing up. (ix) 31.76°. (x) 16, 25.2.1955.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 3 spacings : S<sub>1</sub>=3½', S<sub>2</sub>=4' and S<sub>3</sub>=4½'.

(2) 3 levels of N : N<sub>1</sub>=450, N<sub>2</sub>=525 and N<sub>3</sub>=600 lb./ac.

N applied as mixture of A/S and G.N.C. mixed in the ratio 1 : 2 and applied in 4 doses. Seed rate 10,000 setts/éc. for 3½' and 4' and 15,000 setts for 4½' spacing.

## 3. DESIGN :

- (i) 3×3 Fact. in R.B.D. (ii) (a) 9. (b) N.A. (iii) 4. (iv) (a) 43.2'×31.5'. (b) 33.35'×24.5' for 3.5' spacing ; 34.72'×23.5' for 4.0' spacing and 36.26'×22.5' for 4.5' spacing. (v) One row on each side and 4½' at either end. (vi) Yes.

## 4. GENERAL :

- (i) No lodging. (ii) Attack of top-shoot-borer, stem-borer, pyrilla and mealy-bugs. (iii) Germination counts, tillering, borer counts, milliable sugarcane counts, growth observation, ripening studies and harvest data. (iv) (a) 1951-1953 (3 crops). (b) No. (c) N.A. (v) (a) Akluj, Lakhamapur, Padegaon and Kopergaon. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 55.35 ton/ac.  
(ii) 9.94 ton/ac.  
(iii) Only the main effect of spacing is significant.  
(iv) Av. yield of sugarcane in ton/ac.

	S <sub>1</sub>	S <sub>2</sub>	S <sub>3</sub>	Mean
N <sub>1</sub>	57.75	55.84	52.54	55.38
N <sub>2</sub>	70.97	59.58	47.61	59.39
N <sub>3</sub>	56.13	55.44	42.26	51.27
Mean	61.61	56.95	47.47	55.35

S.E. of marginal mean of N or S =2.87 ton/ac.  
S.E. of body of the table =4.97 ton/ac.

Crop :- Sugarcane.  
Site :- Agri. Res. Stn., Kolhapur.

Ref :- Mh. 53(262).  
Type :- 'CM'.

Object :- To find out the optimum seed rate and manurial requirements for Sugarcane.

1. BASAL CONDITIONS :

(i) (a) Sugarcane—*Ratoon*—Paddy. (b) Paddy. (c) 2 bags/ac. of manure mixture. (ii) (a) Deep black. (b) N.A. (iii) 14.9.1953. (iv) (a) 1 ploughing by tractor, harrowing. (b) Planting in furrows. (c) As per treatments. (d) N.A. (e) —. (v) 10,000 lb./ac. of compost. (vi) CO. 419 (mid-late). (vii) Irrigated. (viii) 1 weeding, 1 interculturing and 1 earthing up. (ix) 43.03%. (x) 23.12.1954.

2. TREATMENTS :

All combinations of (1) and (2)

(1) 3 seed rates :  $R_1=12000$ ,  $R_2=15000$  and  $R_3=18000$  setts/ac.

(2) 2 levels of N :  $N_1=270$  and  $N_2=470$  lb./ac.

N as A/S top dressed.

3. DESIGN :

(i)  $3 \times 2$  Fact. in R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a)  $42.5' \times 34'$ . (b)  $33.5' \times 32.5'$ . (v) One row on either side. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) Yield of sugarcane. (iv) (a) 1951-52 to 1954-55. (b) No. (c) N.A. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 47.78 ton/ac.

(ii) 5.36 ton/ac.

(iii) Main effects and interaction are not significant.

(iv) Av. yield of sugarcane in ton/ac.

	$R_1$	$R_2$	$R_3$	Mean
$N_1$	44.87	44.52	50.31	46.57
$N_2$	52.29	44.28	50.40	48.99
Mean	48.58	44.40	50.35	47.78

S.E. of marginal mean of R = 1.89 ton/ac.

S.E. of marginal mean of N = 1.55 ton/ac.

S.E. of body of table = 2.68 ton/ac.

Crop :- Sugarcane.  
Site :- Agri. Res. Stn., Kopergaon.

Ref :- Mh. 51(80).  
Type :- 'CM'.

Object :- To study the effect of different levels of N in combination with different spacings on Sugarcane,

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Wheat. (c) 3 bags of G.N.C. and 50 lb./ac. of A/S. (ii) (a) A type soil. (b) Refer soil analysis, Kopergaon. (iii) 4.8.1951. (iv) (a) 2 ploughings and 3 harrowings. (b) Planting in furrows. (c) Seed rate according to spacings. (d) As per treatments. (e) —. (v) 20 C.L./ac. of F.Y.M. (vi) CO. 419 (late). (vii) Irrigated. (viii) 2 interculturings and 3 weedings. (ix) 46.40%. (x) 28.1.1953 to 6.2.1953.

2. TREATMENTS :

All combinations of (1) and (2)

(1) 3 spacings :  $S_1=3.5'$  (15000 setts/ac.),  $S_2=4'$  (12000 setts/ac.) and  $S_3=4.5'$  (10000 setts/ac.).

(2) 3 levels of N :  $N_1=450$  lb./ac.,  $N_2=525$  lb./ac. and  $N_3=600$  lb./ac.

N applied as mixture of A/S and G.N.C. in 1 : 2 ratio. Manure broadcast at sowing.

## 3. DESIGN :

(i) 3×3 Fact. in R.B.D. (ii) (a) 9. (b) N.A. (iii) 4. (iv) (a) 42.5'×32'. (b) According to spacing : 34'×24' (4'), 24.5'×33.35' (3½') and 22.5'×36.31' (4¼'). (v) 4.25' at either end, one row on either side. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) N.A. (iii) Height, no. of tillers, millable and unmillable sugarcane yield. (iv) (a) 1951-1955. (b) No. (c) N.A. (v) (a) Deolali and Akluj. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 60.70 ton/ac.  
 (ii) 8.16 ton/ac.  
 (iii) Main effect of S is significant, main effect of N and the interaction are not significant.  
 (iv) Av. yield of sugarcane in ton/ac.

	N <sub>1</sub>	N <sub>2</sub>	N <sub>3</sub>	Mean
S <sub>1</sub>	59.9	65.5	57.6	61.0
S <sub>2</sub>	65.0	65.1	65.6	65.2
S <sub>3</sub>	60.3	49.3	58.3	56.0
Mean	61.7	60.0	60.5	60.7

S.E. of marginal mean of N or S = 2.35 ton/ac.  
 S.E. of body of table = 4.08 ton/ac.

Crop :- Sugarcane.

Site :- Agri. Res. Stn., Kopergaon.

Ref :- Mh. 52(90).

Type :- 'CM'.

Object :- To study the effect of different levels of N in combination with different spacings on Sugarcane.

## 1. BASAL CONDITIONS :

(i) (a) *Bajra+Tur* (mixed)—Sugarcane. (b) *Bajra—Tur* (mixture). (c) Nil. (ii) (a) A type soil. (b) Refer soil analysis, Kopergaon. (iii) 6.8.1952. (iv) (a) Ploughing by tractor and clod crushing. (b) N.A. (c) 10,000 s:ttts/ac. (d) As per treatments. (e)—. (v) 20 C.L./ac. of F.Y.M. (vi) CO. 419. (vii) Irrigated. (viii) 6 weedings. (ix) 23.17". (x) January 1954.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 3 spacings : S<sub>1</sub>=3½', S<sub>2</sub>=4' and S<sub>3</sub>=4¼'.

(2) 3 levels of N : N<sub>1</sub>=450, N<sub>2</sub>=525 and N<sub>3</sub>=600 lb./ac.

N applied as mixture of A/S and G.N.C. in 1 : 2 ratio.

## 3. DESIGN :

(i) 3×3 Fact. in R.B.D. (ii) (a) 9. (b) N.A. (iii) 4. (iv) (a) 31½'×42.5' for 3½' spacing ; 32'×42' for 4' spacing and 31.5'×42.5' for 4¼' spacing. (b) 24.5'×33.5' for 3½' spacing, 24'×34' for 4' spacing and 22.5'×36.5' for 4¼' spacing. (v) 3.5'×4.5' for 3½' spacing, 4'×4.25' for 4' spacing and 4.5'×3' for 4¼' spacing. (vi) Yes.

## 4. GENERAL :

(i) Not satisfactory. (ii) Attack of top-shoot and stem borer observed. (iii) Germination count, tillering and borer count. (iv) (a) 1952—1957. (b) No. (c) Not known. (v) (a) N.A. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 53.64 ton/ac.  
 (ii) 7.52 ton/ac.  
 (iii) Main effect of N, S and their interaction are significant.



(iv) Av. yield of sugarcane in ton/ac.

	N <sub>1</sub>	N <sub>2</sub>	N <sub>3</sub>	Mean
S <sub>1</sub>	66.36	59.70	52.31	59.46
S <sub>2</sub>	49.25	53.03	54.66	52.31
S <sub>3</sub>	48.51	46.70	52.25	49.15
Mean	54.71	53.14	53.07	53.64

S.E. of marginal mean of S or N = 2.17 ton/ac.

S.E. of body of table = 3.76 ton/ac.

Crop :- Sugarcane.

Ref :- Mh. 53(161).

Site :- Agri. Res. Stn., Kopergaon.

Type :- 'CM'.

Object :—To determine the suitable spacing in combination with different manuring for *Adsali* Sugarcane.

## 1. BASAL CONDITIONS :

(i) (a) *Bajra* and *Jowar* (mixed)—Sugarcane. (b) *Bajra-Jowar*. (c) Nil. (ii) (a) A type soil. (b) Refer soil analysis, Kopergaon. (iii) 20.7.1953. (iv) (a) 2 ploughings and 3 harrowings. (b) N.A. (c) 10,000 setts/ac. (d) As per treatments. (e) —. (v) 20 C.L./ac. of F.Y.M. (vi) CO-419. (vii) Irrigated. (viii) 6 weedings and 1 bunding. (ix) 39.92". (x) 5.2.1955.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 3 spacings : S<sub>1</sub>=3½', S<sub>2</sub>=4' and S<sub>3</sub>=4½' between rows.(2) 3 levels of N : N<sub>1</sub>=450, N<sub>2</sub>=525 and N<sub>3</sub>=600 lb./ac.

N applied as mixture of A/S and G.N.C. in 1 : 2 ratio.

## 3. DESIGN :

(i) 3×3 Fact. in R.B.D. (ii) (a) 9. (b) N.A. (iii) 4. (iv) (a) 31.5'×42.5' for 3.5' spacing and 4.5' spacing and 32'×42.5' for 4' spacing. (b) 24.5'×33.25' for 3.5' spacing, 24'×34' for 4' spacing and 22.5'×36.5' for 4.5' spacing. (v) 3.5'×4.5' for 3.5' spacing ; 4'×4.5' for 4' spacing and 4.5'×3' for 4.5' spacing. (vi) Yes.

## 4. GENERAL :

(i) Satisfactory. (ii) Attack of top-shoot, stem-borer and pyrilla. (iii) Germination count, tillering count and height. (iv) (a) 1951 to 1953. (b) No. (c) N.A. (v) (a) N.A. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 55.01 ton/ac.

(ii) 4.95 ton/ac.

(iii) Main effect of N, S and their interaction are significant.

(iv) Av. yield of sugarcane in ton/ac.

	N <sub>1</sub>	N <sub>2</sub>	N <sub>3</sub>	Mean
S <sub>1</sub>	60.02	56.53	55.96	57.50
S <sub>2</sub>	56.90	57.21	58.37	57.49
S <sub>3</sub>	48.14	51.27	50.69	50.03
Mean	55.02	55.00	55.01	55.01

S.E. of any marginal mean

= 1.42 ton/ac.

S.E. of body of the table

= 2.47 ton/ac.

Crop :- Sugarcane  
Site :- Agri. Res. Stn., Kopergaon.

Ref :- Mh. 50(103).  
Type :- 'CM'.

Object :—To determine the suitable spacing in combination with doses of manure.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) Wheat. (c) 3 bags of G.N.C. + 50 lb./ac. of A/S. (ii) (a) A type soil. (b) Refer soil analysis, Kopergaon. (iii) 21.8.1950. (iv) (a) and (b) N.A. (c) 10,000 setts/ac. (d) As per treatments. (e) —. (v) 20,000 lb./ac. of compost. (vi) CO-419 (mid-late). (vii) Irrigated. (viii) N.A. (ix) 21.26'. (x) 14 to 28.12.1951.

2. TREATMENTS :

Main-plot treatments :

3 spacings ;  $S_1=3'$ ,  $S_2=3.5'$  and  $S_3=4'$ .

Sub-plot treatments :

3 levels of N :  $N_1=450$ , and  $N_2=525$  and  $N_3=600$  lb./ac.

N applied as A/S.

3. DESIGN :

(i) Split-plot. (ii) (a) 3 main-plots/block ; 3 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 1.25 *guntha*. (b) 0.75 *guntha*, (v) N.A. (vi) Yes.

4. GENERAL :

(i) N.A. (ii) N.A. (iii) Yield of sugarcane. (iv) (a) N.A. (b) No. (c) N.A. (v) (a) N.A. (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 65.84 ton/ac.  
(ii) (a) 4.96 ton/ac.  
(b) 4.00 ton/ac.  
(iii) Main-plot treatments, sub-plot treatments and their interaction are not significant.  
(iv) Av. yield of sugarcane in lb./ac.

	$S_1$	$S_2$	$S_3$	Mean
$N_1$	62.84	69.22	64.20	65.42
$N_2$	63.36	65.28	65.10	64.58
$N_3$	63.72	70.58	68.26	67.52
Mean	63.31	68.36	65.85	65.84

S.E. of difference of two

1. S marginal means = 2.02 ton/ac.
2. N marginal means = 1.63 ton/ac.
3. N means at the same level of S = 2.83 ton/ac.
4. S means at the same level of N = 3.07 ton/ac.

Crop :- Sugarcane.  
Site :- Agri. Res. Stn., Lakhamapur.

Ref :- Mh. 50(73).  
Type :- 'CM'.

Object :—To find out the effect of different levels of manures in combination with different spacings.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) N.A. (c) 3 bags of G.N.C. and 50 lb./ac. of A/S. (ii) (a) F type soil - very shallow 12" to 15" deep light brown, pH=8.1. (b) Refer soil analysis, Lakhamapur. (iii) 25.8.1950. (iv) (a) 2 ploughings. (b) Setts planted by hand 1" to 2" deep in soil. (c) 10,000 setts/ac. (d) As per treatments. (e) —. (v) 10 C.L./ac. of compost after 1st ploughing and 10 C.L./ac. of compost in furrows before planting. (vi) N.A. (vii) Irrigated. (viii) 2 to 3 hand weedings, 3 to 4 interculturings, 1 light earthing up by Bahadur plough and final earthing up by ridger. (ix) 14.95" to 17.75". (x) 15.12.1952.

## 2. TREATMENTS :

Main-plot treatments :

3 spacings :  $S_1=3'$ ,  $S_2=3\frac{1}{2}'$  and  $S_3=4'$ .

Sub-plot treatments :

3 levels of N :  $N_1=450$ ,  $N_2=525$  and  $N_3=600$  lb./ac.

N as A/S sprinkled in 4 doses ; at planting, 6 weeks after, 12 weeks after and at the time of earthing up.

## 3. DESIGN :

(i) Split-plot. (ii) (a) 3 main-plots/block and 3 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 0.75 *guntha*. (v) 3.75' each length wise and 1 row each breadth wise. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Attack of top borers, controlled by cutting off affected shoots, collection and destroying of egg-masses and moths. (iii) Germination counts, monthly heights, plant population and sugarcane yield. (iv) (a) 1950—1953. (b) No. (c) N.A. (v) (a) Kopergaon, Deolali and Akluj. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 38.85 ton/ac.

(ii) (a) 27.53 ton/ac.

(b) 28.82 ton/ac.

(iii) None of the effects is significant.

(iv) Av. yield of sugarcane in ton/ac.

	$S_1$	$S_2$	$S_3$	Mean
$N_1$	42.01	37.20	40.30	39.84
$N_2$	40.30	39.60	40.00	39.97
$N_3$	37.20	35.60	37.50	36.77
Mean	39.84	37.47	39.27	38.86

S.E. of difference of two

1. S marginal means

=11.2 ton/ac.

2. N marginal means

=11.8 ton/ac.

3. N means at the same level of S

=20.4 ton/ac.

4. S means at the same level of N

=20.1 ton/ac.

Crop :- Sugarcane.

Ref :- Mh. 51(87).

Site :- Agri. Res. Stn., Lakhamapur.

Type :- 'CM'.

Object :- To find out the effect of different levels of manure in combination with different spacings.

## 1. BASAL CONDITIONS :

(i) (a) *Bajra—Tur* (mixed)—Sugarcane. (b) *Bajra—Tur*. (c) Nil. (ii) (a) Very shallow, 12" to 15", deep light brown, pH=8.1. F type soil. (b) Refer soil analysis, Lakhamapur. (iii) 20.8.1951. (iv) (a) 4 ploughings and 4 harrowings. (b) Setts planted by hand 1" to 2" deep. (c) Seed rate 12,000, 10,000 and 15,000 setts/ac. (d) As per treatments. (e) —. (v) 20 C.L./ac. of compost half after 1st ploughing and half in furrows before planting. (vi) N.A. (vii) Irrigated. (viii) 2 to 3 hand weedings, 3 to 4 interculturings by tooth cultivator implement, 1 light earthing up by *Bahadur* plough and 1 final earthing up by ridger. (ix) 10.46". (x) 13.1.1953.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 3 spacings :  $S_1=3\frac{1}{2}'$ ,  $S_2=4'$  and  $S_3=4\frac{1}{2}'$ .(2) 3 levels of N :  $N_1=450$ ,  $N_2=525$  and  $N_3=600$  lb./ac.

N as A/S sprinkled in 4 doses ; at the time of planting, 6 weeks later, 12 weeks later and at the time of earthing up.

## 3. DESIGN :

(i) 3×3 Fact. in R.B.D. (ii) (a) 9. (b) N.A. (iii) 4. (iv) (a) 32'×42.5' (b) 24'×34' (v) 1 row on each side and 4' on either end. (vi) Yes.

## 4. GENERAL :

(i) The general growth and the final yields were normal. (ii) Major pest-top-borer, cutting off the affected shoots, collection and destroying of egg-masses and moths. Slight rat trouble, controlled by poison baits of zinc phosphate. (iii) Germination counts, monthly height observations, plant population, sugarcane yield and fortnightly maturity study. (iv) (a) 1950—1953. (b) No. (c) N.A. (v) (a) Akluj, Kopergaon and Deolali. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 27.2 ton/ac.  
 (ii) 5.51 ton/ac.  
 (iii) Main effects and interactions are not significant.  
 (iv) Av. yield of sugarcane in ton/ac.

	S <sub>1</sub>	S <sub>2</sub>	S <sub>3</sub>	Mean
N <sub>1</sub>	26.7	25.7	27.8	26.7
N <sub>2</sub>	28.3	26.6	37.2	27.3
N <sub>3</sub>	28.4	31.4	22.7	27.5
Mean	27.8	27.9	27.9	27.2

S.E. of marginal mean of N or S = 1.59 ton/ac.  
 S.E. of body of table = 2.76 ton/ac.

Crop :-Sugarcane.

Ref :-Mh. 52(116).

Site :-Agri. Res. Stn., Lakhamapur.

Type :-'CM'.

Object :-To find out the effect of different levels of manure in combination with different spacing between rows.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Wheat. (c) Nil. (ii) (a) F type; very shallow 12"—15" deep. (b) Refer soil analysis, Lakhamapur. (iii) 11.7.1952. (iv) (a) Two ploughings. (b) N.A. (c) 10,000 setts/ac. (d) As per treatments. (e) —. (v) 10 C.L./ac. of compost applied after 1st ploughing and same dose applied in furrows before planting. (vi) N.A. (vii) Irrigated. (viii) 2 to 3 hand weedings, 3 to 4 interculturings, one light earthing up by *bahadur* plough and a final earthing up by ridger. (ix) 10.46" to 24.12". (x) 4.2.1954.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 3 levels of N: N<sub>1</sub>=450, N<sub>2</sub>=525 and N<sub>3</sub>=600 lb./ac.

(2) 3 spacings: S<sub>1</sub>=3½', S<sub>2</sub>=4' and S<sub>3</sub>=4½' between rows.

N as A/S sprinkled in 4 doses; at planting, 6 weeks later, 12 weeks later and at the time of earthing up.

## 3. DESIGN :

(i) 3×3 Fact. in R.B.D. (ii) (a) 9. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 0.75 *guntha*. (v) 3.75' on either side length wise and one row on either side breadth wise. (vi) Yes.

## 4. GENERAL :

(i) Normal. (ii) Attack of top borer; controlled by cutting of affected shoots; collection and destroying of egg-masses and moth. (iii) Germination count, monthly height data, plant population and sugarcane yield. (iv) (a) 1950—1953. (b) No. (c) N.A. (v) (a) Kopergaon, Deolali and Akluj. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 25.95 ton/ac.  
 (ii) 3.94 ton/ac.  
 (iii) None of the effects is significant.

(iv) Av. yield of sugarcane in ton/ac.

	N <sub>1</sub>	N <sub>2</sub>	N <sub>3</sub>	Mean
S <sub>1</sub>	27.19	24.83	29.20	27.07
S <sub>2</sub>	25.57	25.54	27.73	26.28
S <sub>3</sub>	21.45	25.00	27.07	24.50
Mean	24.73	25.12	28.00	25.95

S.E. of marginal mean of S or N = 1.13 ton/ac.  
 S.E. of body of table = 1.97 ton/ac.

Crop :- Sugarcane.

Ref :- Mh. 53(99).

Site :- Agri. Res. Stn., Lakhmapur.

Type :- 'CM'.

Object :- To find out the suitable spacing and manuring for *Adsali* Sugarcane crop.

## 1. BASAL CONDITIONS :

- (i) (a) *Bajra-Tur* mixed—*Adsali* sugarcane. (b) *Bajra-Tur* mixed. (c) 2 md./ac. of manure mixture  
 (ii) (a) Shallow type of soil 6" to 9" ; deep light brown in colour. (b) Refer soil analysis, Lakhmapur.  
 (iii) 9.7.1953. (iv) (a) 2 ploughings with deep plough 10" ; clod crushing & opening furrows. (b) N.A.  
 (c) 10,000 serts/ac. 3 budded. (d) As per treatments. (e) — (v) 20 C.L./ac. of compost applied  
 at the time of preparatory tillage. (vi) CO. 419 (late). (vii) Irrigated. (viii) 2 interculturings with  
 tooth cultivators, light earthing up by a plough, weeding twice at final earthing up by ridger. (ix) 24.72"  
 to 33.52". (x) 27.1.1955 to 2.2.1955.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 3 spacings : S<sub>1</sub>=3½', S<sub>2</sub>=4' and S<sub>3</sub>=4½' between rows.(2) 3 top dressing of N : N<sub>1</sub>=450, N<sub>2</sub>=525 and N<sub>3</sub>=600 lb./ac.

N applied in 4 doses as mixture of A/S and G.N.C. at different stages ; at planting, 6 weeks after planting, 12 weeks after planting and 6 months after planting.

## 3. DESIGN :

- (i) 3×3 Fact. in R.B.D. (ii) (a) 9. (b) N.A. (iii) 4. (iv) (a) 31.5'×42.5'. (b) 24.5'×33.35'. (v) 2 rows. (vi) Yes.

## 4. GENERAL :

- (i) Heavy lodging on 25.9.1954 due to rains. (ii) Top shoot borer 1 to 11% and stem borer 1 to 4.5% ; cutting out the affected plants and collection of egg-mass ; medium attack of pyrilla, spraying 50% B.H.C.  
 (iii) Sugarcane height, tillering count and germination count, botanical observations etc. and yield.  
 (iv) (a) 1950—1953. (b) No. (c) N.A. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 45.95 ton/ac.  
 (ii) 6.63 ton/ac.  
 (iii) None of the effects is significant.  
 (iv) Av. yield of sugarcane in ton/ac.

	N <sub>1</sub>	N <sub>2</sub>	N <sub>3</sub>	Mean
S <sub>1</sub>	49.60	44.20	49.12	47.64
S <sub>2</sub>	47.14	47.82	45.01	46.65
S <sub>3</sub>	40.95	45.84	43.96	43.58
Mean	45.89	45.95	46.03	45.95

S.E. of marginal mean of N or S = 1.91 ton/ac.  
 S.E. of body of table = 3.32 ton/ac.

Crop :-Sugarcane.

Ref. :-Mh 50(97).

Site :-Agri. Res. Stn., Padegaon.

Type :-'CM'.

Object :-To find out the optimum spacing and dose of N for Sugarcane.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Nil. (c) Nil. (ii) (a) B type. (b) Refer soil analysis, Padegaon. (iii) 26.11.1950. (iv) (a) and (b) N. A. (c) 10,000 setts/ac. (d) As per treatments. (e) —. (v) Nil. (vi) CO. 419 (mid-late) (vii) Irrigated. (viii) 2 weedings, 1 interculturing and 1 earthing. (ix) 14.68° in 1951-52. (x) 26.3.1952.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 3 spacing :- $S_1=3\frac{1}{2}'$ ,  $S_2=4'$  and  $S_3=4\frac{1}{2}'$ .(2) 3 levels of N :- $N_1=375$ ,  $N_2=450$  and  $N_3=525$  lb./ac.

N applied as A/S.

## 3. DESIGN :

(i)  $3 \times 3$  Fact in R.B.D. (ii) (a) 9. (b) N.A. (iii) 6. (iv) (a) N.A. (b) 1/40th of an acre. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) The expt. was taken in newly developed area and hence the crop growth was uneven. (ii) Nil. (iii) Brix, Sucrose% and sugarcane yield. (iv) (a) No. (b), (c) No. (v) (a), (b) Nil. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 46.88 ton/ac.

(ii) 9.65 ton/ac.

(iii) Main effect of S and interaction  $N \times S$  are significant. Main effect of N is not significant.

(iv) Av. yield of sugarcane in ton/ac.

	$S_1$	$S_2$	$S_3$	Mean
$N_1$	41.00	55.10	43.10	46.40
$N_2$	50.10	52.20	45.50	49.27
$N_3$	49.20	44.80	40.90	44.97
Mean	46.79	50.70	43.17	46.88

S.E. of marginal mean of N or S =2.27 ton/ac.

S.E. of body of table =3.94 ton/ac.

Crop :-Sugarcane (*Adsali*).

Ref. :-Mh. 50(98).

Site :-Agri. Res. Stn., Padegaon.

Type :-'CM'.

Object :-To find out the optimum spacing and dose of N for Sugarcane.

## 1. BASAL CONDITIONS :

(i) (a) Sugarcane—*Jowar*. (b) Nil. (c) Nil. (ii) (a) B type. (b) Refer soil analysis, Padegaon. (iii) 12.9.1950. (iv) (a) and (b) N.A. (c) Varies according to spacings, the standard being 10,000 three budded setts/ac. for 4' spacing. (d) As per treatments. (e) —. (v) Nil. (vi) CO. 419 (mid-late). (vii) Irrigated. (viii) 2 interculturings, 2 weedings and 1 earthing up. (ix) 14.68°. (x) 5.3.1952.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 3 spacings :- $S_1=3'$ ,  $S_2=3\frac{1}{2}'$  and  $S_3=4'$ .(2) 3 levels of N :- $N_1=450$ ,  $N_2=525$  and  $N_3=600$  lb./ac.

N applied as A/S+G.N.C. in 1 : 1 ratio.

## 3. DESIGN :

(i)  $3 \times 3$  Fact in R.B.D. (ii) (a) 9. (b) N.A. (iii) 6. (iv) (a) N.A. (b) 0.75 *guntha*. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) The growth of crop was uneven as the area was brought under cultivation recently. (ii) Nil. (iii) Brix, sucrose% and sugarcane yield. (iv) (a) 1950—1953. (b), (c) No. (v) (a), (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 45.74 ton/ac.  
 (ii) 14.28 ton/ac.  
 (iii) Only the interaction N × S is significant.  
 (iv) Av. yield of sugarcane in ton/ac.

	S <sub>1</sub>	S <sub>2</sub>	S <sub>3</sub>	Mean
N <sub>1</sub>	36.90	48.40	41.50	42.26
N <sub>2</sub>	44.70	50.90	43.80	46.47
N <sub>3</sub>	44.00	54.10	47.40	48.50
Mean	41.87	51.13	44.23	45.74

S.E. of marginal mean of N or S = 3.36 ton/ac.

S.E. of body of table = 5.83 ton/ac.

Crop :- Sugarcane (*Adsali*).

Site :- Agri. Res. Stn., Padegaon.

Ref :- Mh. 51(136).

Type :- 'CM'.

Object :- To find out the optimum spacing and dose of N for Sugarcane.

## 1. BASAL CONDITIONS :

(i) (a) Sugarcane—*Jowar*. (b) *Jowar*. (c) Nil. (ii) (a) B type. (b) Refer soil analysis, Padegaon. (iii) 3.8.1951. (iv) (a) N.A. (b) N.A. (c) 12500 (for 3½' spacing), 10,000 (for 4' spacing) and 15000 (for 4½' spacing) setts/ac. (d) As per treatments. (e) —. (v) Nil. (vi) CO. 419 (mid-late). (vii) Irrigated. (viii) 2 interculturings, 2 weedings and 1 earthing up. (ix) 14.68". (x) 18.2, 1953.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 3 spacings : S<sub>1</sub> = 3½', S<sub>2</sub> = 4' and S<sub>3</sub> = 4½'.

(2) 3 levels of N : N<sub>1</sub> = 450, N<sub>2</sub> = 525 and N<sub>3</sub> = 600 lb./ac.

N applied as A/S + G.N.C. in 1 : 1.

## 3. DESIGN :

(i) 3 × 3 Fact. in R.B.D. (ii) (a) 9. (b) N.A. (iii) 6. (iv) (a) N.A. (b) 0.75 *guntha*. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) Normal. (ii) Nil. (iii) Brix, sucrose and glucose % and Sugarcane yield. (iv) (a) 1950—1953 (modified in 1951). (b) and (c) No. (v) (a) and (b) N.A. (vi) For 4½' spacing sugarcane is planted in a double line parallel to each other (4" to 5" apart) with seedrate of 15000 setts/ac. (vii) Nil.

## 5. RESULTS :

- (i) 46.83 ton/ac.  
 (ii) 8.87 ton/ac.  
 (iii) Main effects and interaction are not significant.

(iv) Av. yield of sugarcane in ton/ac.

	S <sub>1</sub>	S <sub>2</sub>	S <sub>3</sub>	Mean
N <sub>1</sub>	40.93	41.94	44.93	42.60
N <sub>2</sub>	48.86	50.19	46.20	48.42
N <sub>3</sub>	49.30	48.88	50.25	49.48
Mean	46.36	47.00	47.13	46.83

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

=2.09 ton/ac.  
=3.62 ton/ac.

Crop :- Sugarcane (*Adsali*).  
Site :- Agri. Res. Stn., Padegaon.

Ref :- Mh. 52(163)  
Type :- 'CM'.

Object :- To find out the optimum spacing and dose of N for Sugarcane.

#### 1. BASAL CONDITIONS :

(i) (a) Sugarcane—*Jowar*. (b) *Jowar*. (c) Nil. (ii) (a) B type. (b) Refer soil analysis, Padegaon. (iii) 13.8.1952.  
(iv) (a) N.A. (b) Planting in double lines parallel to each other (for 4½' spacing). (c) According to spacings : 12500 (3½'), (10,000 (4') and 15000 (4½') setts/ac. (d) As per treatments. (e) —. (v) Nil. (vi) CO. 419 (Mid late). (vii) Irrigated. (viii) 2 interculturings, 2 weedings and 1 earthing up. (ix) 11.01° to 16.35°. (x) 27.2.1954.

#### 2. TREATMENTS :

All combinations of (1) and (2)

(1) 3 spacings : S<sub>1</sub>=3½', S<sub>2</sub>=4' and S<sub>3</sub>=4½'.

(2) 3 levels of N : N<sub>1</sub>=450, N<sub>2</sub>=525 and N<sub>3</sub>=600 lb./ac.

N as A/S+cake in 1 : 1 ratio.

#### 3. DESIGN :

(i) 3×3 Fact. in R.B.D. (ii) (a) 9. (b) N.A. (iii) 6. (iv) (a) N.A. (b) 0.75 *guntha*. (v) N.A. (vi) Yes.

#### 4. GENERAL :

(i) Good. (ii) Nil. (iii) Brix, sucrose, glucose % and sugarcane yield. (iv) (a) 1950—1953 (modified in 1951). (b) and (c) No. (v) (a) and (b) N.A. (vi) and (vii) Nil.

#### 5. RESULTS :

(i) 68.39 ton/ac.  
(ii) 8.19 ton/ac.  
(iii) Main effects and interaction are not significant.  
(iv) Av. yield of sugarcane in ton/ac.

	S <sub>1</sub>	S <sub>2</sub>	S <sub>3</sub>	Mean
N <sub>1</sub>	69.72	69.46	60.64	66.61
N <sub>2</sub>	66.51	69.60	70.85	68.99
N <sub>3</sub>	69.45	68.20	71.11	69.59
Mean	68.56	69.09	67.53	68.39

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

=1.93 ton/ac.  
=3.34 ton/ac.



Crop :- Sugarcane (*Adsali*).  
Site :- Agri. Res. Stn., Padegoan.

Ref :- Mh. 53(244).  
Type :- 'CM'.

Object :- To find out the optimum spacing and manures for Sugarcane.

1. BASAL CONDITIONS :

(i) (a) Sugarcane—*Jowar*. (b) *Jowar*. (c) Nil. (ii) (a) B type. (b) Refer soil analysis, Padegoan. (iii) 7.8.1953. (iv) (a) N.A. (b) Planted in double line. (c) According to spacings 12,500 (3.5'), 10,300 (4') and 15,000 (4.5') setts/ac. (d) As per treatments. (e) —. (v) Nil. (vi) CO. 419 (mid-late). (vii) Irrigated. (viii) 2 interculturing, 2 weedings and 1 earthing up. (ix) 16.35" to 20.16". (x) 27 to 31.12.1954.

2. TREATMENTS :

All combinations of (1) and (2)

(1) 3 spacings :  $S_1=3.5'$ ,  $S_2=4'$  and  $S_3=4.5'$ .  
(2) 3 levels of N :  $N_1=450$ ,  $N_2=525$  and  $N_3=600$  lb./ac.  
N as A/S + cake in 1 : 1 ratio.

3. DESIGN :

(i) 3×3 Fact. in R.B.D. (ii) (a) 9. (b) N.A. (iii) 6. (iv) (a) N.A. (b) 0.75 *guntha*. (v) N.A. (vi) Yes.

4. GENERAL:

(i) Good. (ii) Nil. (iii) Brix, sucrose, glucose% and sugarcane yield. (iv) (a) 1950 to 1953 (modified in 1951). (b) and (c) No. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 62.65 ton/ac.  
(ii) 6.29 ton/ac.  
(iii) Main effects and interaction are not significant.  
(iv) Av. yield of sugarcane in ton/ac.

	$S_1$	$S_2$	$S_3$	Mean
$N_1$	66.10	63.40	67.60	65.70
$N_2$	62.90	62.80	58.20	61.30
$N_3$	63.70	60.10	59.10	60.97
Mean	64.23	62.10	61.63	62.65

S.E. of marginal mean of N or S = 1.48 ton/ac.  
S.E. of body of table = 2.56 ton/ac.

Crop :- Sugarcane.  
Site :- Agri. Res. Stn., Akluj.

Ref :- Mh. 48(77).  
Type :- 'IM'.

Object :- To find out the requirements of irrigations and manure for Sugarcane.

1. BASAL CONDITIONS :

(i) (a) Sugarcane—*Rabi Jowar*. (b) *Rabi Jowar*. (c) Nil. (ii) (a) D type. (b) Refer soil analysis, Akluj. (iii) July to September 1948. (iv) (a) 2 ploughings, harrowing and ridging. (b) to (e) N.A. (v) Nil. (vi) CO. 419. (vii) Irrigated. (viii) 2-3 weedings, one light earthing up and a final earthing up. (ix) 21.78". (x) 5.1.1950.

2. TREATMENTS :

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

(1) 2 levels of irrigation :  $I_1=115$  and  $I_2=130$  acre inches.  
(2) 3 levels of F.Y.M. :  $F_1=20$ ,  $F_2=30$  and  $F_3=40$  C.L./ac.  
(3) 3 levels of manure :  $N_1=375$ ,  $N_2=450$  and  $N_3=525$  lb./ac.  
Manure applied as mixture of A/S and G.N.C. in 1 : 2 ratio.

## 3. DESIGN :

(i)  $3 \times 3 \times 2$  Fact. in R.B.D. (ii) (a) 18. (b) N.A. (iii) 3. (iv) (a) 1.6 *guntha*. (b) 1.0 *guntha*. (v) Nil. (vi) Yes.

## 4. GENERAL :

(i) Slight lodging. (ii) Stem-borer 3.5%, top-borer 3.5 %. (iii) Germination and tillering %, height and girth of the sugarcane, total no. of canes and total weight. (iv) (a) 1941-42 to 1946-47 *suru* planting; 1947-49 to 1949-51 *adsali*. (b) No. (c) Nil. (v) (a) Kopergoan, Deolali and Lakhmapur. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 50.55 ton/ac.  
 (ii) 5.33 ton/ac.  
 (iii) None of the effects is significant.  
 (iv) Av. yield of sugarcane in ton/ac.

	F <sub>1</sub>	F <sub>2</sub>	F <sub>3</sub>	Mean	N <sub>1</sub>	N <sub>2</sub>	N <sub>3</sub>
I <sub>1</sub>	51.17	49.10	50.33	50.20	47.71	53.05	49.84
I <sub>2</sub>	53.53	47.56	51.50	50.86	50.19	52.04	50.36
Mean	52.35	48.33	50.91	50.55	48.95	52.54	50.10
N <sub>1</sub>	50.75	46.51	49.59				
N <sub>2</sub>	53.85	51.59	52.19				
N <sub>3</sub>	52.43	46.89	50.96				

S.E. of marginal mean or N or F.

=1.25 ton/ac.

S.E. of marginal mean of I.

=1.03 ton/ac.

S.E. of body of table I × F or I × N

=1.78 ton/ac.

S.E. of body of table F × N

=2.18 ton/ac.

Crop :- Sugarcane (*Ratoon*).

Ref :- Mh. 49(108).

Site :- Agri. Res. Stn., Akluj.

Type :- 'IM'.

Object :- To find out the requirements of irrigations and manure for Sugarcane crop.

## 1. BASAL CONDITIONS :

(i) (a) Sugarcane—*Ratoon*—*Rabi Jowar*. (b) Sugarcane. (c) As per treatments. (ii) (a) D type. (b) Refer soil analysis, Akluj. (iii) N.A. (iv) (a) Ridging. (b) to (e) N.A. (v) Nil. (vi) CO.419. (vii) Irrigated. (viii) 2-3 weedings and earthing up. (ix) 23.64". (x) N.A.

## 2. TREATMENTS :

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

(1) 2 levels of irrigation : I<sub>1</sub>=115 and I<sub>2</sub>=130 acre inches.

(2) 3 levels of F.Y.M. : F<sub>1</sub>=20, F<sub>2</sub>=30 and F<sub>3</sub>=40 C.L./ac.

(3) 3 levels of manure : N<sub>1</sub>=375, N<sub>2</sub>=450 and N<sub>3</sub>=525 lb./ac.

Manure applied as mixture of A/S and G.N.C. in 1 : 2 ratio.

## 3. DESIGN :

(i)  $3 \times 3 \times 2$  Fact. in R.B.D. (ii) (a) 18. (b) N.A. (iii) 3. (iv) (a) 1.6 *guntha*. (b) 1.0 *guntha*. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) No lodging. (ii) Stem-borer 3 to 3.5 % and top borer 3.0 to 3.5%. (iii) Height and girth of sugarcane, total sugarcane and weight of sugarcane. (iv) (a) 1941-42 to 1946-47 *suru* planting; 1947-1949 to 1949-1951 *adsali* planting. (b) No. (c) No. (v) (a) Kopergaon, Deolali and Lakhmapur. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 30.92 ton/ac.  
(ii) 4.03 ton/ac.  
(iii) Main effect of F alone is significant.  
(iv) Av. yield of sugarcane in ton/ac.

	F <sub>1</sub>	F <sub>2</sub>	F <sub>3</sub>	Mean	N <sub>1</sub>	N <sub>2</sub>	N <sub>3</sub>
I <sub>1</sub>	27.29	32.48	32.75	30.84	28.50	32.07	31.95
I <sub>2</sub>	30.25	32.15	30.50	30.97	29.68	30.65	32.63
Mean	28.77	32.31	31.62	30.92	29.09	31.36	32.29
N <sub>1</sub>	25.55	31.19	30.02				
N <sub>2</sub>	29.40	32.28	32.39				
N <sub>3</sub>	31.35	32.97	32.54				

S.E. of marginal mean of N or F = 0.95 ton/ac.  
S.E. of marginal mean of I = 0.78 ton/ac.  
S.E. of body of table F×N = 1.65 ton/ac.  
S.E. of body of tables I×F and I×N = 1.34 ton/ac.

Crop :- Sugarcane (*Adeali*).

Ref :- Mh. 49(110).

Site :- Agri. Res. Stn., Akluj.

Type :- 'IM'.

Object :- To find out the requirements of irrigation and manure for Sugarcane crop.

## 1. BASAL CONDITIONS :

- (i) (a) Sugarcane—*rabi Jowar*. (b) *Rabi Jowar*. (c) Nil. (ii) (a) D type. (b) Refer soil analysis, Akluj.  
(iii) 31.7.1949. (iv) (a) 2 ploughings, harrowing and ridging. (b) to (e) N.A. (v) Nil. (vi) CO.419.  
(vii) Irrigated. (viii) 2 to 3 weedings, 1 light earthing up and final earthing up. (ix) 23.64". (x) 1.2.1951.

## 2. TREATMENTS :

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

- (1) 2 levels of irrigation : I<sub>1</sub>=115 and I<sub>2</sub>=130 acre inches.  
(2) 3 levels of F.Y.M. : F<sub>1</sub>=20, F<sub>2</sub>=30 and F<sub>3</sub>=40 C.L./ac.  
(3) 3 levels of manures : N<sub>1</sub>=375, N<sub>2</sub>=450 and N<sub>3</sub>=525 lb./ac. of N.

N applied as mixture of A/S and G.N.C. in 1 : 2 ratio.

## 3. DESIGN :

- (i) 3×3×2 Fact. in R.B.D. (ii) (a) 18. (b) N.A. (iii) 3. (iv) (a) 1.6 *guntha*. (b) 1.4 *guntha*. (v) N.A.  
(vi) Yes.

## 4. GENERAL :

- (i) Lodging to some extent. (ii) Stemborer 3.5% and top borer 3.0%. (iii) Germination and tillering percentages, height and girth of sugarcane, total no. of canes and weight. (iv) (a) 1941-42 to 1946-47 *suru* planting and 1947-1949 to 1949-1951 *adsali* planting. (b) and (c) No. (v) (a) Kopergaon, Deolali and Lakhmapur. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 69.96 ton/ac.  
(ii) 7.13 ton/ac.  
(iii) Main effect of F is highly significant. Main effect of N is significant. Other effect and interactions are not significant.  
(iv) Av. yield of sugarcane in ton/ac.

	F <sub>1</sub>	F <sub>2</sub>	F <sub>3</sub>	Mean	N <sub>1</sub>	N <sub>2</sub>	N <sub>3</sub>
I <sub>1</sub>	65.99	71.34	70.79	69.37	64.01	72.88	71.23
I <sub>2</sub>	64.35	70.68	76.65	70.52	67.72	68.60	75.26
Mean	65.12	71.01	73.72	69.96	65.86	70.73	73.24
N <sub>1</sub>	61.26	68.56	67.77				
N <sub>2</sub>	68.08	70.59	73.54				
N <sub>3</sub>	66.01	73.87	79.84				

S.E. of marginal mean of N or F	=1.68 ton/ac.
S.E. of marginal mean of I	=1.37 ton/ac.
S.E. of body of N×I or F×I table	=2.38 ton/ac.
S.E. of body of N×F table	=2.91 ton/ac.

Crop :- Sugarcane (*Adsali*).

Ref :- Mh 48(43).

Site :- Agri. Res. Stn., Deolali.

Type :- 'IM'.

Object :- To study the requirements of water and the effect of different quantities of manures.

## 1. BASAL CONDITIONS :

- (i) (a) to (c) N.A. (ii) (a) G type soil. (b) N.A. (iii) 27. 7. 1948. (iv) (a) 2 ploughings and 1 harrowing. (b) N.A. (c) 10,000 setts/ac. (d) 4' between rows. (e) N.A. (v) N.A. (vi) CO. 419. (vii) Irrigated. (viii) N.A. (ix) 23.19" to 39.21". (x) N.A.

## 2. TREATMENTS :

Main-plot treatments :

3 levels of N : N<sub>1</sub>=375, N<sub>2</sub>=450 and N<sub>3</sub>=525 lb./ac.

Sub-plot treatments :

All combinations of (1) and (2).

(1) 2 levels of irrigation : I<sub>1</sub>=115 and I<sub>2</sub>=130 acre inches.

(2) 3 levels of F.Y.M. : F<sub>1</sub>=20, F<sub>2</sub>=30 and F<sub>3</sub>=40 C.L./ac.

## 3. DESIGN :

- (i) Split-plot. (ii) (a) 3 main-plots/block ; 6 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) 32'×54.45'. (b) 1/40th acre. (v) N.A. (vi) Yes.

## 4. GENERAL :

- (i) N.A. (ii) N.A. (iii) N.A. (iv) (a) 1948—1950. (b) No. (c) N.A. (v) (a) Kopergaon. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 50.96 ton/ac.  
(ii) (a) 3.35 ton/ac.  
(b) 7.28 ton/ac.  
(iii) Effect of main-plot treatments alone is significant.

(iv) Av. yield of sugarcane in ton/ac.

	F <sub>1</sub>	F <sub>2</sub>	F <sub>3</sub>	Mean	N <sub>1</sub>	N <sub>2</sub>	N <sub>3</sub>
I <sub>1</sub>	53.84	48.70	52.53	51.69	51.11	48.66	55.30
I <sub>2</sub>	50.84	49.20	50.68	50.24	50.83	48.89	51.01
Mean	52.34	48.95	51.60	50.96			
N <sub>1</sub>	53.43	47.58	51.91	50.97			
N <sub>2</sub>	46.73	50.11	49.45	48.76			
N <sub>3</sub>	56.89	49.15	53.41	53.15			

S.E. of difference of two

1. N marginal means =1.12 ton/ac.
2. F marginal means =2.43 ton/ac.
3. I marginal means =1.98 ton/ac.
4. means in I×F table =3.44 ton/ac.
5. F means at the same level of N =4.20 ton/ac.
6. I means at the same level of N =3.44 ton/ac.
7. N means at the same level of F =3.61 ton/ac.
8. N means at the same level of I =2.67 ton/ac.

Crop :- Sugarcane (*Adsali*).

Site :- Agri. Res. Stn., Deolali.

Ref :- Mh 49(70).

Type :- 'IM'.

Object :- To study the requirement of water and the effect of different quantities of manures.

## 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) G type soil. (b) N.A. (iii) 15.7.1949. (iv) (a) 2 ploughings and 1 harrowing. (b) N.A. (c) 10,000 setts/ac. (d) 4' spacing between rows. (e) —. (v) Nil. (vi) CO. 419. (vii) Irrigated. (viii) N.A. (ix) 23.19" to 26.52". (x) N.A.

## 2. TREATMENTS :

Main-plot treatments :

3 levels of N: N<sub>1</sub>=375, N<sub>2</sub>=450 and N<sub>3</sub>=525 lb./ac.

Sub-plot treatments :

All combinations of (1) and (2)

(1) 2 levels of irrigation: I<sub>1</sub>=115 and I<sub>2</sub>=130 acre inches.(2) 3 levels of F.Y.M. :- F<sub>1</sub>=20, F<sub>2</sub>=30 and F<sub>3</sub>=40 C.L./ac.

## 3. DESIGN :

(i) Split-plot. (ii) (a) 3 main-plots/block; 6 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) 48'×36'. (b) 1/40 acre. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) N.A. (iii) N.A. (iv) (a) 1948—1950 to 1950—1952. (b) No. (c) N.A. (v) (a) Kopergaon. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 39.99 ton/ac.
- (ii) (a) 3.59 ton/ac.  
(b) 5.13 ton/ac.
- (iii) None of the effects is significant.

(iv) Av. yield of sugarcane in ton/ac.

	F <sub>1</sub>	F <sub>2</sub>	F <sub>3</sub>	Mean	N <sub>1</sub>	N <sub>2</sub>	N <sub>3</sub>
I <sub>1</sub>	37.78	38.77	42.70	39.75	36.86	42.53	39.86
I <sub>2</sub>	40.23	40.80	38.54	40.45	42.18	41.51	37.67
Mean	39.01	39.78	40.62	39.99			
N <sub>1</sub>	41.26	36.66	40.64	39.52			
N <sub>2</sub>	39.56	41.67	42.15	42.02			
N <sub>3</sub>	36.19	41.02	39.08	38.76			

S.E. of difference of two

1. N marginal means = 1.20 ton/ac.
2. F marginal means = 1.71 ton/ac.
3. I marginal means = 1.40 ton/ac.
4. means in I × F table = 2.42 ton/ac.
5. F means at the same level of N = 2.96 ton/ac.
6. I means at the same level of N = 2.42 ton/ac.
7. N means at the same level of F = 2.70 ton/ac.
8. N means at the same level of I = 2.09 ton/ac.

Crop :- Sugarcane (*Adsali*).

Ref :- Mh. 50(84).

Site :- Agri. Res. Stn., Deolali.

Type :- 'IM'.

Object :- To study the requirements of water and the effect of different quantities of manure.

## 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) G type soil. (b) N.A. (iii) 16.7.1950. (iv) (a) 2 ploughings and 1 harrowing. (b) N.A. (c) 10,000 setts/ac. (d) 4' between rows. (e) N.A. (v) Nil. (vi) CO. 419. (vii) Irrigated. (viii) N.A. (ix) 1950—26.52° and 1951—27.71°. (x) N.A.

## 2. TREATMENTS :

Main-plot treatments :

3 levels of N : N<sub>1</sub>=375, N<sub>2</sub>=450 and N<sub>3</sub>=525 lb./ac.

Sub-plot treatments :

All combinations of (1) and (2)

(1) 2 levels of irrigation : I<sub>1</sub>=115 and I<sub>2</sub>=130 acre inches.(2) 3 levels of F.Y.M. : F<sub>1</sub>=20, F<sub>2</sub>=30 and F<sub>3</sub>=40 C.L./ac.

## 3. DESIGN :

(i) Split-plot. (ii) (a) 3 main-plots/block ; 6 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) 48' × 36'. (b) 1/40 ac. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) N.A. (iii) N.A. (iv) (a) 1948—1950 to 1950—1952. (b) No. (c) N.A. (v) (a) Kopergaon. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 44.43 ton/ac.
- (ii) (a) 4.91 ton/ac.
- (b) 5.02 ton/ac.
- (iii) Only the interaction I × F is significant.

(iv) Av. yield of sugarcane in ton/ac.

	F <sub>1</sub>	F <sub>2</sub>	F <sub>3</sub>	Mean	N <sub>1</sub>	N <sub>2</sub>	N <sub>3</sub>
I <sub>1</sub>	46.52	44.20	46.13	45.62	45.19	44.35	47.32
I <sub>2</sub>	41.68	47.01	41.10	43.25	42.25	43.19	44.31
Mean	44.08	45.60	43.61	44.43			
N <sub>1</sub>	43.29	46.51	41.36	43.72			
N <sub>2</sub>	43.44	45.10	42.76	43.77			
N <sub>3</sub>	45.49	45.22	46.73	45.81			

S.E. of difference of two

1. N marginal means =1.64 ton/ac.
2. F marginal means =1.67 ton/ac.
3. I marginal means =1.37 ton/ac.
4. means in I×F table =2.36 ton/ac.
5. F means at the same level of N =2.89 ton/ac.
6. I means at the same level of N =2.36 ton/ac.
7. N means at the same level of F =2.88 ton/ac.
8. N means at the same level of I =0.34 ton/ac.

Crop :- Sugarcane.

Ref :- Mh. 49(46).

Site :- Agri. Res. Stn., Lakhmapur.

Type :- 'IM'.

Object:—To study the effect of F.Y.M. along with different irrigation and N does on Sugarcane yield

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) N.A. (c) N.A. (ii) (a) F type, very shallow ; 12" to 15" deep light brown ; pH=8.1. (b) Refer soil analysis, Lakhmapur. (iii) 26.8.1949. (iv) (a) Two ploughings. (b) N.A. (c) 10,000 setts/ac. (d) 4' between rows and 4" to 6" between plants. (e) —. (v) Nil. (vi) N.A. (vii) Irrigated. (viii) 2 to 3 hand weedings, 3 to 4 interculturings and one light earthing up. (ix) 1949—26.95" ; 1950—14.95". (x) 12.2.1951.

## 2. TREATMENTS :

Main-plot treatments :

3 levels of F.Y.M. : F<sub>1</sub>=20, F<sub>2</sub>=30 and F<sub>3</sub>=40 C.L./ac.

Sub-plot treatments :

All combinations of (1) and (2)

(1) 2 levels of irrigation : I<sub>1</sub>=115, and I<sub>2</sub>=130 acre inches.(2) 3 levels of N : N<sub>1</sub>=375, N<sub>2</sub>=450 and N<sub>3</sub>=525 lb./ac. of A/S.

A/S sprinkled in 4 doses-at planting, 6 weeks after planting, 12 weeks after planting and at the time of earthing up.

## 3. DESIGN :

(i) Split-plot. (ii) (a) 3 main-plots/block ; 6 sub-plots/main-plot. (b) N.A. (iii) 3. (iv) (a) 1.6 *guntha* (b) 1 *guntha*. (v) 4.75' each length wise and one row each breadth wise. (vi) Yes.

## 4. GENERAL :

(i) Below normal. (ii) Attack of top borers ; controlled by cutting off affected shoots ; collection and destroying of egg masses and moths. (iii) Yield of sugarcane. (iv) (a) First started in 1941 to 1947, revised in 1949. (b) No. (c) N.A. (v) (a) Akluj, Kopergaon and Deolali. (b) No. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 21.6 ton/ac.
- (ii) (a) 4.13 ton/ac.
- (b) 3.83 ton/ac.
- (iii) None of the effects is significant.

(iv) Av. yield of sugarcane in ton/ac.

	N <sub>1</sub>	N <sub>2</sub>	N <sub>3</sub>	Mean	I <sub>1</sub>	I <sub>2</sub>
F <sub>1</sub>	20.1	23.4	23.6	22.4	21.1	23.7
F <sub>2</sub>	18.9	19.3	21.7	20.8	19.8	20.1
F <sub>3</sub>	21.3	23.6	22.5	22.4	22.1	22.7
Mean	20.1	22.1	22.6	21.6		
I <sub>1</sub>	19.9	22.6	20.5	21.0		
I <sub>2</sub>	20.3	21.6	24.6	22.2		

## S.E. of difference of two

1. F marginal means = 1.37 ton/ac.
2. N marginal means = 1.27 ton/ac.
3. I marginal means = 1.03 ton/ac.
4. means in N×I table = 1.81 ton/ac.
5. I means at the same level of F = 1.79 ton/ac.
6. N means at the same level of F = 2.19 ton/ac.
7. F means at the same level of I = 1.83 ton/ac.
8. F means at the same level of N = 2.24 ton/ac.

Crop :- Sugarcane.

Ref :- Mh. 52(16).

Site :- Agri. Res. Stn., Padegaon.

Type :- 'IM'.

Object :- To study the manurial and water requirements of Sugarcane crop.

## 1. BASAL CONDITIONS :

(i) (a) Sugarcane (*Adsali*)—*Ratoon—Bajra+Tur*. (b) *Bajra+Tur* (mixed). (c) Nil. (ii) (a) B type soil. (b) Refer soil analysis, Padegaon. (iii) 19 and 20.7.1952. (iv) (a) Ploughing 9" to 10" deep. (b) The buds of the sugarcane are exposed and allowed to germinate under soil. (c) and (d) N.A. (e) —. (v) Nil. (vi) CO. 419. (vii) Irrigated. (viii) 2 to 3 hand weedings, 2 to 3 interculturings one earthing up at 5 to 5½ months after planting. (ix) 15.35". (x) N.A.

## 2. TREATMENTS :

Main-plot treatments :

All combinations of (1) and (2)

(1) 2 methods of irrigation : I<sub>1</sub>=Serpentine and I<sub>2</sub>=Straight furrow.(2) 3 levels of N : N<sub>1</sub>=600, N<sub>2</sub>=750 and N<sub>3</sub>=900 lb./ac.

Sub-plot treatments :

2 mixtures of N and P fertilizers : M<sub>1</sub>=N and P mixed in 2 : 1 ratio and M<sub>2</sub>=N and P mixed in 4 : 1 ratio.

N applied as A/S and G.N.C. mixed in 1 : 3 ratio. Quantity of P ranging from 150 to 450 lb./ac.

## 3. DESIGN

(i) Split-plot. (ii) (a) 6 main-plots/block ; 2 sub-plots/main-plot. (b) 224'×163.32'. (iii) 4. (iv) (a) Main-plot : 112'×54.44' ; sub-plot : 54.44'×56'. (b) Sub-plot : 45.44'×48'. (v) 2 rows on either side. (vi) Yes.

## 4. GENERAL :

(i) Good, crop lodged by 2nd fortnight of May and August. (ii) Stem-borer and top shoot borers 5.4, and 4.6% attacks respectively. Mealy bugs also caused damage ; infestation of rats controlled by adopting gassing with cyanide dust ; weekly collection of egg-masses of the borers, hand picking with nets and light trapping of moths of both the borers ; fortnightly removal of dead hearts. (iii) Germination counts, tillering counts, milleable and non-milleable sugarcane counts, maturity tests and yield. (iv) (a) 1952—1955. (b) and (c) No (v) (a) and (b) No. (vi) and (vii) Nil.



## 5. RESULTS :

- (i) 95.67 ton/ac.  
 (ii) (a) 13.34 ton/ac.  
 (b) 10.05 ton/ac.  
 (iii) Only the main effect of N and interaction N×I are significant. Others are not significant.  
 (iv) Av. yield of sugarcane in ton/ac.

	N <sub>1</sub>	N <sub>2</sub>	N <sub>3</sub>	Mean	M <sub>1</sub>	M <sub>2</sub>
I <sub>1</sub>	87.95	94.24	104.95	95.68	96.45	94.91
I <sub>2</sub>	90.26	92.87	103.88	95.67	96.61	94.73
Mean	89.10	93.55	104.41	95.67		
M <sub>1</sub>	89.31	94.68	105.60	96.53		
M <sub>2</sub>	88.89	92.33	103.23	94.82		

## S.E. of difference of two

1. I marginal means = 3.85 ton/ac.
2. N marginal means = 4.72 ton/ac.
3. M marginal means = 2.90 ton/ac.
4. means in I×N table = 6.67 ton/ac.
5. M means at the same level of I = 4.10 ton/ac.
6. M means at the same level of N = 5.03 ton/ac.
7. I means at the same level of M = 4.82 ton/ac.
8. N means at the same level of M = 5.91 ton/ac.

Crop :- Sugarcane.

Ref :- Mh. 53(182).

Site :- Agri. Res. Stn., Padegaon.

Type :- 'IM'.

Object :- To study the manurial and water requirements of Sugarcane crop.

## 1. BASAL CONDITIONS :

(i) (a) Sugarcane (*Adsali*)—*Ratoon—Bajra+Tur*. (b) *Bajra+Tur* (mixed). (c) Nil. (ii) (a) Medium black. (b) Refer soil analysis, Padegaon. (iii) 22.7.1953. (iv) (a) 1 deep ploughing and 2nd ploughing across the first 9" to 10" deep. (b) N.A. (c) 10,000 setts/ac. (d) N.A. (e) 3 tilled setts. (v) Nil. (vi) CO. 419. (vii) Irrigated. (viii) 2 to 3 hand weedings 2 to 3 interculturations by tooth cultivators 8 to 10 weeks after planting, partial tillering after 3½ to 4 months. Earthing up after a period of 5 to 5½ months. (ix) 20.14". (x) 10/21.1.1955.

## 2. TREATMENTS :

Main-plot treatments :

All combinations of (1) and (2)

(1) 2 methods of irrigation : I<sub>1</sub>=Serpentine and I<sub>2</sub>=Straight furrow.(2) 3 levels of N : N<sub>1</sub>=600, N<sub>2</sub>=750 and N<sub>3</sub>=900 lb./ac.

Sub-plot treatments :

2 mixtures of N, P fertilizers : M<sub>1</sub>=N and P mixed in 2 : 1 ratio and M<sub>2</sub>=N and P mixed in 4 : 1 ratio. N applied as A/S and G.N.C. mixed in 1 : 3 ratio. Quantity of P ranging from 150 to 450 lb./ac.

## 3. DESIGN :

(i) Split-plot. (ii) (a) 6 main-plots/block ; 2 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) Main-plot : 56'×108.88'. Sub-plot : 54.44'×56'. (b) Sub-plot : 45.44'×48'. (v) 2 rows on either side. (vi) Yes.

## 4. GENERAL :

(i) Good. Lodged heavily during the 2nd fortnight of May and August. (ii) Stem-borer and top-shoot borers 2.5 and 2.7% attacks. Mealy bugs sael insects and termites were observed on a very small scale control measures adopted collection of egg-masses and moths. Hand picking with nets and light trapping etc. fortnightly removal of dead hearts. (iii) Sugarcane yield. (iv) (a) 1953—1955. (b) and (c) No. (v) (a) and (b) No. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 73.47 ton/ac.  
 (ii) (a) 6.34 ton/ac.  
 (b) 6.70 ton/ac.  
 (iii) Main effect of M is significant. Others are not significant.  
 (iv) Av. yield of sugarcane in ton/ac.

	N <sub>1</sub>	N <sub>2</sub>	N <sub>3</sub>	Mean	M <sub>1</sub>	M <sub>2</sub>
I <sub>1</sub>	77.65	76.25	73.30	75.73	76.23	75.23
I <sub>2</sub>	72.80	72.20	68.40	71.13	69.90	72.37
Mean	75.22	74.22	70.85	73.47		
M <sub>1</sub>	74.00	72.85	72.35	73.06		
M <sub>2</sub>	76.45	75.60	69.35	73.80		

## S.E. of difference of two

1. N marginal means = 2.23 ton/ac.
2. I marginal means = 1.82 ton/ac.
3. M marginal means = 1.94 ton/ac.
4. means in N×I table = 3.17 ton/ac.
5. M means at the same level of N = 3.35 ton/ac.
6. M means at the same level of I = 1.93 ton/ac.
7. I means at the same level of M = 2.66 ton/ac.
8. N means at the same level of M = 3.26 ton/ac.

Crop :- Sugarcane (*Adzali*).  
 Site :- Agri. Res. Stn., Padegaon.

Ref :- Mh. 50(96).  
 Type :- 'IM'.

Object :- To study the water and manurial requirements of Sugarcane crop.

## 1. BASAL CONDITIONS :

(i) (a) Sugarcane—*Jowar*. (b) *Jowar*. (c) Nil. (ii) (a) B type. (b) Refer soil analysis, Padegaon.  
 (iii) 4.8.1950. (iv) (a) and (b) N.A. (c) 10,000 setts/ac. (d) 4' apart between rows. (e) —. (v) 20,000 lb./ac. of compost. (vi) CO.419 (mid-late). (vii) Irrigated. (viii) 2 interculturings, 2 weedings and 1 earthing up. (ix) 22.91". (x) 17.12.1951.

## 2. TREATMENTS :

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

- (1) 2 levels of irrigation : I<sub>1</sub>=115 and I<sub>2</sub>=130 acre inches.
- (2) 3 levels of N as A/S : N<sub>1</sub>=375, N<sub>2</sub>=450 and N<sub>3</sub>=525 lb./ac.
- (3) 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.

## 3. DESIGN :

(i) 2×3×3 Fact. in R.B.D. (ii) (a) 18. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 1/40 ac. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Nil. (iii) Sucrose and glucose, % and sugarcane yield. (iv) (a) 1953-51. (b) and (c) No.  
 (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 66.32 ton/ac.  
 (ii) 2.54 ton/ac.  
 (iii) Main effects of N and P and interactions NP, N×I and P×I are significant. Others are not significant.  
 (iv) Av. yield of sugarcane in ton/ac.

	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>	Mean	I <sub>1</sub>	I <sub>2</sub>
N <sub>1</sub>	60.54	64.26	68.21	64.33	65.22	63.46
N <sub>2</sub>	65.02	70.49	68.82	68.11	70.41	63.81
N <sub>3</sub>	67.21	66.64	65.69	66.51	64.59	68.44
Mean	64.26	67.13	67.57	66.32		
I <sub>1</sub>	66.82	64.87	68.53	66.74		
I <sub>2</sub>	61.69	69.39	66.63	65.90		

S.E. of marginal mean of N or P	=0.52 ton/ac.
S.E. of marginal mean of I	=0.42 ton/ac.
S.E. of body of N×P table	=0.69 ton/ac.
S.E. of body of N×I or P×I table	=0.73 ton/ac.

Crop :- Sugarcane (*Adsali*).  
 Site :- Agri. Res. Stn., Padegaon.

Ref :- Mh. 51(135).  
 Type :- 'IM'.

Object:—To study the water and manurial requirements of Sugarcane.

## 1. BASAL CONDITIONS :

(i) (a) Sugarcane—*Jowar*. (b) *Jowar*. (c) Nil. (ii) (a) B type. (b) Refer soil analysis, Padegaon. (iii) 28.7.1951. (iv) (a) and (b) N.A. (c) 10,000 setts/ac, (d) 4' apart between rows. (e) —. (v) 20,000 lb./ac. of compost. (vi) CO.419 (mid-late). (vii) Irrigated. (viii) 2 interculturings, 2 weedings and 1 earthing up. (ix) 14.68°. (x) 26.12.1952.

## 2. TREATMENTS :

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

- (1) 2 levels of irrigation : I<sub>1</sub>=115 and I<sub>2</sub>=130 acre inches.  
 (2) 3 levels of N as A/S : N<sub>1</sub>=375, N<sub>2</sub>=450 and N<sub>3</sub>=525 lb./ac.  
 (3) 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.

## 3. DESIGN :

(i) 2×3×3 Fact. in R.B.D. (ii) (a) 18. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 1/40 ac. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Nil. (iii) Sucrose, glucose, fibre % and sugarcane yield. (iv) (a) 1950-51. (b) and (c) No. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 73.18 ton/ac.  
 (ii) 6.66 ton/ac.  
 (iii) None of the effects is significant.

(iv) Av. yield of sugarcane in ton/ac.

	N <sub>1</sub>	N <sub>2</sub>	N <sub>3</sub>	Mean	I <sub>1</sub>	I <sub>2</sub>
P <sub>0</sub>	70.11	72.84	71.90	71.62	70.29	72.95
P <sub>1</sub>	71.87	74.77	74.60	73.75	73.89	73.61
P <sub>2</sub>	72.50	75.02	75.05	74.19	72.20	76.18
Mean	71.49	74.21	73.85	73.18		
I <sub>1</sub>	70.30	72.82	73.25	72.12		
I <sub>2</sub>	72.68	75.60	74.45	74.24		

S.E. of marginal mean of N or P = 1.36 ton/ac.  
 S.E. of marginal mean of I = 1.11 ton/ac.  
 S.E. of body of table N×I or P×I = 1.92 ton/ac.  
 S.E. of body of table N×P = 2.36 ton/ac.

Crop :- Sugarcane (*Adzali*).

Ref. :- Mh. 49(88).

Site :- Agri. Res. Stn., Padegaon.

Type :- 'IMV'.

Object :- To study the requirements of water and N for Sugarcane.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) N.A. (c) N.A. (ii) (a) B type. (b) Refer soil analysis, Padegaon. (iii) 26. 7. 1949.  
 (iv) (a) and (b) N.A. (c) 10,000 setts/ac. (d) 4' apart between rows. (e) —. (v) Basal dressing of compost  
 at 20,000 lb./ac. (vi) CO. 419 ; CO. 475 (mid-late). (vii) Irrigated. (viii) 2 weedings, 2 interculturings and  
 1 earthing up. (ix) 23.32%. (x) 29. 12. 1950 to 17. 1. 1951.

## 2. TREATMENTS :

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

(1) 2 levels of irrigation : I<sub>1</sub>=115 and I<sub>2</sub>=130 acre inches.(2) 2 varieties : V<sub>1</sub>=CO. 419 and V<sub>2</sub>=CO. 475.(3) 3 levels of N : N<sub>1</sub>=375, N<sub>2</sub>=450 and N<sub>3</sub>=525 lb./ac.

N applied as A/S+Oilcake mixed in 1 : 2 ratio.

## 3. DESIGN :

(i) 2×2×3 Fact. in R.B.D. (ii) (a) 12. (b) N.A. (iii) 6. (iv) (a) N.A. (b) 1/40th acre. (v) N.A.  
 (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Nil. (iii) Brix, Sucrose, Glucose % and sugarcane yield. (iv) (a) 1946—1949 (Modified  
 in 1949—1951 by introduction of CO. 475 variety) (b) and (c) No. (v) (a), (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 59.04 ton/ac.  
 (ii) 3.92 ton/ac.  
 (iii) All main effects and two-factor interactions are significant.

(iv) Av. yield of sugarcane in ton/ac.

	N <sub>1</sub>	N <sub>2</sub>	N <sub>3</sub>	Mean	I <sub>1</sub>	I <sub>2</sub>
V <sub>1</sub>	60.40	58.45	61.85	60.23	59.57	60.90
V <sub>2</sub>	53.30	58.65	61.60	57.85	56.40	59.30
Mean	56.85	58.55	61.72	59.04		
I <sub>1</sub>	56.30	58.50	59.15	57.98		
I <sub>2</sub>	57.60	58.60	64.30	60.10		

S.E. of marginal mean of N = 0.80 ton/ac.  
 S.E. of marginal mean of V or I = 0.65 ton/ac.  
 S.E. of body of table N×V or N×I = 1.13 ton/ac.  
 S.E. of body of table V×I = 0.92 ton/ac.

✓ Crop :- Cotton (*Kharif*).

Ref. :- Mh. 51(188).

Site :- Govt. Seed and Demonstration Farm, Achalpur.

Type :- 'M'

Object :- To study the effect of cotton seed cake on Cotton yield.

## 1. BASAL CONDITIONS :

(i) (a) Cotton—*Jowar*—Groundnut. (b) *Jowar*. (c) N.A. (ii) (a) Medium black. (b) N.A. (iii) 29.6.1951.  
 (iv) (a) 1 ploughing and 3 *bakharings*. (b) N.A. (c) 10 lb./ac. (d) 18"×9". (e) N.A. (v) 8 C.L./ac. of  
 P.Y.M. (vi) H.420 *deshi*. (medium). (vii) Unirrigated. (viii) 5 hoeings and 2 weedings. (ix) 26.30".  
 (x) Pickings on 28. 10. 1951, 4, 16 and 25. 11. 1951. and 17. 12. 1951.

## 2. TREATMENTS :

1. 20 lb. N/ac. as G.N.C.  
 2. 20 lb. N/ac. as decorticated cotton seed-cake.  
 3. 20 lb. N/ac. as undecorticated cotton seed-cake.  
 4. 20 lb. N/ac. as A/S.  
 Manuring on 29. 6. 1951.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 5. (iv) (a) N.A. (b) 1/40th ac. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) Satisfactory. (ii) Nil. (iii) *Kapas* yield. (iv) (a) 1951—N.A. (b) No. (c) N.A. (v) (a) Akola and  
 Nagpur. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 1411 lb./ac.  
 (ii) 444.0 lb./ac.  
 (iii) Treatments do not differ significantly.  
 (iv) Av. yield of *kapas* in lb./ac.

Treatment	Av. yield
1.	1196
2.	1335
3.	1571
4.	1541
S.E./mean	= 198.5 lb./ac.

Crop :- Cotton (*Kharif*).

Ref :- Mh. 51(189).

Site :- Govt. Seed and Demonstration Farm, Achalpur. Type :- 'M'.

Object :- To study the effect of cotton seed cake on Cotton yield.

1. BASAL CONDITIONS :

- (i) (a) Cotton-Jowar-Groundnut. (b) *Jowar*. (c) N.A. (ii) (a) Medium black. (b) N.A. (iii) 26.6.1951. (iv) (a) 3 Bakharings and 1 ploughing. (b) N.A. (c) 10 lb./ac. (d) 24" x 12". (e) N.A. (v) Nil. (vi) Buri-0394 (late). (vii) Unirrigated. (viii) 8 hoeings and 2 weedings. (ix) 26.30". (x) Pickings on 27.10.1951, 5 and 19.11.1951, 4 and 23.12.1951 and 20.1.1952.

2. TREATMENTS :

1. 20 lb./ac. of N as G.N.C.
  2. 20 lb./ac. of N as decorticated cotton seed-cake.
  3. 20 lb./ac. of N as undecorticated cotton seed-cake.
  4. 20 lb./ac. of N as A/S.
- Manuring on 26.6.1951.

3. DESIGN :

- (i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 5 (iv) (a) N.A. (b) 1/40th ac. (v) N.A. (vi) Yes.

4. GENERAL :

- (i) Normal. (ii) Nil. (iii) *Kapas* yield. (iv) (a) 1951—N.A. (b) No. (c) N.A. (v) (a) Akola and Nagpur. (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

- (i) 621.4 lb./ac.  
 (ii) 87.20 lb./ac.  
 ✓ (iii) Treatments differ significantly.  
 (iv) Av. yield of *kapas* in lb./ac.

Treatment	Av. yield
1.	623.9
2.	554.4
3.	570.4
4.	736.9
S.E./mean	=38.98 lb./ac.

✓ Crop :- Cotton (*Kharif*).

Ref :- Mh. 53(290).

Site :- Govt. Seed and Demonstration Farm, Achalpur. Type :- 'M'.

Object :- To study the effect of C/N in comparison with A/S on Cotton yield.

1. BASAL CONDITIONS :

- (i) (a) Cotton—*Jowar*—Groundnut. (b) *Jowar*. (c) N.A. (ii) (a) Medium black. (b) N.A. (iii) 27.6.1953. (iv) (a) N.A. (b) Sowing by drilling. (c) 10 lb./ac. (d) 18" x 9". (e) N.A. (v) Nil. (vi) H.420 *deshi* (medium). (vii) Unirrigated. (viii) 6 hoeings and 3 weedings. (ix) 34.91". (x) Pickings on 2.5 to 28.11.1953, 21.12.1953 and 11.1.1954.

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) 2 sources of N :  $S_1=A/S$  and  $S_2=C/N$ .

3. DESIGN :

- (i) 4 x 2 Fact. in R.B.D. (ii) (a) 8. (b) N.A. (iii) 5. (iv) (a) 1.26 *guntha*. (b) 33' x 33'. (v) N.A. (vi) Yes.

4. GENERAL :

- (i) Normal. (ii) Nil. (iii) *Kapas* yield. (iv) (a) 1953—N.A. (b) and (c) No. (v) (a) Akola. (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

- (i) 644 lb./ac.  
 (ii) 131.9 lb./ac.  
 (iii) All effects are significant.

(iv) Av. yield of *kapas* in lb./ac.

Control=532 lb./ac.

	N <sub>1</sub>	N <sub>2</sub>	N <sub>3</sub>	Mean
S <sub>1</sub>	574	738	898	737
S <sub>2</sub>	572	675	626	624
Mean	573	707	762	681

S.E. of control mean =41.7 lb./ac.

S.E. of N marginal mean =41.7 lb./ac.

S.E. of S marginal mean =34.1 lb./ac.

S.E. of control vs. any other mean =72.2 lb./ac.

S.E. of body of table =59.0 lb./ac.

Crop :- Cotton (*Kharif*).

Ref :- Mh. 51(187).

Site :- Govt. Seed and Demonstration Farm, Achalpur.

Type :- 'M'.

Object :- To study the residual effect of manures applied to previous *Jowar* crop on Cotton yield.

## 1. BASAL CONDITIONS :

(i) (a) Cotton—*Jowar*. (b) *Jowar*. (c) As per treatments. (ii) (a) Medium black. (b) N.A. (iii) 1.7.1951  
 (iv) (a) 1 ploughing and 3 harrowings. (b) N.A. (c) 10 lb./ac. (d) 18" line to line. (e) N.A. (v) Nil.  
 (vi) H.420 *deshi* (medium). (vii) Unirrigated. (viii) 4 hoeings and 1 weeding. (ix) 26.30°. (x) Pickings on 4.16 and 24.11.1951 and 17.12.1951.

## TREATMENTS :

1. No manure.
  2. 20 lb./ac. of N as T.C.
  3. 40 lb./ac. of N as T.C.
  4. 20 lb./ac. of N as cattle dung.
  5. 40 lb./ac. of N as cattle dung.
  6. 10 lb./ac. of N as G.N.C.
  7. 20 lb./ac. of N as G.N.C.
  8. 10 lb./ac. of N as A/S.
  9. 20 lb./ac. of N as A/S.
- Manures applied to previous *Jowar* crop.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 9. (b) N.A. (iii) 6. (iv) (a) N.A. (b) 66' x 16½'. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) Normal. (ii) Nil. (iii) *Kapas* yield. (iv) (a) 1950—N.A. (b) Yes. (c) N.A. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 761 lb./ac.

(ii) 107.2 lb./ac.

(iii) Treatments do not differ significantly.

(iv) Av. yield of *kapas* in lb./ac.

Treatment	Av. yield	Treatment	Av. yield
1.	717	6.	784
2.	766	7.	794
3.	749	8.	778
4.	713	9.	774
5.	776		
	S.E./mean		=43.8 lb./ac.

Crop :- Cotton (*Kharif*).  
Site :- Govt. Exptl. Farm, Akola.

Ref :- Mh. 48(41).  
Type :- 'M'.

Object :- To find out the best source of N for Cotton crop.

#### 1. BASAL CONDITIONS :

(i) (a) Cotton-*Jowar*. (b) *Jowar*. (c) Nil. (iii) (a) Black cotton soil. (b) Refer soil analysis, Akola. (iii) 26.6.1948. (iv) (a) 1 ploughing and 2 *bakharings*. (b) Sowing by *tiffan* (c) 18-20 lb./ac. (d) 18" x 9". (e) N.A. (v) Nil. (vi) Verem 434 *deshi* (medium). (vii) Unirrigated. (viii) 3 hoeings and 2 weedings. (ix) 51.52" (x) Picking on 20.11.1948, 4.2.1949, 29.3.1949 and 14.4.1949.

#### 2. TREATMENTS :

1. Control.
2. 40 lb./ac. of N as F.Y.M.
3. 20 lb./ac. of N as F.Y.M.+20 lb./ac. of N as poudrette compost.
4. 40 lb./ac. of N as Poudrette compost.
5. 20 lb./ac. of N as F.Y.M.+20 lb./ac. of N as G.N.C.
6. 40 lb./ac. of N as G.N.C.
7. 20 lb./ac. of N as F.Y.M.+20 lb./ac. of N as Red label mixture.
8. 40 lb./ac. of N as Red label mixtrue.

#### 3. DESIGN :

(i) R.B.D. (ii) (a) 8. (b) N.A. (iii) 6. (iv) (a) N.A. (b) 33' x 33'. (v) One row on either side of each plot. (vi) Yes.

#### 4. GENERAL :

(i) Satisfactory. (ii) Nil. (iii) *Kapas* yield. (iv) (a) 1945 to 1946 ; 1949 to 1950. (b) No. (c) N.A. (v) (a) N.A. (b) N.A. (vi) and (vii) Nil.

#### 5. RESULTS :

- (i) 258 lb./ac.
- (ii) 43.80 lb./ac.
- (iii) Treatments do not differ significantly.
- (iv) Av. yield of *Kapas* in lb./ac.

Treatment	Av. yield.
1.	195
2.	207
3.	222
4.	255
5.	258
6.	310
7.	287
8.	327
S.E./mean	=17.88 lb./ac.

Crop :- Cotton (*Kharif*).  
Site :- Govt. Exptl. Farm, Akola.

Ref :- Mh. 49(68).  
Type :- 'M'.

Object :- To find out the best source of N for Cotton crop.

#### 1. BASAL CONDITIONS :

(i) (a) Cotton -*Jowar*. (b) *Jowar*. (c) Nil. (ii) (a) Black cotton soil. (b) Refer soil analysis, Akola. (iii) 27.6.1949. (iv) (a) 1 heavy and 2 light *bakharings*. (b) Sowing by *tiffan*. (c) 18-20 lb./ac. (d) 18" x 9". (e) N.A. (v) Nil. (vi) H-420 *deshi* (medium). (vii) Unirrigated. (viii) N.A. (ix) 42.93". (x) Picking on 14.11.1949, 8 12.1949, 20.1.1950, 18.2.1950 and 3.4.1950.



2. TREATMENTS :

1. Control.
2. 40 lb./ac. of N as F.Y.M.
3. 20 lb./ac. of N as F.Y.M.+20 lb./ac. of N as Poudrette compost.
4. 40 lb./ac. of N as Poudrette compost.
5. 20 lb./ac. of N as F.Y.M.+20 lb./ac. of N as G.N.C.
6. 40 lb./ac. of N as G.N.C.
7. 20 lb./ac. of N as F.Y.M.+20 lb./ac. of N as Red label mixture.
8. 40 lb./ac. of N as Red label mixture.

3. DESIGN :

- (i) R.B.D. (ii) (a) 8. (b) N.A. (iii) 6. (iv) (a) N.A. (b) 33'×33'. (v) One row on either side of each plot. (vi) Yes.

4. GENERAL :

- (i) Fair. (ii) Attack of *Earias fabia* in September. No control measures taken. (iii) *Kapas* yield. (iv) (a) 1945-1946 to 1949-1950. (b) No. (c) N.A. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

- (i) 333 lb./ac.
- (ii) 25.30 lb./ac.
- (iii) Treatments differ significantly.
- (iv) Av. yield of *kapas* in lb./ac.

Treatment	Av. yield
1.	220
2.	285
3.	305
4.	275
5.	390
6.	422
7.	355
8.	412
S.E./mean	= 10.33 lb./ac

Crop :- Cotton (*Kharif*).

Ref :- Mh. 50(85).

Site :- Govt. Exptl. Farm, Akola.

Type :- 'M'.

Object :—To find out the effect of N in different forms on Cotton yield.

1. BASAL CONDITIONS :

- (i) (a) Cotton—*Jowar*. (b) Cotton. (c) 2 C.L./ac. of F.Y.M., 600 lb./ac. of G.N.C. and 35 lb./ac. of C/N.
- (ii) (a) Black cotton soil. (b) Refer soil analysis, Akola. (iii) 15.7.1950. (iv) (a) 2 *bakharings*. (b) Sowing by *tiffan*. (c) 18 lb./ac. (d) and (e) N.A. (v) Nil. (vi) H-420 *deshi* (medium). (vii) Unirrigated. (viii) 3 hoeings and 3 weedings. (ix) 16.89". (x) Picking on 8 and 27.11.1950, 15.12.1950 and 22.1.1951.

2. TREATMENTS :

All combinations of (1) and (2)+a control (no manure).

- (1) 3 levels of N :  $N_1=20$ ,  $N_2=30$  and  $N_3=40$  lb./ac.
- (2) 3 sources of N :  $S_1=G.N.C.$ ,  $S_2=C/N$  and  $S_3=G.N.C+C/N$  in 1 : 1 ratio.

3. DESIGN :

- (i) R.B.D. (ii) (a) 10. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 66'×16½'. (v) One row on either side of the plot. (vi) Yes.

4. GENERAL :

- (i) Normal. (ii) Nil. (iii) *Kapas* yield. (iv) (a) 1950-1951 ; 1953-1954. (b) No. (c) N.A. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

- (i) 574 lb./ac.
- (ii) 89.56 lb./ac.
- (iii) Only interaction  $S \times N$  is significant.

(iv) Av. yield of *kapas* in lb./ac.

✓ Control = 510 lb./ac.

	S <sub>1</sub>	S <sub>2</sub>	S <sub>3</sub>	Mean
N <sub>1</sub>	485	577	545	536
N <sub>2</sub>	555	625	660	613
N <sub>3</sub>	570	602	608	593
Mean	537	601	604	581

S.E. of S or N marginal mean = 25.85 lb./ac.

S.E. of body of table or control mean = 44.78 lb./ac.

Crop :- Cotton (*Kharif*)

Ref. :- Mh. 51(97)

Site :- Govt. Exptl. Farm, Akola.

Type :- 'M'.

Object :- To find out the effect of N in different forms on Cotton yield.

## 1. BASAL CONDITIONS :

(i) (a) No. (b) Cotton. (c) Compost at 1½ C.L./ac. and G.N.C. at 75 lb./ac. (ii) (a) Black cotton soil. (b) Refer soil analysis, Akola. (iii) 28. 6. 1951. (iv) (a) 2 *bakharings*. (b) Sowing by *tiffan* (c) 18-20 lb./ac. (d) 18" × 9". (e) N.A. (v) Nil. (vi) H.420 *deshi* (medium). (vii) Unirrigated. (viii) 5 hoeings, 3 weedings and 1 thinning. (ix) 24.32". (x) Picking on 24. 11. 1951. 4. 12. 1951 and 18. 3. 1952.

## 2. TREATMENTS :

All combinations of (1) and (2) + a control (no manure)

(1) 3 levels of N : N<sub>1</sub>=20, N<sub>2</sub>=30 and N<sub>3</sub>=40 lb./ac.(2) 3 sources of N : S<sub>1</sub>=G.N.C, S<sub>2</sub>=C/N and S<sub>3</sub>=G.N.C. + C/N in 1 : 1 ratio.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 10. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 66' × 16½'. (v) One row on either side of the plot. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Nil. (iii) *Kapas* yield. (iv) (a) 1950-1951 to 1953-1954. (b) No. (c) N.A. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 793 lb./ac.

(ii) 96.72 lb./ac.

(iii) Main effects of S and N and their interaction are significant.

(iv) Av. yield of *kapas* in lb./ac.

✓ Control = 770 lb./ac.

	S <sub>1</sub>	S <sub>2</sub>	S <sub>3</sub>	Mean
N <sub>1</sub>	657	726	741	708
N <sub>2</sub>	887	760	872	840
N <sub>3</sub>	914	781	822	839
Mean	819	756	812	796

S.E. of S or N marginal mean = 27.92 lb./ac.

S.E. of body of table or control mean = 48.36 lb./ac.

Crop :- Cotton (*Kharif*).  
Site :- Govt. Exptl. Farm, Akola.

Ref. :- Mh. 52(117).  
Type :- 'M'.

Object :- To find out the effect of N in different forms on Cotton yield.

1. BASAL CONDITIONS :

(i) (a) Cotton—*Jowar*. (b) *Jowar*. (c) Nil. (ii) (a) Black cotton soil. (b) Refer soil analysis, Akola. (iii) 27. 6. 1952. (iv) (a) and (b) N.A. (c) 18-20 lb./ac. (d) 18"×12". (e) N.A. (v) Nil. (vi) H.420 *deshi* (medium). (vii) Unirrigated. (viii) 4 hoeings, 2 weedings and 1 thinning. (ix) 22.03" (x) Pickings on 12. 11. 1952, 12. 12. 1952 and 23. 1. 1953.

2. TREATMENTS :

All combinations of (1) and (2)+a control (no manure).

(1) 3 levels of N :  $N_1=20$ ,  $N_2=30$  and  $N_3=40$  lb./ac.

(2) 3 sources of N :  $S_1=G.N.C.$ ,  $S_2=C/N$  and  $S_3=G.N.C.+C/N$  in 1 : 1 ratio.

Manures drilled at sowing.

3. DESIGN :

(i) R.B.D. (ii) (a) 10. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 66'×16½'. (v) One row on either side of the plot. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) *Kapas* yield. (iv) (a) 1950-1951 to 1953-1954. (b) No. (c) N.A. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

- (i) 615 lb./ac.  
(ii) 52.40 lb./ac.  
(iii) Main effects of S, N and their interaction are significant.  
(iv) Av. yield of *kapas* in lb./ac.

✓Control=449 lb./ac.

	$S_1$	$S_2$	$S_3$	Mean
$N_1$	510	594	595	566
$N_2$	619	671	610	633
$N_3$	652	748	705	702
Mean	594	671	637	634

S.E. of S or N marginal mean =15.13 lb./ac.

S.E. of body of table or control mean =26.20 lb./ac.

Crop :- Cotton (*Kharif*).  
Site :- Govt. Exptl. Farm, Akola.

Ref :- Mh. 53(175).  
Type :- 'M'.

Object :- To find out the effect of N in different forms on Cotton yield.

BASAL CONDITIONS :

(i) (a) Cotton—*Jowar*. (b) *Jowar*. (c) 10 lb./ac. of N as A/S top dressed. (ii) (a) Black cotton soil. (b) Refer soil analysis, Akola. (iii) 30.6.1953. (iv) (a) and (b) N.A. (c) 18—20 lb./ac. (d) 18"×9". (e) N.A. (v) Nil. (vi) H. 420 *deshi* (medium). (vii) Unirrigated. (viii) 6 hoeings and 2 weedings. (ix) 26.38". (x) Pickings on 30.11.1953, 28.12.1953 and 30.1.1954.

2. TREATMENTS :

All combinations of (1) and (2)+a control (no manure)

(1) 3 levels of N :  $N_1=20$ ,  $N_2=30$  and  $N_3=40$  lb./ac.

(2) 3 sources of N :  $S_1=G.N.C.$ ,  $S_2=C/N$  and  $S_3=G.N.C.+C/N$  in 1 : 1 ratio.

Manures drilled at sowing.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 10. (b) N.A. (iii) 4. (iv) (a) N.A. (b)  $66' \times 16\frac{1}{2}'$ . (v) One row on either side of the plot. (vi) Yes.

## 4. GENERAL :

(i) Normal. (ii) Nil. (iii) *Kapas* yield. (iv) (a) 1950—51 and 1953—54. (b) No. (c) N.A. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 340 lb./ac.  
 (ii) 52.88 lb./ac.  
 (iii) Only 'control vs others' effect is significant.  
 (iv) Av. yield of *kapas* in lb./ac.

✓ Control = 283 lb./ac.

	S <sub>1</sub>	S <sub>2</sub>	S <sub>3</sub>	Mean
N <sub>1</sub>	313	332	319	321
N <sub>2</sub>	322	354	342	339
N <sub>3</sub>	383	386	362	377
Mean	339	357	341	346

S.E. of S or N marginal mean = 15.27 lb./ac.

S.E. of body of table or control mean = 26.44 lb./ac.

Crop :- Cotton (*Kharif*).

Ref :- Mh. 50(86).

Site :- Govt. Exptl. Farm, Akola.

Type :- 'M'.

Object :- To find out the effect of N in different forms on Cotton yield.

## 1. BASAL CONDITIONS :

(i) (a) Cotton—*Jowar*. (b) Cotton. (c) 2 C.L./ac. of F.Y.M. + 600 lb./ac. of G.N.C. powder + 35 lb./ac. of C/N. (ii) (a) Black cotton soil. (b) Refer soil analysis, Akola. (iii) 17.7.1950. (iv) (a) 2 *bakharings* (b) Sowing by *tiffan* (c) 18-20 lb./ac. (d)  $18^\circ \times 9^\circ$ . (e) N.A. (v) Nil. (vi) H-420 *deshi* (medium) (vii) Unirrigated. (viii) 3 hoeings and 3 weedings. (ix) 16.89%. (x) Picking on 8 and 27.11.1950, 16.12.1950. and 22.1.1950.

## 2. TREATMENTS :

All combinations of (1) and (2) + a control (no manure)

(1) 3 levels of N : N<sub>1</sub>=20, N<sub>2</sub>=30 and N<sub>3</sub>=40 lb./ac.

(2) 3 sources of N : S<sub>1</sub>=F.Y.M. S<sub>2</sub>=C/N and S<sub>3</sub>=F.Y.M.+C/N in 1 : 1 ratio.

Manuring on 13.7.1950.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 10. (b) N.A. (iii) 4. (iv) (a) N.A. (b)  $66' \times 16\frac{1}{2}'$ . (v) One row on either side of the plot. (vi) Yes.

## 4. GENERAL :

(i) Stunted growth due to insufficient rains. (ii) Nil. (iii) *Kapas* yield. (iv) 1950—51 to 1953—54. (b) No. (c) N.A. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 456 lb./ac.  
 (ii) 59.24 lb./ac.  
 (iii) Main effect of S, N and their interaction are significant.

(iv) Av. yield of *kapas* in lb./ac.

✓ Control = 322 lb./ac.

	S <sub>1</sub>	S <sub>2</sub>	S <sub>3</sub>	Mean
N <sub>1</sub>	425	482	417	441
N <sub>2</sub>	412	540	412	455
N <sub>3</sub>	415	657	482	518
Mean	417	560	437	471

S.E. of S or N marginal mean = 17.10 lb./ac.  
 S.E. of body of table or control mean = 29.62 lb./ac.

Crop :- Cotton (*Kharif*).

Ref :- Mh. 51(96).

Site :- Govt. Exptl. Farm, Akola.

Type :- 'M'.

Object :—To find out the effect of N in different forms on Cotton yield.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Cotton. (c) 2 C.L./ac. of F.Y.M. + 600 lb./ac. of G.N.C.+35 lb./ac. of C/N. (ii) (a) Black cotton soil. (b) Refer soil analysis, Akola. (iii) 28.6.1951. (iv) (a) 2 *bakharings*. (b) Sowing by *tiffan*. (c) 18 lb./ac. (d) 18"×9". (e) N.A. (v) Nil. (vi) H-420 *deshi* (medium). (vii) Unirrigated. (viii) 3 weedings and 5 hoeings. (ix) 24.32". (x) 23.11.1951, 14.12.1951 and 18.3.1952.

## 2. TREATMENTS :

All combinations of (1) and (2) + a control (no manure).

(1) 3 levels of N : N<sub>1</sub>=20, N<sub>2</sub>=30 and N<sub>3</sub>=40 lb./ac.(2) 3 sources of N : S<sub>1</sub>=F.Y.M. S<sub>2</sub>=C/N and S<sub>3</sub>=F.Y.M.+C/N in 1 : 1 ratio

Manuring on 20.6.1951.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 10. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 66'×16½'. (v) One row on either side of plot. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Nil. (iii) *Kapas* yield. (iv) (a) 1950-51 to 1953-54. (b) No. (c) N.A. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 928 lb./ac.

(ii) 105.5 lb./ac.

(iii) Main effect of S and interaction S×N are significant. Main effect of N is not significant.

(iv) Av. yield of *kapas* in lb./ac.

✓ Control = 756 lb./ac.

	S <sub>1</sub>	S <sub>2</sub>	S <sub>3</sub>	Mean
N <sub>1</sub>	832	930	921	894
N <sub>2</sub>	906	1032	1000	979
N <sub>3</sub>	897	974	1033	968
Mean	878	979	985	947

S.E. of S or N marginal mean = 30.46 lb./ac.  
 S.E. of body of table or control mean = 52.76 lb./ac.

Crop :- Cotton (*Kharif*).  
Site :- Govt. Exptl. Farm, Akola.

Ref :- Mh. 52(119).

Type :- 'M'.

Object :- To study the effect of N in different forms on Cotton yield.

### 1. BASAL CONDITIONS :

(i) (a) Cotton—*Jowar*. (b) *Jowar*. (c) Nil. (ii) (a) Black cotton soil. (b) Refer soil analysis, Akola. (iii) 13.7.1952. (iv) (a) and (b) N.A. (c) 18-20 lb./ac. (d) 18"×12". (e) N.A. (v) Nil. (vi) H.420 *deshi* (medium). (vii) Unirrigated. (viii) 4 hoeings, 2 weedings, and 1 thinning. (ix) 22.03". (x) Picking on 18.12.1952, 17.1.1953 and 23.2.1953.

### 2. TREATMENTS :

All combinations of (1) and (2) + a control (no manure).

(1) 3 levels of N :  $N_1=20$ ,  $N_2=30$  and  $N_3=40$  lb./ac.,

(2) 3 sources of N :  $S_1=F.Y.M.$ ,  $S_2=C/N$  and  $S_3=F.Y.M.+C/N$  in 1 : 1 ratio.

### 3. DESIGN :

(i) R.B.D. (ii) (a) 10. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 66'×16½'. (v) 1 row on either side of the plot. (vi) Yes.

### 4. GENERAL :

(i) Normal. (ii) Nil. (iii) *Kapas* yield. (iv) (a) 1950-51 to 1953-54. (b) No. (c) N.A. (v) (a) and (b) N.A. (vi) and (vii) Nil.

### 5. RESULTS :

(i) 516 lb./ac.

(ii) 68.24 lb./ac.

(iii) Main effects of S and N and their interaction are significant.

(iv) Av. yield of *kapas* in lb./ac.

√Control=402 lb./ac.

	$S_1$	$S_2$	$S_3$	Mean
$N_1$	438	549	479	489
$N_2$	490	609	483	527
$N_3$	463	655	595	571
Mean	464	604	519	529

S.E. for S or N marginal mean = 19.70 lb./ac.

S.E. of body of table or control mean = 34.12 lb./ac.

Crop :- Cotton (*Kharif*).  
Site :- Govt. Exptl. Farm, Akola.

Ref :- Mh. 53(174).

Type :- 'M'.

Object :- To find out the effect of N in different forms on Cotton yield.

### 1. BASAL CONDITIONS :

(i) (a) Cotton—*Jowar*. (b) *Jowar*. (c) 10 lb./ac. of N top dressed. (ii) (a) Black cotton soil. (b) Refer soil analysis, Akola. (iii) 29.6.1953. (iv) (a) and (b) N.A. (c) 18-20 lb./ac. (d) 18"×9". (e) N.A. (v) Nil. (vi) H.420 *deshi* (medium). (vii) Unirrigated. (viii) 6 hoeings, 2 weedings and 1 thinning. (ix) 26.38". (x) Picking on 1.12.1953, 29.12.1953 and 1.2.1954.

## 2. TREATMENTS :

All combinations of (1) and (2)+a control (no manure).

(1) 3 levels of N :  $N_1=20$ ,  $N_2=30$  and  $N_3=40$  lb./ac.

(2) 3 sources of N  $S_1=F.Y.M.$ ,  $S_2=C/N$  and  $S_3=F.Y.M.+C/N$  in 1 : 1 ratio.

Manures drilled with seed.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 10. (b) N.A. (iii) 4. (iv) (a) N.A. (b)  $66' \times 16\frac{1}{2}'$ . (v) One row on either side of the plot. (vi) Yes.

## 4. GENERAL:

(i) Good. (ii) Nil. (iii) *Kapas* yield. (iv) (a) 1950 to 1953. (b) No. (c) N.A. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 363 lb./ac.

(ii) 53.28 lb./ac.

(iii) Main effect of S, N and their interaction are significant.

(iv) Av. yield of *kapas* in lb./ac.

✓ Control=290 lb./ac.

	$S_1$	$S_2$	$S_3$	Mean
$N_1$	304	359	339	334
$N_2$	320	417	403	380
$N_3$	336	444	416	399
Mean	320	407	386	371

S.E. of S or N marginal mean =15.38 lb./ac.

S.E. of body of table or control mean =26.64 lb./ac.

Crop :- Cotton (*Kharif*).

Site :- Govt. Exptl. Farm, Akola.

Ref :- Mh. 51(126).

Type :- 'M'.

Object :- To study the residual effect of Super applied to previous leguminous crop on Cotton.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) and (c) As per treatments. (ii) (a) Black cotton soil. (b) Refer soil analysis, Akola. (iii) 28.6.1951. (iv) (a) One heavy and one light *bakharing*. (b) Sowing by *tiffan*. (c) 18-20 lb./ac. (d) and (e) N.A. (v) Nil. (vi) H-420 *deshti* (medium). (vii) Unirrigated. (viii) 3 hoeings and 2 weedings. (ix) 24.32". (x) Picking on 16.11.1951, 13.12.1951 and 16.2.1952.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 2 levels of  $P_2O_5$  :  $P_0=0$  and  $P_1=30$  lb./ac.

(2) 5 previous crops :  $C_1=Groundnut$ ,  $C_2=Tur$ ,  $C_3=Soyabean$ ,  $C_4=Sunnhemp$  and  $C_5=Jowar$ .

$P_2O_5$  applied to the above crops in *kharif* 1950.

## DESIGN :

(i)  $2 \times 5$  Fact. in R.B.D. (ii) (a) 10. (b) N.A. (iii) 4. (iv) (a)  $70' \times 30'$ . (b)  $60' \times 18'$ . (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Nil. (iii) *Kapas* yield. (iv) (a) 1951-1952 to 1954-1955. (b) No. (c) N.A. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 1060 lb./ac.  
 (ii) 130.4 lb./ac.  
 (iii) Main effect of C and interaction C×P are significant.  
 (iv) Av. yield of *kapas* in lb./ac.

	✓ P <sub>0</sub>	P <sub>1</sub>	Mean
C <sub>1</sub>	1192	1255	1223
C <sub>2</sub>	1175	1219	1197
C <sub>3</sub>	851	925	888
C <sub>4</sub>	1282	1345	1313
C <sub>5</sub>	673	686	679
Mean	1035	1086	1060

S.E. of marginal mean of C = 46.1 lb./ac.  
 S.E. of marginal mean of P = 29.2 lb./ac.  
 S.E. of body of table = 65.2 lb./ac.

Crop :- Cotton (*Kharif*).  
 Site :- Govt. Expl. Farm, Akola.

Ref. :- Mh. 52(230).  
 Type :- 'M'.

Object :—To study the residual effect of super applied to the previous leguminous crop on Cotton yield.

## 1. BASAL CONDITIONS :

(i) (a), (b) and (c) As per treatments. (ii) (a) Black cotton soil. (b) Refer soil analysis, Akola. (iii) 25. 6. 1952. (iv) (a) and (b) N.A. (c) 18-20 lb./ac. (d) 18"×9". (e) N.A. (v) Nil. (vi) H.420 *deshi* (medium). (vii) Unirrigated. (viii) 3 hoeings and 2 weedings. (ix) 22.03". (x) N.A.

## 2. TREATMENTS :

All combinations of (1) and (2).

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

(2) 5 previous crops :- C<sub>1</sub>=Groundnut, C<sub>2</sub>=*Tur*, C<sub>3</sub>=Soyabean, C<sub>4</sub>=Sannhemp and C<sub>5</sub>=*Jowar*.  
 P<sub>2</sub>O<sub>5</sub> applied to the above crops in *Kharif* 1951-52.

## 3. DESIGN :

(i) 2×5 Fact. in R.B.D. (ii) (a) 10. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 1/40th acre. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) Normal. (ii) Nil. (iii) *Kapas* yield. (iv) (a) 1951 to 1953. (b) No (c) N.A. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 761 lb./ac.  
 (ii) 85.76 lb./ac.  
 (iii) Main effect of C and interaction C×P are significant.



(v) Av. yield of *kapas* in lb./ac.

	✓ P <sub>0</sub>	P <sub>1</sub>	Mean
C <sub>1</sub>	1044	1089	1068
C <sub>2</sub>	681	706	694
C <sub>3</sub>	703	680	691
C <sub>4</sub>	916	948	932
C <sub>5</sub>	419	426	423
Mean	753	769	761

S.E. of marginal mean of P = 19.17 lb./ac.  
 S.E. of marginal mean of C = 30.32 lb./ac.  
 S.E. of body of table = 42.88 lb./ac.

Crop :- Cotton (*Kharif*).

Ref. :- Mh. 53(268).

Site :- Govt. Expl. Farm, Akola.

Type :- 'M'.

Object :- To study the residual effect of Super applied to the previous leguminous crop on Cotton.

## 1. BASAL CONDITIONS :

(i) (a) No. (b) Cotton (c) Nil. (ii) (a) Black cotton soil. (b) Refer soil analysis, Akola. (iii) 25. 6. 1953. (iv) (a) 3 *bakharings*. (b) N.A. (c) 15 lb./ac. (d) 18"×9". (e) N.A. (v) Nil. (vi) H.420 *deshi* (medium). (vii) Unirrigated. [(viii) Hoeings on 15. 7. 1953, 9. 8. 1953, 29. 8. 1953, 1. 10. 1953 and 14. 10. 1953; weedings on 1. 8. 1953, 9. 9. 1953, 16. 10. 1953 and thinning on 27. 8. 1953. (ix) 26.38". (x) Picking on 7. 12. 1953, 9. 1. 1954 and 6. 2. 1954.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 2 levels of P<sub>2</sub>O<sub>5</sub>: P<sub>0</sub>=0 and P<sub>1</sub>=30 lb./ac.(2) 5 previous crops: C<sub>1</sub>=Groundnut, C<sub>2</sub>=*Tur*, C<sub>3</sub>=Soyabean, C<sub>4</sub>=Sannhemp and C<sub>5</sub>=*Jowar*. P<sub>2</sub>O<sub>5</sub> applied to the above crops grown in *Kharif* 1951.

## 3. DESIGN :

(i) 2×5 Fact. in R.B.D. (ii) (a) 10. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 60'×18'. (v) One line on either side of the plot. (vi) Yes.

## 4. GENERAL :

(i) Normal crop. (ii) Nil. (iii) *Kapas* yield. (iv) (a) 1951 to 1953. (b) No., (c) N.A. (v) (a), (b) N.A. (vi) Nil. (vii) 2nd year of the residual effect studied.

## 5. RESULTS:

- (i) 345 lb./ac.  
 (ii) 34.04 lb./ac.  
 (iii) Main effect of C and interaction C×P are significant.  
 (iv) Av. yield of *kapas* in lb./ac.

	✓ P <sub>0</sub>	P <sub>1</sub>	Mean
C <sub>1</sub>	302	339	320
C <sub>2</sub>	391	415	403
C <sub>3</sub>	326	349	337
C <sub>4</sub>	306	304	305
C <sub>5</sub>	352	361	357
Mean	335	354	345

S.E. of marginal mean of P = 7.83 lb./ac.  
 S.E. of marginal mean of C = 12.39 lb./ac.  
 S.E. of body of table = 17.52 lb./ac.

Crop :- Cotton (*Kharif*).  
Site :- Govt. Exptl. Farm, Akola.

Ref :- Mh. 53(269).  
Type :- 'M'.

Object :- To study the effect of green manuring with and without  $P_2O_5$  on Cotton crop.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Jowar*. (c) N.A. (ii) (a) Deep black cotton soil. (b) Refer soil analysis, Akola. (iii) 6.7.1953. (iv) (a) 3 *bakharings*. (b) N.A. (c) 15 lb./ac. (d) 24' x 12'. (e) N.A. (v) Nil. (vi) Buri. 0394 (late). (vii) Unirrigated. (viii) Hoeings on 30.7.1953, 21.8.1953, 11.9.1953 and 12.10.1953. Weedings on 7.8.1953, 21.8.1953, 17.9.1953, 17.10.1953 and 29.10.1953. Thinning on 7.8.1953. (ix) 26.38". (x) 28.11.1953, 30.12.1953 and 24.2.1954.

2. TREATMENTS :

1. No manure
2.  $P_2O_5$  at 30 lb./ac. as Super.
3. 3.79 ton/ac. of Sannhemp.
4. 4.32 ton/ac. of Sannhemp +  $P_2O_5$  at 30 lb./ac. as Super.
5. 1.88 ton/ac. of *udid*.
6. 2.17 ton/ac. of *udid* +  $P_2O_5$  at 30 lb./ac. as Super.

3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 6. (iv) (a) N.A. (b) 60.5' x 18'. (v) One row on either side. (vi) Yes.

4. GENERAL :

(i) Normal crop growth. (ii) A serious attack of red leaf disease occurred, lower leaves turned red and dropped. (iii) *Kapas* yield. (iv) (a) to (c) No. (v) (a) and (b) Nil. (vi) and (vii) Nil.

5. RESULTS :

- (i) 218.5 lb./ac.
- (ii) 52.36 lb./ac.
- (iii) Treatment differences are not significant.
- (iv) Av. yield of *kapas* in lb./ac.

Treatment	Av. yield
1.	180.0
2.	224.0
3.	197.0
4.	250.0
5.	196.0
6.	264.0
S.E./mean	= 21.38 lb./ac.

Crop :- Cotton (*Kharif*).  
Site :- Crop Res. Stn., Badnapur.

Ref :- Mh. 53(13).  
Type :- 'M'.

Object :- To compare the effects of A/S, Ammonium Chloride and C/N on yield of Cotton.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) Groundnut. (c) N.A. (ii) (a) Black cotton soil. (b) Refer soil analysis, Badnapur. (iii) 8.7.1953. (iv) (a) Ploughing and *bakharings* in summer. (b) to (e) N.A. (v) N.A. (vi) G-12. (vii) N.A. (viii) Gap-filling on 29.7.1953. (ix) 26.68". (x) Picking on 8 and 14.12.1953, 5 and 19.1.1954 and 4.2.1954.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 3 levels of N:  $N_0=0$ ,  $N_1=20$  and  $N_2=40$  lb /ac.

(2) 3 sources of N:  $S_1=A/S$ ,  $S_2=Ammonium Chloride$  and  $S_3=C/N$ .

Time of application of manure—13.7.1953.

## 3. DESIGN :

(i)  $3 \times 3$  Fact. in R.B.D. (ii) (a) 9. (b) N.A. (iii) 5. (iv) (a)  $127' \times 10\frac{1}{2}'$ . (b)  $121' \times 7\frac{1}{2}'$ . (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) Plants stunted in growth and stand uneven. Hence results not reliable. (ii) N.A. (iii) Yield of *kapas*. (iv) (a) 1953—N.A. (b) Yes. (c) N.A. (v) (a) Nanded and Parbhani. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 297 lb./ac.

(ii) 61.20 lb./ac.

(iii) Main effect of S and interaction  $S \times N$  are not significant, while the main effect of N is significant.

(iv) Av. yield of *kapas* in lb./ac.

	$S_1$	$S_2$	$S_3$	Mean
$N_0$	—	—	—	265
$N_1$	312	309	261	294
$N_2$	313	345	337	332
Mean	313	327	299	297

S.E. of marginal mean of N = 15.77 lb./ac.

S.E. of marginal mean of S = 19.20 lb./ac.

S.E. of body of table = 27.36 lb./ac.

Crop :- Cotton (*Kharif*).

Ref :- Mh.51(197).

Site :- Govt. Farm, Buldana.

Type :- 'M'.

Object :—To study the effect of soaking cotton seed in A/S solution before sowing.

## 1. BASAL CONDITIONS :

(i) (a) No. (b) and (c) N.A. (ii) (a) Medium black. (b) N.A. (iii) 23.6.1951. (iv) (a) 3 *bakharings* and 1 ploughing. (b) Dibbling. (c) 10 lb./ac. (d)  $18'' \times 9''$ . (e) 3 to 4 seeds/hill. (v) 10 C.L./ac. of tank silt (vi) H.420 *deshi* (medium). (vii) Unirrigated. (viii) 2 weedings and 2 hoeings. (ix) 33.22°. (x) 7.11.1951 to 31.12.1951.

## 2. TREATMENTS :

1. Control.

2. Cotton seeds soaked in 13% solution of A/s.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 2. (b) N.A. (iii) 2. (iv) (a) N.A. (b) 1/40th ac. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) Normal. (ii) Nil. (iii) *Kapas* yield. (iv) (a) 1951—N.A. (b) and (c) No. (v) (a) Akola, Washim and Achalpur. (v) (a), (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 581 lb./ac.

(ii) 13.89 lb./ac.

(iii) Treatments do not differ significantly.

(iv) Av. yield of *kapas* in ton/ac.

Treatment	Av. yield
1.	580
2.	582
S.E./mean	= 9.81 lb./ac.

Crop :- Cotton (*Kharif*).

Ref :- Mh. 51(113).

Site :- Govt. Seed and Demonstration Farm, Buldana.

Type :- 'M'.

Object :—To compare the manurial value of cotton seed cake with other manures.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Jowar*. (c) N.A. (ii) (a) Medium black. (b) Refer soil analysis, Buldana. (iii) 21.6.1951. (iv) (a) to (e) N.A. (v) Nil. (vi) N.A. (vii) Unirrigated. (viii) N.A. (ix) 38.22". (x) 9 to 20.11.1951 and 11.12.1951.

## 2. TREATMENTS :

1. Control (no manure).

2. 20 lb./ac. of N as G.N.C.

3. 20 lb./ac. of N as cotton seed cake (undecorticated).

4. 20 lb./ac. of N as cotton seed cake (decorticated).

5. 20 lb./ac. of N as A/S.

Manures applied on 14.7.1951.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 5. (iv) (a) and (b) 1/40th ac. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) Nil. (iii) *Kapas* yield. (iv) (a) 1951—N.A. (b) No. (c) N.A. (v) (a) Washim. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 672 lb./ac.

(ii) 147.4 lb./ac.

(iii) Treatments do not differ significantly.

(iv) Av. yield of *kapas* in lb./ac.

Treatment	Av. yield
1.	616
2.	736
3.	704
4.	608
5.	696
S.E./mean	= 65.89 lb./ac.

Crop :- Cotton (*Kharif*).

Ref :- Mh. 53(184).

Site :- Govt. Seed and Demonstration Farm, Buldana. Type :- 'M'.

Object :-To study the effect of C/N in comparison with A/S on Cotton yield.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) and (c) N.A. (ii) (a) Medium black. (b) Refer soil analysis, Buldana. (iii) 1.7.1953. (iv) (a) N.A. (b) Drilling. (c) 10 lb./ac. (d) 18"×9". (e) N.A. (v) Nil. (vi) H-420 *deshi* (medium-late). (vii) Unirrigated. (viii) 3 weedings and one hoeing. (ix) 36.52%. (x) Picking on 18.11.1953, 30.11.1953, 16.12.1953 and 7.1.1954.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 4 doses of N :  $N_0=0$ ,  $N_1=20$ ,  $N_2=40$  and  $N_3=60$  lb./ac.(2) 2 sources of N :  $S_1=A/S$  and  $S_2=C/N$ .

## 3. DESIGN :

(i) 4×2 Fact. in R.B.D. (ii) (a) 8. (b) N.A. (iii) 5. (iv) (a) N.A. (b) 33'×33'. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) Nil. (iii) *Kapas* yield. (iv) (a) 1953--N.A. (b) No. (c) N.A. (v) (a) Washim. (b) N.A. (vi) No reason for low yield is given. (vii) Nil.

## 5. RESULTS :

(i) 357 lb./ac.

(ii) 58.32 lb./ac.

(iii) Main effects of N and interaction of S×N are significant, while main effect of S is not significant.

(iv) Av. yield of *kapas* in lb./ac.

Control=327 lb./ac.

	$S_1$	$S_2$	Mean
$N_1$	307	354	330
$N_2$	425	352	388
$N_3$	408	353	380
Mean	380	353	366

S.E. of body of table

=26.07 lb./ac.

S.E. of control mean

=18.44 lb./ac.

S.E. of N marginal mean

=18.44 lb./ac.

S.E. of S marginal mean

=15.06 lb./ac.

S.E. of control vs any other mean in table

=31.94 lb./ac.

Crop :- Cotton (*Kharif*).

Ref :- Mh. 48(32).

Site :- Agri. Res. Stn., Jalagaon.

Type :- 'M'.

Object :-To study the N and  $P_2O_5$  requirements of Cotton with F.Y.M.

## 1. BASAL CONDITIONS :

(i) (a) No. (b) *Jowar*. (c) Nil. (ii) (a) Deep black cotton type having a depth of 10 to 13 feet. (b) Refer soil analysis, Jalagaon. (iii) 17.6.1948. (iv) (a) N.A. (b) Dibbling. (c) 6 lb./ac. (d) Distance between rows : 18" and distance between plants: 6". (v) F.Y.M. at 5 C.L./ac. (vi) *Jarila* (early). (vii) Unirrigated. (viii) Gap filling on 29.6.1948, one weeding and interculturing on 4 and 5.7.1948, 2nd interculturing on 9.8.1948, 3rd on 20.9.1948 and 2nd weeding on 21.9.1948. (ix) 34.46%. (x) 29.10.1948, 14 and 15.12.1948.

## 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) 2 sources of N :  $S_1=A/S$  and  $S_2=G.N.C.$ (3) 3 levels of  $P_2O_5$  :  $P_0=0$ ,  $P_1=30$  and  $P_2=60$  lb./ac. $P_2O_5$  applied as Super.

## 3. DESIGN :

- (i)  $3 \times 3 \times 2$  Fact. in R.B.D. (ii) (a) 18', (b) N.A. (iii) 4. (iv) (a)  $42' \times 18'$ , (b)  $30' \times 12'$ . (v)  $6' \times 3'$ . (vi) Yes.

## 4. GENERAL :

- (i) Crop remained stunted due to continuous rains for some period, otherwise growth is uniform and normal. (ii) Pink boll worm—No considerable damage. (iii) *Kapas* yield: (iv) (a) 1948—1951, (b) No. (c) N.A. (v) (a) Nil, (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 616 lb./ac.  
 (ii) 140.2 lb./ac.  
 (iii) Main effect of N, interaction NP and selective vs others differ significantly,  
 (iv) Av. yield of *kapas* in lb./ac.

Selective treatment  $P_0$  = 511 lb./ac.  
 Selective treatment  $P_1$  = 484 lb./ac.  
 Selective treatment  $P_2$  = 448 lb./ac.

	$P_0$	$P_1$	$P_2$	Mean	$S_1$	$S_2$
$N_1$	687	626	655	656	713	598
$N_2$	715	733	683	710	765	655
Mean	701	679	669	683	739	627
$S_1$	735	735	748	739		
$S_2$	667	624	590	627		

S.E. of marginal mean of N or S = 28.6 lb./ac.  
 S.E. of marginal mean of P = 35.1 lb./ac.  
 S.E. of mean of selective treatments = 49.6 lb./ac.  
 S.E. of selective vs other treatment means = 35.1 lb./ac.  
 S.E. of body of NP or SP tables = 49.6 lb./ac.  
 S.E. of body of NS table = 40.5 lb./ac.

Crop :- Cotton (*Kharif*)  
 Site :- Agri. Res. Stn., Jalagaon.

Ref :- Mh. 49(49).  
 Type :- 'M'.

Object :- To study the N and  $P_2O_5$  requirements of Cotton grown with F.Y.M.

## 1. BASAL CONDITIONS :

- (i) (a) No. (b) Gram. (c) Nil. (ii) (a) Deep black cotton type having a depth of 10 to 13 feet. (b) Refer soil analysis, Jalagaon. (iii) 30. 6. 1949. (iv) (a) N.A. (b) Drilling. (c) 10 lb./ac. (d) Between rows 18". (v) F.Y.M. at 5 C.L./ac. (vi) Jarila early. (vii) Unirrigated. (viii) Thinnings on 14. 7. 1949, weedings on 24. 7. 1949, 7. 8. 1949 and 17. 8. 1949 and hoeing on 15. 7. 1949, 20. 7. 1949, 12. 8. 1949, and 16. 8. 1949. (xi) 44.16". (x) 11 and 30. 11. 1949 and 11. 1. 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) 2 sources of N :  $S_1=A/S$  and  $S_2=G.N.C.$   
 (3) 3 levels of  $P_2O_5$  :  $P_0=0$ ,  $P_1=30$  and  $P_2=60$  lb./ac.  
 $P_2O_5$  as Super.

## 3. DESIGN :

- (i)  $3 \times 3 \times 2$  Fact. in R.B.D. (ii) (a) 18. (b) N.A. (iii) 4. (iv) (a)  $42' \times 18'$ , (b)  $30' \times 12'$ . (v)  $6' \times 3'$ . (vi) Yes.

## 4. GENERAL :

(i) Normal. (ii) Nil. (iii) *Kapas* yield. (iv) (a) 1948 *Kharif*—1951. (b) No. (c) N.A. (v) (a) Nil. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 609 lb./ac.  
 (ii) 131.8 lb./ac.  
 (iii) None of the main effects and interaction differ significantly. Selective treatments and selective vs others do not differ significantly.  
 (iv) Av. yield of *kapas* in lb./ac.

Selective treatment  $P_0$  = 538 lb./ac.

Selective treatment  $P_1$  = 582 lb./ac.

Selective treatment  $P_2$  = 548 lb./ac.

	$P_0$	$P_1$	$P_2$	Mean	$S_1$	$S_2$
$N_1$	619	625	629	624	638	611
$N_2$	662	633	649	648	657	738
Mean	641	629	639	636	647	625
$S_1$	683	650	609	647		
$S_2$	599	608	668	625		

S.E. of marginal mean of N or S = 26.9 lb./ac.

S.E. of marginal mean of P = 32.9 lb./ac.

S.E. of mean of selective treatments = 46.6 lb./ac.

S.E. of selective vs other treatment mean = 32.9 lb./ac.

S.E. of body of NP or SP tables = 46.6 lb./ac.

S.E. of body of NS table = 38.0 lb./ac.

Crop :- Cotton (*Kharif*).

Ref :- Mh. 50 (64).

Site :- Agri. Res. Stn., Jalagaon.

Type :- 'M'.

Object :- To study the N and  $P_2O_5$  requirements of Cotton grown with F.Y.M.

## BASAL CONDITIONS :

(i) (a) Gram-Cotton. (b) Gram. (c) Nil. (iii) (a) Deep black cotton type having a depth of 10 to 13 feet (b) Refer soil analysis, Jalagaon. (iii) 8, 9.7.1950. (iv) (a) N.A. (b) Drilling. (c) 10 lb./ac. (d) Distance between rows 18" and between plants irregular. (e) N.A. (v) 5 C.L./ac. of F.Y.M. (vi) Jarila (early). (vii) Unirrigated. (viii) Gap filling on 17, 18.7.1950, hoeings on 24.7.1950, 30.7.1950 and 20.7.1950 and weedings on 2.8.1950, 17 and 18.8.1950, and 2.9.1950. (ix) 21.73" (x) 15.11.1950, 7.12.1950 and 2.1.1951.

## 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) 2 sources of N:  $S_1=A/S$  and  $S_2=G.N.C.$

(3) 3 levels of  $P_2O_5$  :  $P_0=0$ ,  $P_1=30$  and  $P_2=60$  lb./ac.

$P_2O_5$  as Super.

## 3. DESIGN :

(i)  $3 \times 3 \times 2$  Fact. in R.B.D. (ii) (a) 18. (b) N.A. (iii) 4. (iv) (a)  $42' \times 18'$ . (b)  $30' \times 12'$ . (v)  $6' \times 3'$ . (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) Anthracnose disease 15 days after germination. (iii) *Kapas* yield. (iv) (a) 1948 (*Kharif*)—1951. (b) No. (c) N.A. (v) (a) Nil. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 1141 lb./ac.  
 (ii) 130.4 lb./ac.  
 (iii) Main effect of N, interaction N×P and selective vs others differ significantly.  
 (iv) Av. yield of *kapas* in lb./ac.

Selective treatment  $P_0=1038$  lb./ac.

Selective treatment  $P_1=1048$  lb./ac.

Selective treatment  $P_2=1006$  lb./ac.

	$P_0$	$P_1$	$P_2$	Mean	$S_1$	$S_2$
$N_1$	1154	1126	1176	1152	1130	1174
$N_2$	1258	1244	1225	1242	1208	1276
Mean	1206	1185	1201	1197	1169	1225
$S_1$	1171	1162	1175	1169		
$S_2$	1241	1208	1226	1225		

S.E. of marginal mean of N or S =26.6 lb./ac.

S.E. of marginal mean of P =32.6 lb./ac.

S.E. of selective treatment means =46.1 lb./ac.

S.E. of selective vs other treatment mean =32.8 lb./ac.

S.E. of body of NP or SP table =46.1 lb./ac.

S.E. of body of NS table =40.5 lb./ac.

Crop :- Cotton (*Kharif*)  
 Site :- Agri. Res. Stn., Jalagaon.

Ref :- Mh. 51(76).  
 Type :- 'M'.

Object :- To study the N and  $P_2O_5$  requirements of Cotton grown with F.Y.M.

## 1. BASAL CONDITIONS :

- (i) (a) Gram—Cotton. (b) Gram. (c) Not manured. (ii) (a) Deep black cotton type having a depth of 10 to 13 feet. (b) Refer soil analysis, Jalagaon. (iii) 6 and 9. 7. 1951. (iv) (a) N.A. (b) Drilling. (c) 10 lb./ac. (d) Distance between rows  $18^\circ$ , between plants irregular. (v) 5 C.L./ac. of F.Y.M. (vi) Jarila (early). (vii) Unirrigated (viii) Gap filling on 24. 7. 1951, hoeings on 1, 18 and 26. 8. 1951 and 13. 9. 1951. (ix)  $20.14^\circ$ . (x) 19. 11. 1951 and 2. 1. 1952.

## 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) 2 sources of N :  $S_1=A/S$  and  $S_2=G.N.C.$   
 (3) 3 levels of  $P_2O_5$  :  $P_0=0$ ,  $P_1=30$  and  $P_2=60$  lb./ac!  
 $P_2O_5$  as Super.

## 3. DESIGN :

- (i)  $3 \times 3 \times 2$  Fact. in R.B.D. (ii) (a) 18. (b) N.A. (iii) 4. (iv) (a)  $42' \times 18'$ . (b)  $30' \times 12'$ . (v)  $6' \times 3'$ . (vi) Yes.

## 4. GENERAL :

- (i) N.A. (ii) Nil. (iii) *Kapas* yield. (iv) (a) 1948 (*Kharif*)-1951. (b) No. (c) N.A. (v) (a) Nil. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 879 lb./ac.  
 (ii) 115.2 lb./ac.  
 (iii) Main effect of N, interaction N×P and selective vs others differ significantly.



(iv) Av. yield of *kapas* in lb./ac.Selective treatment  $P_0=748$  lb./ac.Selective treatment  $P_1=897$  lb./ac.Selective treatment  $P_2=884$  lb./ac.

	$P_0$	$P_1$	$P_2$	Mean	$S_1$	$S_2$
$N_1$	888	867	813	856	830	882
$N_2$	869	921	1026	939	877	1001
Mean	879	894	920	898	854	942
$S_1$	845	848	868	854		
$S_2$	913	940	972	942		

S.E. of marginal mean of N or S	=23.5 lb./ac.
S.E. of marginal mean of P	=28.8 lb./ac.
S.E. of selective treatments	=40.7 lb./ac.
S.E. of selective vs other treatment means	=28.8 lb./ac.
S.E. of body of NP or SP tables	=40.7 lb./ac.
S.E. of body of NS table	=33.3 lb./ac.

Crop :- Cotton (*Kharif*)

Ref :-Mh. 48(29)

Site :-Agri. Res. Stn., Jalagaon.

Type :-'M'.

Object :-To study the N and  $P_2O_5$  requirements of Cotton grown without F.Y.M.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Wheat. (c) Nil. (ii) (a) Deep black cotton type having a depth of 10 to 13 feet. (b) Refer soil analysis, Jalagaon. (iii) 17. 6. 1948. (iv) (a) N.A. (b) Dibbling. (c) 6 lb./ac. (d) Between rows 18", plant to plant 6". (e) N.A. (v) Nil. (vi) Jarila. (vii) Unirrigated. (viii) Gap filling on 29.6.1948, weeding and interculturing on 4 and 5. 7. 1948, 9. 8. 1948, 20. 9. 1948 and 21. 8. 1948. (ix) 34.46". (x) 29. 10. 1948, 14 and 15. 12. 1948.

## 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 sources of N :  $S_1=A/S$  and  $S_2=G.N.C.$
- (3) 3 levels of  $P_2O_5$  :  $P_0=0$ ,  $P_1=30$  and  $P_2=60$  lb./ac.  
 $P_2O_5$  as Super.

## 3. DESIGN :

(i)  $3 \times 3 \times 2$  Fact. in R.B.D. (ii) (a) 18. (b) N.A. (iii) 4. (iv) (a)  $42' \times 18'$ . (b)  $30' \times 12'$ . (v)  $6' \times 3'$ . (vi) Yes.

## 4. GENERAL :

(i) Crop remained stunted due to continuous rains for some period, otherwise growth was uniform and normal. (ii) Black arm disease and pink boll worm attack. (iii) *Kapas* yield. (iv) (a) 1948-1951. (b) No. (c) N.A. (v) (a) No. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 452 lb./ac.
- (ii) 133.2 lb./ac.
- (iii) Main effect of P, interaction  $N \times P$  and selective vs other treatments differ significantly.

(iv) Av. yield of *kapas* in lb./ac.

Selective treatment  $P_0=434$  lb./ac.  
 Selective treatment  $P_1=375$  lb./ac.  
 Selective treatment  $P_2=336$  lb./ac.

	$P_0$	$P_1$	$P_2$	Mean	$S_1$	$S_2$
$N_1$	440	505	468	471	524	418
$N_2$	400	567	547	504	514	494
Mean	420	536	508	488	519	456
$S_1$	420	566	572	519		
$S_2$	420	506	443	456		

S.E. of marginal mean of N or S = 27.19 lb./ac.  
 S.E. of marginal mean of P = 33.30 lb./ac.  
 S.E. of selective treatments = 47.09 lb./ac.  
 S.E. of selective vs other treatment means = 33.30 lb./ac.  
 S.E. of body of NP or SP tables = 47.09 lb./ac.  
 S.E. of body of NS table = 38.45 lb./ac.

Crop :- Cotton (*Kharif*).

Ref :- Mh. 49(50).

Site :- Agri. Res. Stn., Jalagaon.

Type :- 'M'.

Object :- To study the N and  $P_2O_5$  requirements of Cotton grown without F.Y.M.

#### 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Groundnut. (c) N.A. (ii) (a) Deep black cotton type having a depth of 10 to 13 feet. (b) Refer soil analysis, Jalagaon. (iii) 29.6.1949. (iv) (a) N.A. (b) Drilling. (c) 10 lb./ac. (d) Row to row 18". (e) N.A. (v) Nil. (vi) Jarila (early). (vii) Unirrigated. (viii) Thinning on 16.7.1949 and weeding on 17.8.1949, 25.7.1949 and 12.8.1949. (ix) 44.17". (x) 11, 30.11.1949 and 11.1.1950.

#### 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) 2 sources of N :  $S_1=A/S$  and  $S_2=G.N.C.$

(3) 3 levels of  $P_2O_5$  :  $P_0=0$ ,  $P_2=30$  and  $P_3=60$  lb./ac.

-  $P_2O_5$  applied as Super.

#### 3. DESIGN :

(i)  $3 \times 3 \times 2$  Fact. in R.B.D. (ii) (a) 18. (b) N.A. (iii) 4. (iv) (a)  $42' \times 18'$ . (b)  $30' \times 12'$ . (v)  $6' \times 3'$ . (vi) Yes.

#### 4. GENERAL :

(i) Nil. (ii) Nil. (iii) *Kapas* yield. (iv) (a) 1948-1951. (b) No. (c) N.A. (v) (a) No. (b) N.A. (vi) and (vii) Nil.

#### 5. RESULTS :

(i) 534 lb./ac.

(ii) 71.52 lb./ac.

(iii) Main effect of N, interaction  $N \times P$  and selective vs other treatments differ significantly.

(iv) Av. yield of *kapas* in lb./ac.Selective treatment  $P_0=423$  lb./ac.Selective treatment  $P_1=515$  lb./ac.Selective treatment  $P_2=486$  lb./ac.

	$P_0$	$P_1$	$P_2$	Mean	$S_1$	$S_2$
$N_1$	498	551	543	530	557	504
$N_2$	569	594	623	595	564	626
Mean	534	573	583	563	560	565
$S_1$	537	576	569	560		
$S_2$	530	569	597	565		

S.E. of marginal means of N or S	=14.60 lb./ac.
S.E. of marginal means of P	=17.88 lb./ac.
S.E. of selective treatment means	=25.59 lb./ac.
S.E. of selective vs other treatment means	=17.88 lb./ac.
S.E. of body of NP or SP tables	=25.29 lb./ac.
S.E. of body of NS table	=20.65 lb./ac.

Crop :- Cotton (*Kharif*).

Ref :- Mh. 50(63).

Site :- Agri. Res. Stn., Jalagaon.

Type :- 'M'.

Object :- To study the N and  $P_2O_5$  requirements of Cotton grown without F.Y.M.

## 1. BASAL CONDITIONS :

(i) (a) Gram—Cotton. (b) Gram. (c) Nil. (ii) (a) Deep black cotton type having a depth of 10 to 13 feet. (b) Refer soil analysis, Jalagaon. (iii) 8, 9.7.1950. (iv) (a) N.A. (b) Drilling. (c) 10 lb./ac. (d) Row to row 18" and between plants irregular. (e) N.A. (v) Nil. (vi) Jarila (early). (vii) Unirrigated. (viii) Gap-filling on 17 and 18.7.1950, hoeings on 24.7.1950, 6.8.1950, 30.2.1950 and 20.7.1950 and weedings on 2.8.1950, 17 and 18.8.1950 and 2.9.1950. (ix) 21.73". (x) 15.11.1950, 7.12.1950 and 2.1.1951.

## 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) 2 sources of N :  $S_1=A/S$  and  $S_2=G.N.C.$ (3) 3 levels of  $P_2O_5$  :  $P_0=0$ ,  $P_1=30$  and  $P_2=60$  lb./ac. $P_2O_5$  applied as Super.

## 3. DESIGN :

(i)  $3 \times 3 \times 2$  Fact. in R.B.D. (ii) (a) 18. (b) N.A. (iii) 4. (iv) (a)  $42' \times 18'$ . (b)  $30' \times 12'$ . (v)  $6' \times 3'$ . (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) Anthracnose disease 15 days after germination. (iii) *Kapas* yield. (iv) (a) 1948—1951 (b) No. (c) N.A. (v) (a) No. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 1243 lb./ac.

(ii) 203.2 lb./ac.

(iii) Only main effect of N, interaction  $N \times P$  and selective vs others are significant.

(iv) Av. yield of *kapas* in lb./ac.Selective treatment  $P_0=1111$  lb./ac.Selective treatment  $P_1=1109$  lb./ac.Selective treatment  $P_2=1288$  lb./ac.

	$P_0$	$P_1$	$P_2$	Mean	$S_1$	$S_2$
$N_1$	1196	1203	1318	1239	1152	1326
$N_2$	1347	1363	1249	1320	1208	1432
Mean	1272	1283	1284	1280	1180	1379
$S_1$	1260	1183	1097	1180		
$S_2$	1283	1383	1470	1379		

S.E. of marginal means of N or S	=41.49 lb./ac.
S.E. of marginal means of P	=50.80 lb./ac.
S.E. of selective treatment means	=58.66 lb./ac.
S.E. of selective vs other treatment means	=50.80 lb./ac.
S.E. of body of NP or SP tables	=58.66 lb./ac.
S.E. of body of NS table	=71.84 lb./ac.

Crop :- Cotton (*Kharif*).  
 Site :- Agri. Res. Stn., Jalagaon.

Ref :- Mh. 51(75).  
 Type :- 'M'.

Object :- To study the N and  $P_2O_5$  requirements of Cotton grown without F.Y.M.

#### 1. BASAL CONDITIONS :

(i) (a) Gram—Cotton. (b) Gram. (c) Nil. (ii) (a) Deep black cotton type having a depth of 10 to 13 feet. (b) Refer soil analysis, Jalagaon. (iii) 6 to 9.7.1951. (iv) (a) N.A. (b) Drilling. (c) 10 lb./ac. (d) Row to row 18" and between plants irregular. (e) N.A. (v) Nil (vi) Jarila (early). (vii) Unirrigated. (viii) Gap filling on 24.7.1951 and hoeings on 1.8.1951, 18.8.1951 to 26.8.1951 and 13.9.1951. (ix) 20.14". (x) 19.11.1951 and 2.1.1952.

#### 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) 2 sources of N :  $S_1=A/S$  and  $S_2=G.N.C.$   
 (3) 3 levels of  $P_2O_5$  :  $P_0=0$ ,  $P_1=30$  and  $P_2=60$  lb./ac.  
 $P_2O_5$  applied as Super.

#### 3. DESIGN :

(i)  $3 \times 3 \times 2$  Fact. in R.B.D. (ii) (a) 18. (b) N.A. (iii) 4. (iv) (a)  $42' \times 18'$ . (b)  $36' \times 12'$ . (v) 3' around the plot. (vi) Yes.

#### 4. GENERAL:

(i) N.A. (ii) Nil. (iii) *Kapas* yield. (iv) (a) 1948 to 1951. (b) No. (c) N.A. (v) (a) No. (b) N.A. (vi) and (vii) Nil.

#### 5. RESULTS :

(i) 717 lb./ac.  
 (ii) 123.1 lb./ac.  
 (iii) Only main effect of P, interaction  $N \times P$  and selective vs others differ significantly.

(iv) Av. yield of *kapas* in lb./ac.Selective treatment  $P_0=575$  lb./ac.Selective treatment  $P_1=660$  lb./ac.Selective treatment  $P_2=600$  lb./ac.

	$P_0$	$P_1$	$P_2$	Mean	$S_1$	$S_2$
$N_1$	702	778	767	749	739	758
$N_2$	671	843	860	791	749	833
Mean	687	811	814	770	744	796
$S_1$	622	779	832	744		
$S_2$	752	842	795	796		

S.E. of marginal means of N or S = 25.13 lb./ac.

S.E. of marginal means of P = 30.78 lb./ac.

S.E. of selective treatment means = 43.52 lb./ac.

S.E. of selective vs other treatment means = 30.78 lb./ac.

S.E. of body of NP or SP table = 43.52 lb./ac.

S.E. of body of NS table = 35.54 lb./ac.

Crop :- Cotton (*Kharif*).

Ref :- Mh. 52(317).

Site :- Agri. Res. Stn., Jalagaon.

Type :- 'M'.

Object :- To study the residual effect of manures applied to previous *Jowar* (without a basal dose of F.Y.M) on Cotton yield.

## 1. BASAL CONDITIONS:

(i) (a) N.A. (b) *Jowar*. (c) As per treatments. (ii) (a) Deep black cotton soil. (b) Refer soil analysis, Jalagaon. (iii) 19.6.1952. (iv) (a) N.A. (b) Drilling. (c) 10 lb./ac. (d) 18" between rows. (e) —. (v) Nil. (vi) 197-3 *Virnar*. (vii) Unirrigated. (viii) 3 weedings and 5 hoeings. (ix) 17.0". (x) 6.11.1952, 10.12.1952 and 21.1.1953.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 4 levels of N as G.N.C. :  $N_0=0$ ,  $N_1=20$ ,  $N_2=40$  and  $N_3=60$  lb./ac.(2) 4 levels of  $P_2O_5$  as Super :  $P_0=0$ ,  $P_1=20$ ,  $P_2=40$  and  $P_3=60$  lb./ac.Manures applied to previous crop *Jowar*.

## 3. DESIGN :

(i) 4x4 Fact. in R.B.D. (ii) (a) 16. (v) N.A. (iii) 4. (iv) (a) 42'x27'. (b) 30'x15'. (v) 6' around the plot. (vi) Yes.

## 4. GENERAL :

(i) Unsatisfactory. (ii) Nil. (iii) *Kapas* yield. (iv) (a) Experiment conducted on *Jowar* from 1941 to 1951 and in 1952 residual effect studied on cotton for one year only. (b) Yes. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 272 lb./ac.

(ii) 73.08 lb./ac.

(iii) Main effects of N and P and their interaction are highly significant.

(iv) Av. yield of *kapas* in lb./ac.

	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>	P <sub>3</sub>	Mean
N <sub>0</sub>	251	206	224	251	233
N <sub>1</sub>	209	221	248	271	237
N <sub>2</sub>	275	236	249	278	260
N <sub>3</sub>	275	295	454	404	357
Mean	253	240	294	301	272

S.E. of marginal means of N or P = 18.27 lb./ac.  
 S.E. of body of table = 36.54 lb./ac.

Crop :- Cotton (*Kharif*).  
 Site :- Agri. Res. Stn., Jalagaon.

Ref :- Mh. 52(316)  
 Type :- 'M'.

Object :- To study the residual effect of manures applied to previous *Jowar* (with a basal dose of F.Y.M.) on Cotton yield.

#### 1. BASAL CONDITIONS :

(i) (a) N.A. (b) *Jowar* (c) As per treatments. (ii) (a) Deep black cotton soil (b) Refer soil analysis, Jalagaon. (iii) 19.6.1952. (iv) (a) N.A. (b) Drilling. (c) 10 lb./ac. (d) 18" between rows. (e)-(v) Nil. (vi) 197-3 *Virnar*. (vii) Unirrigated. (viii) 3 weedings and 5 hoeings. (ix) 17.0" (x) 5.11.1952, 9.12.1952 and 21.1.1953.

#### 2. TREATMENTS :

All combinations of (1) and (2)

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

(2) 4 levels of P<sub>2</sub>O<sub>5</sub> as Super : P<sub>0</sub>=0, P<sub>1</sub>=20, P<sub>2</sub>=40 and P<sub>3</sub>=60 lb./ac.

Manures applied to previous crop *Jowar*.

#### 3. DESIGN :

(i) 4x4 Fact. in R.B.D. (ii) (a) 16 (b) N.A. (iii) 4 (iv) (a) 42'x27' (b) 30'x15' (v) 6' around the plot. (vi) Yes.

#### 4. GENERAL :

(i) Unsatisfactory. (ii) Nil. (iii) *Kapas* yield. (iv) (a) Experiment conducted on *Jowar* from 1948 to 1951 and in 1952 residual effect studied on Cotton for one year only. (b) Yes. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

#### 5. RESULTS :

(i) 314 lb./ac.

(ii) 58.08 lb./ac.

(iii) Main effects of N, P and their interaction are highly significant.

(iv) Av. yield of *kapas* in lb./ac.

	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>	P <sub>3</sub>	Mean
N <sub>0</sub>	227	254	254	271	252
N <sub>1</sub>	253	274	285	300	278
N <sub>2</sub>	295	315	384	387	345
N <sub>3</sub>	315	433	342	427	379
Mean	273	319	316	346	314

S.E. of marginal means of N or P = 14.52 lb./ac.  
 S.E. of body of table = 29.04 lb./ac.

Crop :- Cotton (*Kharif* ).  
Site :- Plant Breeding Stn., Latur.

Ref :- Mh. 51(114).  
Type :- 'M'.

Object :- To find out the N and P requirements of Cotton.

1. BASAL CONDITIONS :

(i) (a) *Jowar*—Cotton. (b) *Kharif Jowar*. (c) 10 C.L./ac. of F.Y.M. (ii) (a) Deep black clayey soil. (b) Refer soil analysis, Latur. (iii) 2.7.1951. (iv) (a) One ploughing. (b) Drilling. (c) 16 lb./ac. (d) Row to row 18". (e) N.A. (v) Nil. (vi) *Gaorani-12*. (vii) Unirrigated. (viii) One weeding and 2 hoeings. (ix) 26.12". (x) 16.11.1951, 3.12.1951 and 3.1.1952.

2. TREATMENTS :

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

- (1) 2 doses of N :  $N_0=0$  and  $N_1=30$  lb./ac.  
(2) 2 sources of N :  $S_1=A/S$  and  $S_2=G.N.C.$   
(3) 2 levels of  $P_2O_5$  :  $P_0=0$ , and  $P_1=30$  lb./ac.

A/S and G N.C. were broadcasted. Source of  $P_2O_5$  is Super which is drilled.

3. DESIGN :

(i)  $2^3$  Fact. in R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a) 127'×15'. (b) 121'×9'. (v) 3' around the plot. (vi) Yes.

4. GENERAL :

(i) There was heavy shedding of young bolls due to insufficient moisture in the soil and so the yields were moderate. (ii) Nil. (iii) Height of plants, yield of *kapas*. (iv) (a) 1950—1953. (b) No. (c) N.A. (v) (a) Nil. (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

- (i) 534 lb./ac.  
(ii) 72.45 lb./ac.  
(iii) Selective vs others differ significantly while other effects do not differ significantly.  
(iv) Av. yield of *kapas* in lb./ac.

Selective treatment  $P_0$  = 423 lb./ac.

Selective treatment  $P_1$  = 485 lb./ac.

	$P_0$	$P_1$	Mean
$N_1S_1$	618	569	593
$N_1S_2$	597	670	633
Mean	607	619	613

S.E. of any marginal mean = 25.61 lb./ac.

S.E. of selective vs others = 44.37 lb./ac.

S.E. of body of table = 36.22 lb./ac.

Crop :- Cotton (*Kharif* ).  
Site :- Plant Breeding Stn., Latur.

Ref :- Mh. 52(132).  
Type :- 'M'.

Object :- To find out the N and P requirements of Cotton.

BASAL CONDITIONS :

(i) (a) *Jowar*—Cotton. (b) *Jowar*. (c) 10 C.L./ac. of F.Y.M. (ii) (a) Medium black. (b) Refer soil analysis, Latur. (iii) 16.7.1952. (iv) (a) One ploughing and one cleaning. (b) N.A. (c) 16 lb./ac. (d) Between rows 18". (e) N.A. (v) Nil. (vi) *Gaorani-12*. (vii) Unirrigated. (viii) One weeding and 2 hoeings. (ix) 18.0". (x) 17.11.1952, 2.12.1952, 17.12.1952 and 8.1.1953.

## 2. TREATMENTS :

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

- (1) 2 doses of N :  $N_0=0$  and  $N_1=30$  lb./ac.  
 (2) 2 sources of N :  $S_1=A/S$  and  $S_2=G.N.C.$   
 (3) 2 levels of  $P_2O_5$  :  $P_0=0$  and  $P_1=30$  lb./ac.

A/S and G.N.C. were broadcasted. Source of  $P_2O_5$  is Super, which is drilled.

## 3. DESIGN :

(i) 2<sup>3</sup> Fact. in R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a) 127'×15'. (b) 121'×9'. (v) Two rows on each flank in a plot together with 3' at each extremity. (vi) Yes.

## 4. GENERAL :

(i) Unsatisfactory due to scanty rainfall. (ii) Heavy attack of bollworms. (iii) Plant height, flowering and yield of *kapas*. (iv) (a) 1950 to 1952. (b) No. (c) N.A. (v) (a) N.A. (b) No. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 188 lb./ac.  
 (ii) 31.52 lb./ac.  
 (iii) Only selective vs others differ significantly.  
 (iv) Av. yield of *kapas* in lb./ac.

Selective treatment  $P_0$  =143 lb./ac.  
 Selective treatment  $P_1$  =133 lb./ac.

	$P_0$	$P_1$	Mean
$N_1S_1$	238	252	245
$N_1S_2$	210	252	231
Mean	224	252	

S.E. of any marginal mean =11.15 lb./ac.  
 S.E. of selective vs others =19.31 lb./ac.  
 S.E. of body of table =15.76 lb./ac.

Crop :-Cotton (*Kharif*).

Ref :-Mh. 52(40).

Site :-Plant Breeding Stn., Latur.

Type :-'M'.

Object :-To study the effect of N by soaking Cotton seed with molar solution of A/S on Cotton yield.

## 1. BASAL CONDITIONS :

(i) (a) *Jowar*—Cotton. (b) *Kharif Jowar*. (c) F.Y.M. at 10 C.L./ac. (ii) (a) Deep black clayey soil. (b) Refer soil analysis, Latur. (iii) 19.7.1952. (iv) (a) One ploughing. (b) Seeds sown through *Moghas*, (c) 16 lb./ac. (d) 18". (e) N.A. (v) 3 C.L. of compost. (vi) *Gaorani*—12. (vii) Unirrigated. (viii) Two weedings and one hoeing. (ix) 18.03". (x) 19.11.1952.

## 2. TREATMENTS :

- Control (no manure, no seed treatment).
- Only molar solution of A/S.
- Molar solution +20 lb./ac. of N as A/S by broadcast.
- 20 lb./ac. of N as A/S by broadcast at the time of sowing.  
 Treatment 4 given one month after sowing. 132 gms. of A/S dissolved in water to make 1000 c.c. of molar solution.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 4. (iv) (a) 127'×15'. (b) 121'×9'. (v) Two rows on each side of the plot and 3' on each extremity of a row. (vi) Yes.



## 4. GENERAL

(i) Not satisfactory due to scanty rainfall. (ii) Heavy attack of bollworms. (iii) Plant height at flowering and maturity and yield of *kapas*. (iv) (a) 1952—1954. (b) No. (c) N.A. (v) (a) Nanded. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 320 lb./ac.  
 (ii) 40.2 lb./ac.  
 (iii) Treatments do not differ significantly.  
 (iv) Av. yield of *kapas* in lb./ac.

Treatment	Av. yield.
1.	301
2.	325
3.	296
4.	356
S.E./mean	=20.6 lb./ac.

Crop :- Cotton (*Kharif*).

Ref :- Mh. 53(189).

Site :- Plant Breeding Stn., Latur.

Type :- 'M'.

Object :- To study the effect of N by soaking Cotton seed with molar solution of A/S on Cotton yield.

## 1. BASAL CONDITIONS :

(i) (a) Groundnut—Cotton. (b) Groundnut. (c) F.Y.M. at 10 C.L./ac. (ii) (a) Deep black clayey soil. (b) Refer soil analysis, Latur. (iii) 23.6.1953. (iv) (a) One ploughing and four harrowings. (b) Line sowing. (c) to (e) N.A. (v) Nil. (vi) *Gaorani*—12. (vii) Unirrigated. (viii) One weeding and 3 hoeings. (ix) 41". (x) 18.11.1953, 2.12.1953, 18.12.1953 and 15.1.1954.

## 2. TREATMENTS :

- Control (no manure, no seed treatment).
- Only molar solution of A/S.
- Molar solution + 20 lb./ac. of N as A/S by broadcast.
- 20 lb./ac. of N as A/S by broadcast at the time of sowing.  
 Treatment 4 given one month after sowing. 132 gms. of A/S dissolved in water to make 1000 c.c. of molar solution.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 4. (iv) (a) 127' × 15'. (b) 121' × 9'. (v) Two rows on each side of plot and 3' on each extremity of the row. (vi) Yes.

## 4. GENERAL :

(i) Not satisfactory due to scanty rains. (ii) Nil. (iii) Plant heights and yield of *kapas*. (iv) (a) 1952—1954. (b) No. (c) N.A. (v) (a) Nil. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 32.48 lb./ac.  
 (ii) 20.45 lb./ac.  
 (iii) Treatments do not differ significantly.  
 (iv) Av. yield of *kapas* in lb./ac.

Treatment	Av. yield
1.	41.44
2.	23.81
3.	29.00
4.	35.68
S.E./mean	=10.22 lb./ac.

Crop :- Cotton (*Kharif*).

Ref :- Mh. 53(17).

Site :- Plant Breeding Stn., Latur.

Type :- 'M'.

Object :- To study the effect of organic manures and A/S on yield of Cotton.

## 1. BASAL CONDITIONS :

(i) (a) *Kharif Jowar*—Cotton. (b) *Kharif Jowar*. (c) F.Y.M. at 10 C.L./ac. (ii) (a) Medium black clayey soil. (b) Refer soil analysis, Latur. (iii) 17.6.1953. (iv) (a) 1 ploughing, 2 harrowings and 1 cleaning. (b) Seeds sown through *moghas*. (c) 16 lb./ac. (d) 18°. (e) N.A. (v) Nil. (vi) *Gaorani-12*. (vii) Un-irrigated. (viii) Bullock hoeing twice, hand hoeing once, weeding once and uprooting of wild plants. (ix) 41.10°. (x) 12 to 17.11.1953, 14.12.1953 and 13.1.1954.

## 2. TREATMENTS :

All combinations of (1) and (2)

- (1) 2 levels of F.Y.M. :  $F_0=0$  and  $F_1=4$  ton/ac.  
 (2) 2 levels of N as A/S :  $N_0=0$  and  $N_1=100$  lb./ac.

## 3. DESIGN :

(i) 2x2 Fact. in R.B.D. (ii) (a) 4. (b) N.A. (iii) 4. (iv) (a) 127'x15'. (b) 121'x9'. (v) 2 rows at each flank and 3' at each extremity of a row. (vi) Yes.

## 4. GENERAL :

(i) Due to excessive rains during 1953-54 and heavy rains in Sept. and Oct. 1953, Cotton yields were low as shedding of bolls was much. (ii) Nil. (iii) Plant height at flowering and at maturity and yield of *kapas*. (iv) (a) 1953—1956. (b) No. (c) N.A. (v) (a) No. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 262 lb./ac.  
 (ii) 38.40 lb./ac.  
 (iii) Main effects of N and F and interaction are significant.  
 (iv) Av. yield of *kapas* in lb./ac.

	$F_0$	$F_1$	Mean
$N_0$	179	298	239
$N_1$	260	308	284
Mean	220	303	262

S.E. of any marginal mean = 11.1 lb./ac.  
 S.E. of body of table = 15.6 lb./ac.

Crop :- Cotton (*Kharif*).

Ref :- Mh. 52(51).

Site :- Cotton Res. Stn., Nanded.

Type :- 'M'.

Object :- To study the effect of soaking Cotton seed in molar solution of A/S [before] sowing, on yield of Cotton.

## 1. BASAL CONDITIONS :

(i) (a) *Rabi Jowar*—Cotton. (b) *Rabi Jowar*. (c) 10 C.L./ac. of T.C. and B.M. at the rate of 30 lb./ac. of  $P_2O_5$ . (ii) (a) Black cotton soil. (b) Refer soil analysis, Nanded. (iii) 30.6.1952. (iv) (a) *Bakharing* 4 times. (b) Drilled by three coultered 18" drill. (c) 16 lb./ac. (d) 18°. (e) N.A. (v) Nil. (vi) *Gaorani-6*. (vii) Un-irrigated. (viii) Hoeing twice and weeding once. (ix) 28.83°. (x) Pickings on 8.11.1952, 8.12.1952 and 8.1.1953.

## 2. TREATMENTS :

All combinations of (1) and (2)

- (1) 2 soakings :  $S_0$ =No soaking and  $S_1$ =Seed soaked for 24 hours in one molar solution of A/S.  
 (2) 2 levels of N as A/S :  $N_0=0$  and  $N_1=20$  lb./ac.  
 In  $N_1S_0$  plots manure was broadcasted at sowing and in  $N_1S_1$  plots applied one month after sowing in rows.

## 3. DESIGN :

(i) 2×2 Fact. in R.B.D. (ii) (a) 4. (b) N.A. (iii) 5. (iv) (a) 127'×15'. (b) 121'×9'. (v) 2 rows at each flank and 3 ft. at each extremity of the row. (vi) Yes.

## 4. GENERAL :

(i) Satisfactory. (ii) No. (iii) Germination and final stand, plant height, boll no., boll weight, ginning percentage, fibre properties and *kapas* yield. (iv) (a) 1952-53. (b) No. (c) N.A. (v) (a) Latur. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 347 lb./ac.  
 (ii) 23.20 lb./ac.  
 (iii) Main effect of N is highly significant others are not significant.  
 (iv) Av. yield of *kapas* in lb./ac.

	S <sub>0</sub>	S <sub>1</sub>	Mean
N <sub>0</sub>	289	290	290
N <sub>1</sub>	409	400	404
Mean	349	345	347

S.E. of any marginal mean = 7.30 lb./ac.

S.E. of body of table = 10.40 lb./ac.

Crop :- Cotton (*Kharif*).

Site :- Cotton Res. Stn., Nanded.

Ref :- Mh. 53(118)

Type :- 'M'.

Object :- To study the effect of soaking Cotton seed in one molar solution of A/S before sowing on the ultimate yield of Cotton.

## 1. BASAL CONDITIONS :

(i) (a) *Rabi Jowar*—Cotton. (b) *Rabi Jowar*. (c) Nil. (ii) (a) Black cotton soil. (b) Refer soil analysis, Nanded. (iii) 28. 6. 1953, (iv) (a) *Bakharing* thrice (b) to (e) N.A. (v) Nil. (vi) *Gaorani-6*. (vii) Un-irrigated. (viii) Hoeing twice and weeding once. (ix) [45.13". (x) Pickings on 24. 11. 1953 and 24. 12. 1953.

## 2. TREATMENTS :

All combinations (1) and (2)

(1) 2 soakings : S<sub>0</sub> = No soaking and S<sub>1</sub> = Seed soaked for 24 hours in one molar solution of A/S.

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

In N<sub>1</sub>S<sub>0</sub> plots manure was broadcasted at sowing and N<sub>1</sub>S<sub>1</sub> plots applied one month after sowing in rows.

## 3. DESIGN :

(i) 2×2 Fact. in R.B.D. (ii) (a) 4. (b) N.A. (iii) 5. (iv) (a) 127'×15'. (b) 121'×9'. (v) Two rows at each flank and 3 ft. at each extremity of the row. (vi) Yes.

## 4. GENERAL :

(i) Not satisfactory. (ii) No. (iii) Germination and final stand, plant height, boll no., ginning percentage, fibre properties and *kapas* yield. (iv) (a) 1952-53. (b) No. (c) N.A. (v) (a) Latur. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 112 lb./ac.
- (ii) 15.48 lb./ac.
- (iii) Main effect of N alone is significant.
- (iv) Av. yield of *kapas* in lb./ac.

	S <sub>0</sub>	S <sub>1</sub>	Mean
N <sub>0</sub>	104	104	104
N <sub>1</sub>	118	122	120
Mean	111	113	112

S.E. of any marginal mean = 6.90 lb./ac.  
 S.E. of body of table = 4.90 lb./ac.

Crop :- Cotton (*Kharif*).

Site :- Cotton Res. Stn., Nanded.

Ref :- Mh. 48(10).

Type :- 'M'.

Object :- To study the effect of leguminous crops, grown with and without P<sub>2</sub>O<sub>5</sub>, on the yield of succeeding Cotton crop.

## 1. BASAL CONDITIONS :

- (i) (a) As per treatments. (b) As per treatments. (c) As per treatments. (ii) (a) Black cotton soil. (b) Refer soil analysis, Nanded. (iii) 30.6.48. (iv) (a) Ploughing once in groundnut plots, harrowing thrice. (b) N.A. (c) 16 lb./acre. (d) Rows 18" apart. (e) N.A. (v) N.A. (vi) *Gaorani-6*. (vii) Unirrigated. (viii) One weeding and two hoeings. (ix) 49.14". (x) 24. 11. 1948 and 25.12.1948.

## 2. TREATMENTS :

Main-plot treatments : All combinations of (1) and (2)

- (1) 3 previous crop rotations : R<sub>1</sub>=Groundnut-*Jowar*, R<sub>2</sub>=Gram-*Jowar* and R<sub>3</sub>=*Mung-Jowar*
- (2) 2 doses of P<sub>2</sub>O<sub>5</sub> applied to legumes at sowing : P<sub>0</sub>=0 and P<sub>1</sub>=30 lb./ac.

Sub-plot treatments :

- 2 levels of N : N<sub>0</sub>=0 and N<sub>1</sub>=30 lb./ac.

P<sub>2</sub>O<sub>5</sub> as super and N applied as G.N.C. to cotton at sowing.

## 3. DESIGN :

- (i) Split-plot. (ii) (a) 6 main-plots/block ; 2 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 127' × 15'. (b) 121' × 9'. (v) 3' around the net plot. (vi) Yes.

## 4. GENERAL :

- (i) Normal. (ii) Nil. (iii) Germination, final stand, plant height, boll no., boll wt., ginning %, seed wt., fibre properties and *kapas* yield. (iv) (a) 1947 to 1951. (b) Yes. (c) N.A. (v) (a) Nil. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 205.8 lb./ac.
- (ii) (a) 46.14 lb./ac.
- (b) 34.68 lb./ac.
- (iii) Main effects of P and N are significant.

(iv) Av. yield of *kapas* in lb./ac.

	N <sub>0</sub>	N <sub>1</sub>	Mean	P <sub>0</sub>	P <sub>1</sub>
R <sub>1</sub>	143.5	259.5	201.5	162.0	241.0
R <sub>2</sub>	163.5	279.5	221.5	191.0	252.0
R <sub>3</sub>	137.5	251.0	194.2	17.5	216.0
Mean	148.2	263.3	205.8		
P <sub>0</sub>	121.3	229.3	175.3		
P <sub>1</sub>	175.3	297.3	236.3		

S.E. of difference of two

1. R marginal means =16.31 lb./ac.
2. P marginal means =13.32 lb./ac.
3. N marginal means =10.01 lb./ac.
4. N means at a level of R =17.33 lb./ac.
5. N means at a level of P =14.16 lb./ac.
6. R means at a level of N =20.41 lb./ac.
7. P means at a level of N =16.60 lb./ac.

Crop :- Cotton (*Khariif*). ..

Ref :- Mh. 49(12)/48(10).

Site :- Cotton Res. Stn., Nanded.

Type :- 'M'.

Object :—To study the effect of leguminous crops grown with and without P<sub>2</sub>O<sub>5</sub> on the yield of succeeding Cotton crop.

## 1. BASAL CONDITIONS :

(i) (a) As per treatments. (b) and (c) As per treatments. (ii) (a) Black cotton soil. (b) Refer soil analysis, Nanded. (iii) 27.6.1949. (iv) (a) Ploughing once in groundnut plots and harrowing thrice. (b) N.A. (c) 16 lb./ac. (d) Rows 18" apart. (e) N.A. (v) Nil. (vi) *Gaorani-6*. (vii) Unirrigated. (viii) Weeding twice and hoeing once. (ix) 44.88". (x) 1st picking on 13.11.1949 and 2nd picking on 13.12.1949.

## 2. TREATMENTS :

Main-plot treatments :

All combinations of (1) and (2)

(1) 3 previous crop rotations : R<sub>1</sub>=Groundnut-*Jowar*, R<sub>2</sub>=Gram-*Jowar* and R<sub>3</sub>=*Mung-Jowar*.(2) 2 doses of P<sub>2</sub>O<sub>5</sub> applied to legumes at sowing : P<sub>0</sub>=0 and P<sub>1</sub>=30 lb./ac.

Sub-plot treatments :

2 levels of N : N<sub>0</sub>=0 and N<sub>1</sub>=30 lb./ac.P<sub>2</sub>O<sub>5</sub> applied as Super and N applied as G.N.C. to cotton at sowing.

## 3. DESIGN :

(i) Split-plot. (ii) (a) 6 main-plots/block ; 2 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 127'×15'. (b) 121'×9'. (v) 3' around the net plot. (vi) Yes.

## 4. GENERAL :

(i) Heavy rains in July and September damaged the crop causing heavy shedding of buds and bolls and infestation of weeds in the plots. The yields are therefore very low. (ii) Nil. (iii) Germination and final stand, plant height, boll no., boll wt., ginning %, seed wt., fibre properties and *kapas* yield. (iv) (a) 1947 to 1951. (b) Yes. (c) N.A. (v) (a) Nil. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS:

- (i) 36.4 lb./ac.  
(ii) (a) 31.64 lb./ac.  
(b) 15.67 lb./ac.  
(iii) Main effects of R, P and N and interaction N×R are highly significant.  
(iv) Av. yield of *kapas* in lb./ac.

	N <sub>0</sub>	N <sub>1</sub>	Mean	P <sub>0</sub>	P <sub>1</sub>
R <sub>1</sub>	6.2	15.3	10.7	8.4	13.1
R <sub>2</sub>	31.2	89.0	60.1	40.9	79.3
R <sub>3</sub>	18.4	58.1	38.2	24.7	51.8
Mean	18.6	54.1	36.4		
P <sub>0</sub>	9.8	39.6	24.7		
P <sub>1</sub>	27.5	68.7	48.1		

## S.E. of difference of two

1. R marginal means = 11.17 lb./ac.
2. P marginal means = 9.14 lb./ac.
3. N marginal means = 4.53 lb./ac.
4. N means at a level of R = 7.84 lb./ac.
5. N means at a level of P = 6.40 lb./ac.
6. R means at a level of N = 12.48 lb./ac.
7. P means at a level of N = 10.19 lb./ac.

Crop :- Cotton (*Kharij*).

Ref :- Mh. 50(20)/49(12)/48(10).

Site :- Cotton Res. Stn., Nanded.

Type :- 'M'.

Object :—To study the effect of leguminous crops grown with and without P<sub>2</sub>O<sub>5</sub> on the yield of succeeding Cotton crop.

## 1. BASAL CONDITIONS :

- (i) (a) As per treatments. (b) and (c) As per treatments. (ii) (a) Black cotton soil. (b) Refer soil analysis, Nanded. (iii) 8.7.1950. (iv) (a) Harrowing four times. (b) N.A. (c) 16 lb./ac. (d) Rows 18' apart. (e) N.A. (v) Nil. (vi) *Gaorani-6*. (vii) Unirrigated. (viii) Weeding once and hoeing twice. (ix) 29.37%. (x) 1st picking on 17.11.1950, 2nd picking on 18.12.1950 and 3rd picking on 18.1.1951.

## 2. TREATMENTS :

Main-plot treatments :

All combinations of (1) and (2)

- (1) 3 previous crop rotations : R<sub>1</sub>=Groundnut-*Jowar*, R<sub>2</sub>=Gram-*Jowar* and R<sub>3</sub>=*Mung-Jowar*.
- (2) 2 doses of P<sub>2</sub>O<sub>5</sub> applied to legumes at sowing : P<sub>0</sub>=0 and P<sub>1</sub>=30 lb./ac.

Sub-plot treatments:

2 levels of N : N<sub>0</sub>=0 and N<sub>1</sub>=30 lb./ac.P<sub>2</sub>O<sub>5</sub> applied as Super and N applied as G.N.C. to cotton at sowing.

## 3. DESIGN :

- (i) Split-plot. (ii) (a) 6 main-plots/block ; 2 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 127'×15'. (b) 121'×9'. (v) 2 rows on either side and 3' at each end of every row. (vi) Yes.

## 4. GENERAL :

- (i) Due to water logging the crop suffered in replication III and replication IV. (ii) Nil. (iii) Germination and final stand, plant height boll no., boll wt., ginning %, seed weight, fibre properties and *kapas* yield. (iv) (a) 1947 to 1951. (b) Yes. (c) N.A. (v) (a) Nil. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 450 lb./ac.  
 (ii) (a) 71.02 lb./ac.  
 (b) 72.98 lb./ac.  
 (iii) Only main effects of R, P and N are significantly different.  
 (iv) Av. yield of *kapas* in lb./ac.

	N <sub>0</sub>	N <sub>1</sub>	Mean	P <sub>0</sub>	P <sub>1</sub>
R <sub>1</sub>	409	547	478	437	519
R <sub>2</sub>	413	568	491	455	527
R <sub>3</sub>	308	456	382	367	397
Mean	377	523	450		
P <sub>0</sub>	352	487	420		
P <sub>1</sub>	401	560	481		

## S.E. of difference of two

1. R marginal means =25.10 lb./ac.
2. P marginal means =20.51 lb./ac.
3. N marginal means =21.07 lb./ac.
4. N means at the same level of R =36.49 lb./ac.
5. N means at the same level of P =29.80 lb./ac.
6. R means at the same level of N =36.00 lb./ac.
7. P means at the same level of N =29.40 lb./ac.

Crop :- Cotton (*Kharif*).

Ref :- Mh. 51(24)/50(20)/49(12)/48(10).

Site :- Cotton Res. Stn., Nanded. Type :- 'M'.

Object :- To study the effect of leguminous crops grown with and without P<sub>2</sub>O<sub>5</sub> on the yield of succeeding Cotton crop.

## 1. BASAL CONDITIONS :

(i) (a) to (c) As per treatments. (ii) (a) Black cotton soil. (b) Refer soil analysis, Nanded. (iii) 28.6.1951. (iv) (a) Harrowing thrice. (b) N.A. (c) 16 lb./ac. (d) Rows 18' apart. (e) N.A. (v) Nil. (vi) *Gaorani*-6. (vii) Unirrigated. (viii) Weeding thrice and hoeing twice. (ix) 31.84". (x) Pickings on 7.11.1951, 7.12.1951 and 6.1.1952.

## 2. TREATMENTS :

Main-plot treatments :

All combinations of (1) and (2)

(1) 3 previous crop rotations : R<sub>1</sub>=Groundnut—*Jowar*, R<sub>2</sub>=Gram—*Jowar* and R<sub>3</sub>=*Mung*—*Jowar*.(2) 2 doses of P<sub>2</sub>O<sub>5</sub> applied to legumes at sowing : P<sub>0</sub>=0, P<sub>1</sub>=30 lb./ac.

Sub-plot treatments :

2 levels of N : N<sub>0</sub>=0 and N<sub>1</sub>=30 lb./ac.P<sub>2</sub>O<sub>5</sub> applied as Super, N applied as G.N.C. to Cotton at sowing.

## 3. DESIGN :

(i) Split-plot. (ii) (a) 6 main-plots/block ; 2 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 127'×15'. (b) 121'×9'. (v) 3' around the net plot. (vi) Yes.

## 4. GENERAL :

(i) Normal. (ii) No. (iii) Germination and final stand, plant height, boll no., boll wt., seed wt., ginning%, fibre properties and *kapas* yield. (iv) (a) 1947 to 1951. (b) Yes. (c) N.A. (v) (a) Nil. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 584 lb./ac.  
 (ii) (a) 84.25 lb./ac.  
 (b) 41.63 lb./ac.  
 (iii) Main effect of R and P are highly significant. Effect of N and interaction  $N \times R$  are significant.  
 (iv) Av. yield of *kapas* in lb./ac.

	$N_0$	$N_1$	Mean	$P_0$	$P_1$
$R_1$	513	805	659	570	748
$R_2$	472	740	606	558	655
$R_3$	408	569	488	459	518
Mean	464	705	584		
$P_0$	412	646	529		
$P_1$	517	763	640		

## S.E. of difference of two

1. R marginal means =29.70 lb./ac.
2. P marginal means =24.32 lb./ac.
3. N marginal means =12.02 lb./ac.
4. N means at a level of R =20.81 lb./ac.
5. N means at a level of P =17.00 lb./ac.
6. R means at a level of N =33.22 lb./ac.
7. P means at a level of N =27.13 lb./ac.

Crop :-Cotton ( *Kharif* ).

Ref :-Mh. 48(11).

Site :-Cotton Res. Stn., Nanded.

Type :-'M'.

Object:—To study the effect of N and  $P_2O_5$  on yield of Cotton.

## 1. BASAL CONDITIONS :

(i) (a) *Rabi Jowar*—Cotton. (b) *Rabi Jowar*. (c) Nil. (ii) (a) Black cotton soil. (b) Refer soil analysis, Nanded. (iii) 2.7.1948. (iv) (a) 3 harrowings. (b) N.A. (c) 15 lb./ac. (d) Rows 18" apart. (e) N.A. (v) Nil. (vi) *Gaorani*—6. (viii) One weeding and one hoeing. (ix) 49.14". (x) 1st picking on 27.11.1948 and 2nd picking on 27.12.1948.

## 2. TREATMENTS :

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

- (1) 2 sources of N :  $S_1$ =G.N.C. and  $S_2$ =A/S.
  - (2) 4 levels of N :  $N_0$ =0,  $N_1$ =20,  $N_2$ =40 and  $N_3$ =60 lb./ac.
  - (3) 3 levels of  $P_2O_5$  as Super :  $P_0$ =0,  $P_1$ =30 and  $P_2$ =60 lb./ac.
- N applied on 2.7.1948 and  $P_2O_5$  applied on 26.6.1948.

## 3. DESIGN :

(i)  $2 \times 4 \times 3$  Fact. in R.B.D. (ii) (a) 24, arranged in two tiers of 12 each. (b) N.A. (iii) 4. (iv) (a)  $100' \times 18'$ . (b)  $94' \times 12'$ . (v) Two rows on either side and 3' at each end of every row. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) N.A. (iii) Germination and final stand, plant height, boll wt., ginning%, seed weight and *kapas* yield. (iv) (a) [1948 to 1950. (b) and (c) N.A. (v) (a) Nil. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 202 lb./ac.
- (ii) 43.1 lb./ac.
- (iii) Main effects of S, N and P and interaction  $S \times N$  are 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>	Mean	S <sub>1</sub>	S <sub>2</sub>
P <sub>0</sub>	127	142	143	124	134	160	108
P <sub>1</sub>	183	241	259	247	233	249	216
P <sub>2</sub>	202	257	248	257	241	250	232
Mean	171	213	216	209	202	220	185
S <sub>1</sub>	—	227	222	252	234		
S <sub>2</sub>	—	200	210	167	192		

S.E. of marginal mean of N	= 8.80 lb./ac.
S.E. of marginal mean of S	= 6.20 lb./ac.
S.E. of marginal mean of P	= 7.62 lb./ac.
S.E. of body of N×S table	= 12.40 lb./ac.
S.E. of body of S×P table	= 10.80 lb./ac.
S.E. of body of N×P table	= 15.20 lb./ac.
S.E. of marginal mean of S in S×N table	= 7.19 lb./ac.

Crop :- Cotton (*Kharif*).

Ref :- Mh. 49(13).

Site :- Cotton Res. Stn., Nanded.

Type :- 'M'.

Object :- To study the effect of N and P<sub>2</sub>O<sub>5</sub> on yield of Cotton.

## 1. BASAL CONDITIONS :

(i) (a) *Rabi Jowar*—Cotton. (b) *Rabi Jowar*. (c) Nil. (ii) (a) Black cotton soil. (b) Refer soil analysis, Nanded. (iii) 28.6.1949. (iv) (a) 3 harrowings. (b) N.A. (c) 15 lb./ac. (d) Rows 18" apart. (e) N.A. (v) Nil. (vi) *Gaorani-6*. (vii) Unirrigated. (viii) 2 hoeings and one weeding. (ix) 44.88%. (x) 1st picking on 14.11.1949 and 2nd picking on 14.12.1949.

## 2. TREATMENTS :

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

(1) 2 sources of N : S<sub>1</sub>=G.N.C. and S<sub>2</sub>=A/S.(2) 4 levels of N : N<sub>0</sub>=0, N<sub>1</sub>=20, N<sub>2</sub>=40 and N<sub>3</sub>=60 lb./ac.(3) 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.N applied on 28.6.1949 and P<sub>2</sub>O<sub>5</sub> applied on 16.6.1949.

## 3. DESIGN :

(i) 2×4×3 Fact. in R.B.D. (ii) 24, arranged in two tiers of 12 each. (b) N.A. (iii) 4. (iv) (a) 100'×18'. (b) 94'×12'. (v) Two rows on either side and 3' at each end of every row. (vi) Yes.

## 4. GENERAL :

(i) Continuous rains in July affected the crop badly especially in replications III and IV. (ii) Nil. (iii) Germination and final stand, plant height, boll weight, ginning %, seed weight, fibre properties and *kapas* yield. (iv) (a) 1948 to 1950. (b) No. (c) N.A. (v) (a) Nil. (b) N.A. (vi) N.A. (vii) Analysis carried out for only 2 replications, the other two replications were damaged.

## 5. RESULTS :

(i) 146 lb./ac.

(ii) 40.17 lb./ac.

(iii) Only the effects of S and N and interaction P×N are 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>	Mean	S <sub>1</sub>	S <sub>2</sub>
P <sub>0</sub>	60	85	163	226	136	116	156'
P <sub>1</sub>	70	139	189	203	149	127	171
P <sub>2</sub>	79	108	204	227	154	148	160
Mean	70	110	184	222	146	130	163
S <sub>1</sub>	—	93	159	196	149		
S <sub>2</sub>	—	128	208	247	194		

S.E. of marginal mean of N	=11.50 lb./ac.
S.E. of marginal mean of S	= 8.20 lb./ac.
S.E. of marginal mean of P	=10.04 lb./ac.
S.E. of body of N×S table	=16.40 lb./ac.
S.E. of body of S×P table	=14.20 lb./ac.
S.E. of body of N×P table	=20.08 lb./ac.
S.E. of marginal mean of S in S×N table	=9.47 lb./ac.

Crop :- Cotton (*Kharif*).

Ref :- Mh. 50(21).

Site :- Cotton Res. Stn., Nanded.

Type :- 'M'.

Object :—To study the effect of N and P<sub>2</sub>O<sub>5</sub> on yield of Cotton.

## 1. BASAL CONDITIONS :

(i) (a) *Rabi Jowar*—Cotton. (b) *Rabi Jowar*. (c) Nil. (ii) (a) Black cotton soil. (b) Refer soil analysis, Nanded. (iii) 9.7.1950. (iv) (a) 3 harrowings. (b) N.A. (c) 15 lb./ac. (d) Rows 18" apart. (e) N.A. (v) Nil. (vi) *Gaorani-6*. (vii) Unirrigated. (viii) 2 hoeings and one weeding. (ix) 29.37". (x) 1st picking on 21.11.1950, 2nd picking on 21.12.1950 and 3rd picking on 21.1.1951.

## 2. TREATMENTS :

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

(1) 2 sources of N: S<sub>1</sub>=G.N.C. and S<sub>2</sub>=A/S.(2) 4 levels of N: N<sub>0</sub>=0, N<sub>1</sub>=20, N<sub>2</sub>=40 and N<sub>3</sub>=60 lb./ac.(3) 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.N applied on 9.7.1950 and P<sub>2</sub>O<sub>5</sub> applied on 24.6.1950.

## 3. DESIGN :

(i) 2×4×3 Fact. in R.B.D. (ii) (a) 24 arranged in two tiers of 12 each. (b) N.A. (iii) 4. (iv) (a) 100'×18'. (b) 94'×12'. (v) Two rows on either side and 3' at each end of every row. (vi) Yes.

## 4. GENERAL :

(i) Shedding of buds and flowers due to heavy showers on 12.9.1950. Growth was satisfactory. (ii) Nil. (iii) Germination and final stand, plant height, boll weight, ginning %, seed weight, fibre properties and *kapas* yield. (iv) (a) 1948 to 1950. (b) No. (c) N.A. (v) (a) Nil. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 496 lb./ac.

(ii) 41.68 lb./ac.

(iii) Main effects of N, P and S and interaction N×P are 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>	Mean	S <sub>1</sub>	S <sub>2</sub>
P <sub>0</sub>	328	426	502	502	440	437	442
P <sub>1</sub>	371	505	570	621	517	503	531
P <sub>2</sub>	366	496	594	666	530	512	549
Mean	355	476	555	596	496	484	507
S <sub>1</sub>	—	463	527	593	528		
S <sub>2</sub>	—	488	584	599	557		

S.E. of marginal mean of N	= 8.50 lb./ac.
S.E. of marginal mean of S	= 6.01 lb./ac.
S.E. of marginal mean of P	= 7.36 lb./ac.
S.E. of body of N×S table	= 12.10 lb./ac.
S.E. of body of S×P table	= 10.40 lb./ac.
S.E. of body of N×P table	= 14.70 lb./ac.
S.E. marginal mean of S in N×S table	= 6.95 lb./ac.

Crop :- Cotton (*Kharif*)

Ref :- Mh. 50(22).

Site :- Cotton Res. Stn., Nanded.

Type :- 'M'.

Object :- To study the effect of N and P<sub>2</sub>O<sub>5</sub> on Cotton yield.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) Groundnut. (c) Nil. (ii) (a) Black cotton soil. (b) Refer soil analysis, Nanded. (iii) 11. 7. 1950. (iv) (a) Ploughing once and *bakharing* 4 times. (b) Dibbling. (c) N.A. (d) 9'×18'. (e) Two seeds per dibble and then thinned to one plant per hole. (v) Nil. (vi) *Gaorani-6*. (vii) Unirrigated. (viii) Weeding thrice and hoeing once. (ix) 29.37%. (x) Pickings on 13.28.11.1950, 13, 28.12-1950 and 13.1.1951.

## 2. TREATMENTS :

All combinations of (1) and (2)

(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>=30 lb./ac.

## 3. DESIGN :

(i) 2×2 Fact. in R.B.D. (ii) (a) 4. (b) N.A. (iii) 6. (iv) (a) 18'-9"×9'. (b) 15'-9"×6'. (v) One row on each flank and 1½ ft. at each extremity of every row. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) N.A. (iii) Germination and final stand, plant height, ginning %, boll and seed weight boll no. and *kapas* yield. (iv) (a) 1950 to 1952. (b) No. (c) N.A. (v) (a) Nil. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 878 lb./ac.  
(ii) 91.27 lb./ac.  
(iii) Main effect of N alone is significant.  
(iv) Av. yield of *kapas* in lb./ac.

	P <sub>0</sub>	P <sub>1</sub>	Mean
N <sub>0</sub>	728	767	748
N <sub>1</sub>	982	1034	1008
Mean	855	900	878

S.E. of any marginal mean	= 26.3 lb./ac
S.E. of body of table	= 37.2 lb./c.

Crop :- Cotton (*Kharif*).

Ref :- Mh. 51(25)

Site :- Cotton Res. Stn., Nanded.

Type :- 'M'.

Object :- To study the effect of N and  $P_2O_5$  on Cotton yield.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Rabi Jowar*. (c) Nil. (ii) (a) Black cotton soil. (b) Refer soil analysis, Nanded. (iii) 1.7.1951. (iv) (a) *Bakharing* twice. (b) Dibbling (c) N.A. (d)  $9' \times 18'$ . (e) Two seeds per dibble and then thinned to one plant per hole. (vi) *Gaorani-6*. (vii) Unirrigated. (viii) 3 weedings and 3 hoeings. (ix) 31.84%. (x) Pickings on 8, 23.11.1951, 8, 23.12.1951 and 7.1.1952.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 2 levels of N as A/S :  $N_0=0$  and  $N_1=30$  lb./ac.(3) 2 levels of  $P_2O_5$  as Super :  $P_0=0$  and  $P_1=30$  lb./ac.

## 3. DESIGN :

(i)  $2 \times 2$  Fact. in R.B.D. (ii) (a) 4. (b) N.A. (iii) 6. (iv) (a)  $18.75' \times 9'$ . (b)  $15.75' \times 6'$ . (v) One row on either side and  $1\frac{1}{2}$  ft. at each end of every row. (vi) Yes.

## 4. GENERAL :

(i) Normal. (ii) No. (iii) Germination and final stand, plant height, ginning %, boll and seed weight, boll no., detailed study of plant development and *kapas* yield. (iv) (a) 1950 to 1952. (b) No. (c) Nil. (v) (a) Nil. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 849 lb./ac.

(ii) 73.30 lb./ac.

(iii) Main effect of N alone is highly significant.

(iv) Av. yield of *kapas* in lb./ac.

	$P_0$	$P_1$	Mean
$N_0$	688	674	681
$N_1$	1023	1009	1016
Mean	856	842	849

S.E. of any marginal mean = 21.10 lb./ac.

S.E. of body of table = 29.80 lb./ac.

Crop :- Cotton (*Kharif*).

Ref :- Mh. 52(50).

Site :- Cotton Res. Stn., Nanded.

Type :- 'M'.

Object :- To study the effect of N and  $P_2O_5$  on Cotton yield.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Rabi Jowar*. (c) 10 C.L./ac. of F.Y.M. (ii) (a) Black cotton soil. (b) Refer soil analysis, Nanded. (iii) 28.6.1952. (iv) (a) *Bakharing* thrice. (b) Dibbling. (c) N.A. (d)  $9' \times 18'$ . (e) Two seeds per dibble and then thinned to one plant per hole. (v) Nil. (vi) *Gaorani-6*. (vii) Unirrigated. (viii) Weeding once and hoeing once. (ix) 28.83%. (x) Pickings on 10, 25.11.1952, 10, 25.12.1952 and 9.1.1953.

## 2. TREATMENTS :

All combinations of (1) and (2)

(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  $P_1=30$  lb./ac.

## 3. DESIGN :

(i)  $2 \times 2$  Fact. in R.B.D. (ii) (a) 4. (b) N.A. (iii) 6. (iv) (a)  $18.75' \times 9'$ . (b)  $15.75' \times 6'$ . (v) One row on either flank and  $1\frac{1}{2}'$  at each extremity of every row. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) No. (iii) Germination and final stand, plant height, ginning %, boll and seed weight, boll no., detailed study of plant development and *kapas* yield. (iv) (a) 1950 to 1952. (b) No. (c) N.A. (v) (a) Nil. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 401 lb./ac.  
 (ii) 45.17 lb./ac.  
 (iii) Only main effect of N is highly significant.  
 (iv) Av. yield of *kapas* in lb./ac.

	P <sub>0</sub>	P <sub>1</sub>	Mean
N <sub>0</sub>	370	328	349
N <sub>1</sub>	446	461	454
Mean	408	394	401

S.E. of any marginal mean = 13.00 lb./ac.  
 S.E. of body of table = 18.40 lb./ac.

Crop :- Cotton (*Kharif*).

Ref :- Mh. 52(48).

Site :- Cotton Res. Stn., Nanded.

Type :- 'M'.

Object:—To study the direct effect of organic manures along with A/S on Cotton and residual effect on *Jowar*.

## 1. BASAL CONDITIONS :

(i) (a) *Rabi Jowar*—Cotton. (b) *Rabi Jowar*. (c) Nil. (ii) (a) Black cotton soil. (b) Refer soil analysis, Nanded. (iii) 27.6.1952. (iv) (a) Three *bakharings*. (b) Drilling through *mogha*. (c) 16 lb./ac (d) 18" between rows. (e) N.A. (v) Nil. (vi) *Gaorani*—6. (vii) Unirrigated. (viii) Hoeing twice and weeding once. (ix) 28.83". (x) 1st picking on 5.11.1952, 2nd picking on 4.12.1952 and 3rd picking on 5.1.1953.

## 2. TREATMENTS :

All combinations of (1) and (2)

- (1) 2 levels of N as A/S : N<sub>0</sub>=0 and N<sub>1</sub>=100 lb./ac,  
 (2) 3 levels of organic manure : M<sub>0</sub>=0, M<sub>1</sub>=4 ton/ac. of F.Y.M. and M<sub>2</sub>=4 ton/ac. of T.C.  
 Manures were broadcasted on 26.5.1952.

## 3. DESIGN :

(i) 3×2 Fact. in R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) 127'×15'. (b) 121'×9'. (v) Two rows at each flank and 3 ft. at each extremity of the row were treated as non-experimental. (vi) Yes.

## 4. GENERAL :

(i) Satisfactory. (ii) Nil. (iii) Plant height, node no., germination and final stand, boll no., boll weight, seed weight, ginning%, fibre properties and *kapas* yield. (iv) (a) 1952 to 1954. (b) No. (c) N.A. (v) (a) Nil. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 314 lb./ac.  
 (ii) 50.80 lb./ac.  
 (iii) Main effects of N and M are highly significant. Interaction N×M is not significant.

(iv) Av. yield of *kapas* in lb./ac.

	M <sub>0</sub>	M <sub>1</sub>	M <sub>2</sub>	Mean
N <sub>0</sub>	226	329	267	274
N <sub>1</sub>	266	414	383	354
Mean	246	372	325	314

S.E. of marginal mean of N = 14.6 lb./ac.  
 S.E. of marginal mean of M = 17.9 lb./ac.  
 S.E. of body of table = 25.3 lb./ac.

Crop :- Cotton (*Kharif*).

Ref :- Mh. 53(28).

Site :- Cotton Res. Stn., Nanded.

Type :- 'M'.

Object :- To study the direct effect of organic manures along with A/S on Cotton and residual effect on *Jowar*.

## 1. BASAL CONDITIONS :

(i) (a) *Rabi Jowar*—Cotton. (b) *Rabi Jowar*. (c) Nil. (ii) (a) Black cotton soil. (b) Refer soil analysis, Nanded. (iii) 25.6.1953. (iv) (a) 3 *bakharings*. (b) Drilling through *moghas*. (c) 16 lb./ac. (d) 18" between rows. (e) N.A. (v) Nil. (vi) *Gaorani-6*. (vii) Unirrigated. (viii) Hoeing twice and weeding once. (ix) 45.13". (x) 1st picking on 10.11.1952, 2nd picking on 10.12.1953 and 3rd picking on 10.1.1954.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 2 levels of N as A/S : N<sub>0</sub>=0 and N<sub>1</sub>=100 lb./ac.(2) 3 levels of organic manure : M<sub>0</sub>=0, M<sub>1</sub>=4 ton/ac. of F.Y.M. and M<sub>2</sub>=4 ton/ac. of T.C. Manures broadcasted on 26.5.1953.

## 3. DESIGN :

(i) 3 × 2 Fact. in R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) 127' × 15'. (b) 121' × 9'. (v) 2 rows on either flank and 3 ft. at each end of each row. (vi) Yes.

## 4. GENERAL :

(i) Below average. (ii) No. (iii) Plant height, node no., germination and final stand, boll no., boll wt., seed wt., ginning %, fibre properties and *kapas* yield. (iv) (a) 1952 to 1954. (b) No. (c) N.A. (v) (a) and (b) No. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 139 lb./ac.

(ii) 19.60 lb./ac.

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

(iv) Av. yield of *kapas* in lb./ac.

	M <sub>0</sub>	M <sub>1</sub>	M <sub>2</sub>	Mean
N <sub>0</sub>	94	141	154	130
N <sub>1</sub>	112	154	176	147
Mean	103	148	165	139

S.E. of marginal mean of N = 6.00 lb./ac.  
 S.E. of marginal mean of M = 7.00 lb./ac.  
 S.E. of body of table = 10.00 lb./ac.

Crop :- Cotton (*Kharif*).

Ref :- Mh. 53(55).

Site :- Cotton Res. Stn., Nanded.

Type :- 'M'.

Object :- To study the effect of repeated manuring of soil with different kinds of N fertilizers.

## 1. BASAL CONDITIONS :

(i) (a) *Kharif Jowar*—Cotton. (b) *Kharif Jowar*, Maize and Soyabean. (c) Nil. (ii) (a) Black cotton soil. (b) Refer soil analysis, Nanded. (iii) 27.6.1953. (iv) (a) Ploughing once and *bakharings* twice. (b) Drilled with 3 coultured seed drill. (c) 16 lb./ac.. (d) Rows 18" apart. (e) N.A. (v) Nil. (vi) *Gaorani-6*. (vii) Unirrigated. (viii) Hoeing twice and weedings twice. (ix) 45.13". (x) Pickings on 30.11.1953, 30.12.1953 and 30.1.1954.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 3 levels of N:  $N_0=0$ ,  $N_1=20$  and  $N_2=40$  lb./ac.(2) 3 sources of N:  $S_1=C/N$ ,  $S_2=A/S$  and  $S_3=Ammonium$  chloride.

Manures were drilled at sowing.

## 3. DESIGN :

(i) 3×3 Fact. in R.B.D. (ii) (a) 9. (b) N.A. (iii) 5. (iv) (a) 135'×9'. (b) 132'×6'. (v) 1 row on either flank, 1½ ft. at either end of every row. (vi) Yes.

## 4. GENERAL :

(i) Badly affected by heavy rains. Poor yields. (ii) No. (iii) Germination and final stand, plant height boll and seed weight, boll no., fibre properties and *kapas* yield. (iv) (a) 1953—N.A. (b) Yes. (c) N.A. (v) (a) No. (b) N.A. (vi) Nil. (vii) Nil.

## 5. RESULTS :

(i) 120 lb./ac.

(ii) 34.49 lb./ac.

(iii) Only N effect is highly significant.

(iv) Av. yield of *kapas* in lb./ac.

	$N_0$	$N_1$	$N_2$	Mean
$S_1$	—	104	148	126
$S_2$	—	138	146	142
$S_3$	—	143	147	145
Mean	86	128	147	

S.E. of marginal mean of N = 8.9 lb./ac.

S.E. of marginal mean of S = 10.9 lb./ac.

S.E. of body of table = 15.4 lb./ac.

Crop :- Cotton (*Kharif*).

Ref :- M. 50(116).

Site :- Agri. Res. Stn., Padegaon.

Type :- 'M'.

Object :- To find the optimum manurial dose and time of application of N for Cotton.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) N.A. (c) N.A. (ii) (a) B type: (b) Refer soil analysis, Padegaon. (iii) 20, 21. 5. 1950. (iv) (a) and (b) N.A. (c) 10 lb./ac. (d) 9"×3'. (e) N.A. (v) Nil. (vi) CO-4-B-40. (vii) Unirrigated. (viii) Weedings on 18.6.1950 and 23.7.1950. (ix) 22.91". (x) 24.10.1950 and 20.11.1950.

## 2. TREATMENTS :

## Main-plot treatments :

All combinations of (1) and (2)

(1) 3 levels of N :  $N_0=0$ ,  $N_1=20$  and  $N_2=40$  lb./ac.(2) 3 sources of N :  $S_1=A/S$ ,  $S_2=G.N.C.$  and  $S_3=A/S$  and G.N.C. in 1 : 1 ratio.

## Sub-plot treatments : 2 times of application of N :

 $T_1$ =whole dose of N applied 22 days after sowing. $T_2$ =Half dose 22 days after sowing and half dose at flowering.

## 3. DESIGN :

(i) Split-plot. (ii) (a) 9 main-plots/block ; 2 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a), (b) 54.44'×30' main-plot. 24'×21' sub-plot. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) Normal. (b) Affected with aphids and leafspots. Damage can be estimated as 5 to 10%. (iii) *Kapas* yield. (iv) (a) 1950 to 1951. (b) No. (c) N.A. (v) (a) and (b) N.A. (vi) Nil. (vii) Nil.

## 5. RESULTS :

(i) 772 lb./ac.

(ii) (a) 179.1 lb./ac.

(b) 177.9 lb./ac.

(iii) None of the effects and their interaction are significant.

(iv) Av. yield of *kapas* in lb./ac.

	$N_0S_1$	$N_1S_1$	$N_2S_1$	$N_0S_2$	$N_1S_2$	$N_2S_2$	$N_0S_3$	$N_1S_3$	$N_2S_3$	Mean
$T_1$	824	816	709	821	760	754	760	602	909	773
$T_2$	666	921	658	755	834	763	884	834	623	771
Mean	745	868	683	788	797	759	822	718	766	772

## S.E. of difference of two

1. main-plot treatment means = 89.5 lb./ac.
2. sub-plot treatment means = 41.9 lb./ac.
3. sub-plot treatment means at a level of main-plot treatment = 125.8 lb./ac.
4. main-plot treatment means at a level of sub-plot treatment = 126.3 lb./ac.

Crop :- Cotton (*Kharif*).

Ref :- Mh. 51(155).

Site :- Agri. Res. Stn., Padegaon.

Type :- 'M'.

Object :- To find out optimum manurial dose and time of application of N for Cotton.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) N.A. (c) N.A. (ii) (a) B type. (b) Refer soil analysis, Padegaon. (iii) 30. 5. 1951. (iv) (a) and (b) N.A. (c) 10 lb./ac. (d) 3'×9". (e) N.A. (v) Nil. (vi) 170-CO<sub>2</sub>. (vii) Unirrigated. (viii) 2 weedings 2 interculturings and gap filling. (ix) 14.68". (x) 16. 10. 1951 ; 18. 11. 1951 and 25. 12. 1951.

## 2. TREATMENTS :

## Main-plot treatments :

All combinations of (1) and (2)

(1) 3 levels of N :  $N_0=0$ ,  $N_1=20$  and  $N_2=40$  lb./ac.(2) 3 sources of N :  $S_1=A/S$ ,  $S_2=G.N.C.$  and  $S_3=A/S$  and G.N.C. in 1 : 1 ratio.

Sub-plot treatments : Two times of application of N

 $T_1$ =Whole dose of N applied 22 days after sowing. $T_2$ =Half dose 22 days after sowing and half at flowering.

## 3. DESIGN :

(i) Split-plot. (ii) (a) 9 main-plots/block ; 2 sub-plots/main-plot. (b) N.A. (iii) 5. (iv) (a) Main-plot 40.33'×30', sub-plot 40.33'×15'. (b) Sub-plot 9'×30.25'. (v) N.A. (vi) Yes.



## 4. GENERAL:

- (i) Normal. (ii) Slight attack of Aphides and thripes. (iii) *Kapas* yield. (iv) (a) 1950 to 1951. (b) No. (c) N.A. (v) (a) and (b) N.A. (vi) Nil. (vii) Nil.

## 5. RESULTS:

- (i) 1325 lb./ac.  
 (ii) (a) 321.9 lb./ac.  
 (b) 181.1 lb./ac.  
 (iii) None of the effects and their interaction is significant.  
 (iv) Av. yield of *kapas* in lb./ac.

	N <sub>0</sub> S <sub>1</sub>	N <sub>1</sub> S <sub>1</sub>	N <sub>2</sub> S <sub>1</sub>	N <sub>0</sub> S <sub>2</sub>	N <sub>1</sub> S <sub>2</sub>	N <sub>2</sub> S <sub>2</sub>	N <sub>0</sub> S <sub>3</sub>	N <sub>1</sub> S <sub>3</sub>	N <sub>2</sub> S <sub>3</sub>	Mean
T <sub>1</sub>	1302	1320	1469	1251	1288	1292	1244	1466	1496	1348
T <sub>2</sub>	1406	1256	1440	1266	1042	1350	1182	1426	1364	1304
Mean	1354	1288	1454	1258	1165	1321	1213	1446	1430	1325

S E. of difference of two

1. main-plot treatment means = 144.0 lb./ac.
2. sub-plot treatment means = 38.2 lb./ac.
3. sub-plot treatment means at a level of main-plot treatment = 114.3 lb./ac.
4. main-plot treatment means at a level of sub-plot treatment = 164.6 lb./ac.

Crop :- Cotton (*Kharif*).

Ref :- Mh. 53(11).

Site :- Cotton Res. Stn., Parbhani.

Type :- 'M'.

Object :- To study the effect of soaking seed in one molar solution of different fertilizers on yield of Cotton.

## 1. BASAL CONDITIONS:

- (i) (a) Cotton—Groundnut. (b) Groundnut. (c) Nil. (ii) (a) Medium black. (b) Refer soil analysis, Parbhani. (iii) 14.7.1953. (iv) (a) One ploughing and two harrowings. (b) Dibbling. (c) 42 seeds per row of 21 feet. (d) 18" between rows. (e) Drilled rows. (v) Nil. (vi) Parbhani American I. (vii) Unirrigated. (viii) 2 weedings and 2 hoeings. (ix) 40.32%. (x) Pickings on 16.12.1953, 7.1.1954, 27.1.1954 and 10.2.1954.

## 2. TREATMENTS:

Seed soaked in one molar solution of the following fertilizers:

1. A/S.
2. Ammo. Phosphate Monobasic.
3. Mono. Potassium Phosphate.
4. Ammo. Phos. Diabasic.
5. Pure water.
6. Control (dry seed).

The following quantities of fertilizers were dissolved in water to make 100 c.c. of solution:

- (1) A/S—132.00 gm. (2) Ammo. Phos. Mono—115.04 gm and (3), Mono. Phosphate 136.09 gm.

## 3. DESIGN:

- (i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) 21'×3'. (b) 19'×3'. (v) One row at either end and one after each replication. (vi) Yes.

## 4. GENERAL:

- (i) Fair. (ii) Boll worm attack. (iii) Final stand, yield of *kapas*, halo length and weight of 100 seeds. (iv) (a) 1953—1955. (b) and (c) No. (v) (a) Badnapur. (b) N.A. (vi) Nil. (vii) The treatment Ammonium Phosphate Diabasic has been dropped from analysis as the yield was poor. The seeds did not germinate at all and the treated seeds were damaged by ants.

## 5. RESULTS :

- (i) 221 lb./ac.  
 (ii) 66.8 lb./ac.  
 (iii) Treatment differences are not significant.  
 (iv) Av. yield of *kapas* in lb./ac.

Treatment	Av. yield
1.	161
2.	278
3.	201
4.	—
5.	270
6.	193
S.E./mean	= 33.4 lb./ac.

Crop :- Cotton (*Kharif*).

Ref :- Mh. 53(12).

Site :- Agri. Res. Stn., Parbhani.

Type :- 'M'.

Object :- To study the effect of soaking seed in one molar solution of different fertilizers on yield of Cotton.

## 1. BASAL CONDITIONS :

(i) (a) Cotton—Groundnut. (b) Groundnut. (c) Nil. (ii) (a) Medium black cotton soil. (b) Refer soil analysis, Parbhani. (iii) 14.7.1953. (iv) (a) One ploughing and two harrowings. (b) Dibbling. (c) 81 seeds per row of 21 feet. (d) 18" between rows. (e) —. (v) Nil. (vi) *Gaorani-12*. (vii) Unirrigated. (viii) 2 weedings and 2 hoeings. (ix) 40.32". (x) Pickings on 16.12.1953, 7.1.1954, 27.1.1954 and 10.2.1954. gram.

## 2. TREATMENTS :

Seed was soaked in one molar solution of the following fertilizers :

1. A/S.
2. Ammo. Phosphate Monobasic.
3. Mono. Potassium Phosphate.
4. Ammonium Phosphate Diabasic.
5. Pure water.
6. Control (dry seed).

The following quantities of fertilizers were dissolved in water to make 1000 c.c. of solution :

(1) A/S—132.00 gm. (2) Ammo. Phos. Monobasic—115.04 gm. and (3) Mono. Pot. Phosphate—136.09 gm.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) 21'×3'. (b) 19'×3'. (v) One row at either end and one after each replication. (vi) Yes.

## 4. GENERAL :

(i) N.A. (i) Boll worm attack. (iii) Final stand, yield of *kapas*, halo length and weight of 100 seeds. (iv) (a) 1953—1955. (b) and (c) No. (v) (a) Badnapur. (b) N.A. (vi) Nil. (vii) The treatment Ammonium Phosphate Diabasic has been dropped from analysis, as the yield was poor. The seeds did not germinate at all and treated seed was damaged by ants.

## RESULTS :

- (i) 174 lb./ac.  
 (ii) 35.4 lb./ac.  
 (iii) Treatment differences are not significant.  
 (iv) Av. yield of *kapas* in lb./ac.

Treatment	Av. yield
1.	174
2.	175
3.	193
4.	—
5.	150
6.	179
S.E./mean	= 17.7 lb./ac.

Crop :- Cotton (*Kharif*).

Ref :- Mh. 53(21).

Site :- Govt. Main Farm, Parbhani.

Type :- 'M'.

Object :- To determine the effect of C/N on yield of Cotton and its residual effect on the soil.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) Groundnut. (c) Paddy fertilizer mixture at 200 lb./ac. (ii) (a) Medium black. (b) Refer soil analysis, Parbhani. (iii) 26.6.1953. (iv) (a) 3 ploughings and 2 harrowings. (b) Sown by *mogha* behind a 2 coulters local seed drill. (c) N.A. (d) 18" x 6". (e) N.A. (v) Nil. (vi) *Gaorant*-12. (vii) Nil. (viii) 2 hoeings and 2 weedings. (ix) 33.03". (x) Pickings on 14.11.1953, 21.12.1953 and 20.1.1954.

## 2. TREATMENTS :

T<sub>1</sub>=No manure (3 plots per block).T<sub>2</sub>=20 lb./ac. of N as A/S+10 lb./ac. of P<sub>2</sub>O<sub>5</sub> as Super.T<sub>3</sub>=20 lb./ac. of N as Ammo. Chloride+10 lb./ac. of P<sub>2</sub>O<sub>5</sub> as Super.T<sub>4</sub>=20 lb./ac. of N as C/N+10 lb./ac. of P<sub>2</sub>O<sub>5</sub> as Super.T<sub>5</sub>=40 lb./ac. of N as A/S+20 lb./ac. of P<sub>2</sub>O<sub>5</sub> as Super.T<sub>6</sub>=40 lb./ac. of N as Ammo. Chloride+20 lb./ac. of P<sub>2</sub>O<sub>5</sub> as Super.T<sub>7</sub>=40 lb./ac. of N as C/N+20 lb./ac. of P<sub>2</sub>O<sub>5</sub> as Super.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 9. (b) N.A. (iii) 5. (iv) (a) 127' x 10½'. (b) 121' x 7½' (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) Due to heavy rains in the first fortnight of October 1953 there had been heavy shedding of bolls which greatly affected the yield. (ii) N.A. (iii) *Kapas* yield. (iv) (a) 1953—N.A. (b) and (c) No. (v) (a) Badnapur. (b) N.A. (vi) Heavy rains in the first fortnight of October 1953. (vii) Nil.

## 5. RESULTS :

(i) 72.96 lb./ac.

(ii) 19.20 lb./ac.

(iii) Treatment differences are significant.

(iv) Av. yield of *kapas* in lb./ac.

Treatment	Av. yield
T <sub>1</sub>	63.21
T <sub>2</sub>	69.60
T <sub>3</sub>	74.40
T <sub>4</sub>	63.00
T <sub>5</sub>	85.20
T <sub>6</sub>	97.80
T <sub>7</sub>	76.20

S.E./mean (T<sub>1</sub>) = 4.95 lb./ac.S.E./mean (T<sub>2</sub>, T<sub>3</sub> ... T<sub>7</sub>) = 8.58 lb./ac.Crop :- Cotton. (*Kharif*).

Ref :- Mh. 48 (73).

Site :- Govt. Seed and Demonstration Farm, Washim.

Type :- 'M'.

Object :- To find out the residual effect of T.C. on the yield of Cotton.

## 1. BASAL CONDITIONS :

(i) (a) Cotton-*Jowar*-Groundnut. (b) Groundnut. (c) Nil. (ii) (a) Medium black. (b) N.A. (iii) 21.6.1948. (iv) (a) 2 *bakharings*. (b) to (e) N.A. (v) Nil. (vi) H-420 (medium). (vii) Unirrigated. (viii) 5 hoeings, 1 weeding and 1 thinning. (ix) 38.88" (x) Pickings on 16,17.11.1948, 10.12.1948 and 7.1.1949.

## 2. TREATMENTS :

1. Control.

2. 10 C.L./ac. of T.C.

3. 20 C.L./ac. of T.C.

4. 10 C.L./ac. of F.Y.M.

5. 20 C.L./ac. of F.Y.M.

6. 330 lb./ac. of G.N.C.

Manures applied in 1947-1948.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 6. (iv) (a) N.A. (b) 66' × 16.5' (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) Not satisfactory. (ii) Nil. (iii) *Kapas* yield. (iv) (a) 1946-1949. (b) Yes. (c) N.A. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 193.5 lb./ac.  
 (ii) 36.46 lb./ac.  
 (iii) Treatments do not differ significantly.  
 (iv) Av. yield of *kapas* in lb./ac.

Treatment.	Av. yield.
1.	184.5
2.	211.3
3.	213.7
4.	177.5
5.	168.7
6.	205.0
S.E./mean.	=14.89 lb./ac.

Crop :- Cotton. (*Kharif*).

Ref :- Mh. 51 (109).

Site :- Govt. Seed and Demonstration Farm, Washim. Type :- 'M'.

Object :—To compare the effect of cotton seed cake with other manures on Cotton crop.

## 1. BASAL CONDITIONS

(i) (a) N.A. (b) Groundnut. (c) N.A. (ii) (a) Medium black. (b) N.A. (iii) 27.6.1951. (iv) (a) 3 *bakharings*. (b) Sowing by *argada*. (c) 18-20. lb./ac. (d) 12 lines/plot. (e) N.A. (v) Nil. (vi) H-420. (mid-late). (vii) Unirrigated. (viii) 5 hoeings, 2 weedings and 1 thinning. (ix) 29.75" (x) Picking on 19.11.1951, 4.12.1951, and 7.1.1952.

## 2. TREATMENTS :

- 20 lb./ac. of N as G.N.C.
- 20 lb./ac. of N as cotton seed cake decorticated.
- 20 lb./ac. of N as cotton seed cake undecorticated.
- 20 lb./ac. of N as A/S.
- Control (no manures).  
A/S applied on 25.7.51, other manures on 27.6.51.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 5. (iv) (a) N.A. (b) 66' × 16.5' (v) 3' between plots. (vi) Yes.

## 4. GENERAL :

(i) Germination was poor. (ii) Nil. (iii) Germination count and *kapas* yield. (iv) (a) 1951 to 1952. (b) and (c) No. (v) (a) and (b) N.A. (vi) *Tur* was sown in the margins between plots but yield was not recorded. (vii) Nil.

## 5. RESULTS :

- (i) 519.6 lb./ac.  
 (ii) 82.48 lb./ac.  
 (iii) Treatments differ highly significantly.  
 (iv) Av. yield of *kapas* in lb./ac.

Treatment.	Av. yield.
1.	584.0
2.	452.0
3.	468.0
4.	638.0
5.	456.0
S.E./mean.	=36.87 lb./ac.

Crop :- Cotton. (Kharif).

Ref :- Mh. 52 (128).

Site :- Govt. Seed and Demonstration Farm, Washim. Type :- 'M'.

Object :- To compare the effect of cotton seed cake with other manures on Cotton yield.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Wheat. (c) As per treatments. (ii) (a) Medium black. (b) N.A. (iii) 25.6.1952. (iv) (a) 3 *bakharings*. (b) Sowing by *argada*. (c) 20 lb./ac. (d) and (e) N.A. (v) Nil. (vi) H-420. (vii) Unirrigated. (viii) 5 hoeings, 2 weedings and 1 thinning. (ix) 17.95" (x) Pickings on 4, 17.11.1952, and 23.12.1952.

## 2. TREATMENTS :

1. 20 lb./ac. of N as G.N.C.
  2. 20 lb./ac. of N as cotton seed cake decorticated.
  3. 20 lb./ac. of N as cotton seed cake undecorticated.
  4. 20 lb./ac. of N as A/S.
  5. No manure (control).
- Manures applied on 17.7.1952.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 5. (iv) (a) N.A. (b) 66' x 16½' (v) 3' between plots. (vi) Yes.

## 4. GENERAL :

(i) Soil was cracked for want of moisture and flower buds were seen shedding. (ii) Attack of aphids which subsided due to lady bird beetles. (iii) Germination counts and *kapas* yield. (iv) (a) 1951 to 1952. (b) and (c) No. (v) (a) and (b) Nil. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 731 lb./ac.
- (ii) 61.36 lb./ac.
- (iii) Treatments do not differ significantly.
- (iv) Av. yield of *kapas* in lb./ac.

Treatment.	Av. yield.
1.	755
2.	753
3.	710
4.	715
5.	722
S.E./mean.	=27.43 lb./ac.

Crop :- Cotton. (Kharif).

Ref :- Mh. 53(166).

Site :- Govt. Seed and Demonstration Farm, Washim. Type :- 'M'.

Object :- To find out the effect of different doses of N applied in different forms on Cotton yield.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) *Jowar*. (c) N.A. (ii) (a) Medium black. (b) N.A. (iii) 29.6.1953. (iv) (a) 4 *bakharings*. (b) N.A. (c) 15 lb./ac. (d) and (e) N.A. (v) Nil. (vi) H-420. (medium). (vii) Unirrigated. (viii) 6 hoeings, 2 weedings and 1 hand interculturing. (ix) 38.55" (x) Pickings on 2 and 22.12.1953 and 22.1.1954.

## 2. TREATMENTS :

1. Control (two plots/block).
  2. 20 lb./ac. of N as A/S.
  3. 40 lb./ac. of N as A/S.
  4. 60 lb./ac. of N as A/S.
  5. 20 lb./ac. of N as C/N.
  6. 40 lb./ac. of N as C/N.
  7. 60 lb./ac. of N as C/N.
  8. 20 lb./ac. of N as A/S and G.N.C. in 1:3 ratio.
- Manures applied at sowing.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 9, (b) N.A. (iii) 5. (iv) (a) 39' x 39', (b) 33' x 33'. (v) 3' between plots. (vi) Yes.

## 4. GENERAL :

(i) Normal. (ii) Mild attack of Aphids ; heavy rains removed them. (iii) *Kapas* yield. (iv) (a) 1953- NA. (b) and (c) No. (v) (a), (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 538 lb./ac.

(ii) 57.4 lb./ac.

(iii) Treatment differences are highly significant.

(iv) Av. yield of *kapas* in lb./ac.

Treatment	Av. yield
1.	464
2.	551
3.	695
4. ✓	760
5.	488
6.	419
7.	582
8.	423
S.E./mean. (1)	=25.7 lb./ac.
S.E./mean. (2,3,...8)	±18.2 lb./ac.

Crop :- Cotton. (*Kharif*).

Ref :- Mh. 51(183).

Site :- Govt. Exptl. Farm, Yeotmal.

Type :- 'M'.

Object :- To compare the manurial value of cotton seed cake with other manures.

## 1. BASAL CONDITIONS .

(i) (a) *Jowar*-Groundnut-Cotton. (b) Groundnut. (c) N.A. (ii) (a) Black medium soil. (b) Refer soil analysis, Yeotmal. (iii) 29.6.1951. (iv) (a) to (e) N.A. (v) N.A. (vi) H-420. (medium). (vii) Unirrigated. (viii) N.A. (ix) 39.57". (x) 1st week of Nov. 1951 to 2nd week of Jan. 1952.

## 2. TREATMENTS :

- 20 lb./ac. of N top dressed as G.N.C.
- 20 lb./ac. of N top dressed as decorticated cotton seed cake.
- 20 lb./ac. of N top dressed as undecorticated cotton seed cake.
- 20 lb./ac. of N top dressed as A/S.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 5. (iv) (a) N.A. (b) 1/40th of an acre. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) Satisfactory. (ii) N.A. (iii) N.A. (iv) (a) 1951-N.A. (b) No. (c) N.A. (v) (a) and (b) N.A. (vi) Nil. (vii) As raw data was not available and so average yield was given from annual report.

## 5. RESULTS :

(i) 313 lb./ac.

(ii) N.A.

(iii) N.A.

(iv) Av. yield of *kapas* in lb./ac.

Treatment	Av. yield
1.	304
2.	296
3.	324
4.	328

Crop :- Cotton (Kharif).

Ref :- Mh. 53(272).

Site :- Govt. Exptl. Farm, Yeotmal.

Type :- 'M'.

Object :- To study the effect of Sodium nitrate on Cotton.

## 1. BASAL CONDITIONS :

(i) (a) *Jowar*-Groundnut-Cotton. (b) Groundnut. (c) N.A. (ii) (a) Black medium loam. (b) Refer soil analysis, Yeotmal. (iii) 22.6.1953. (iv) (a) 2 *bakharings*. (b) *Argada* sowing. (c), (d) and (e) N.A. (v) Nil. (vi) H-420. (medium). (vii) Unirrigated. (viii) 2 weedings and 4 hoeings. (ix) 37.63" (x) Pickings on 23.10.53, 3.11.53, 14.11.53 and 1.12.1953.

## 2. TREATMENTS :

1. Control (2 plots/replication).
2. 20 lb./ac. of N as A/S.
3. 40 lb./ac. of N as A/S.
4. 60 lb./ac. of N as A/S.
5. 20 lb./ac. of N as Sodium nitrate.
6. 40 lb./ac. of N as Sodium nitrate.
7. 60 lb./ac. of N as Sodium nitrate.
8. 2 mds of G.N.C. before sowing and .67md. of A/S at hoeing.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 9. (b) N.A. (iii) 6. (iv) (a) N.A. (b) 1/40th of an acre. (v) One line on each side and 4 plants on other two sides. (vi) Yes.

## 4. GENERAL :

(i) Satisfactory. (ii) Nil. (iii) *Kapas* yield. (iv) (a) 1953-contd. (b) No. (c) N.A. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 239 lb./ac.  
 (ii) 69.80 lb./ac.  
 (iii) Control vs others are significant while other manurial treatments do not differ significantly  
 (iv) Av. yield of *kapas* in lb./ac.

Treatment.	Av. yield
1.	181
2.	268
3.	270
4.	305
5.	210
6.	209
7.	261
8.	267

S.E. for treatment mean (other than control). = 28.50 lb./ac.

S.E. for control mean. = 20.15 lb./ac.

Crop :- Cotton.

Ref :- Mh. 52(179).

Site :- Govt. Exptl. Farm, Yeotmal.

Type :- 'M'.

Object :- To compare the effect of A/S with A.S.N. on Cotton.

## 1. BASAL CONDITIONS :

(i) (a) *Jowar*-Groundnut-Cotton. (b) Groundnut. (c) N.A. (ii) (a) Medium black soil. (b) Refer soil analysis, Yeotmal. (iii) 4.7.1952. (iv) (a) 5 *bakharings*. (b) Hand drilling. (c) to (e) N.A. (v) N.A. (vi) H-420 (medium). (vii) Unirrigated. (viii) 3 hoeings and 2 weedings. (ix) 40.28". (x) 1.11.1952 to 1st week of January 1953.

## 2. TREATMENTS :

1. Ammo. Sulphate Nitrate at 20 lb./ac. of N.
2. A/S at 20 lb./ac. of N.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 2. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 52'x21'. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) Satisfactory. (ii) Attack of pink boll worm ; no remedy was taken. (iii) *Kapas* yield. (iv) (a) 1952—N.A. (b) No. (c) N.A. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 1146 lb./ac.  
 (ii) 162.6 lb./ac.  
 (iii) Treatments do not differ significantly.  
 (iv) Av. yield of *kapas* in lb./ac.

Treatment	Av. yield
1.	1182
2.	1109
S.E./mean	=81.3 lb./ac.

Crop :-Cotton (*Kharif*).

Ref :-Mh. 51(94).

Site :-Govt. Exptl. Farm, Akola.

Type :-'MV'.

Object :—To study the effect of sowing *Deshi* and American cottons successively in rotation with and without manures.

## 1. BASAL CONDITIONS :

(i) (a) to (c) As per treatments. (ii) (a) Black cotton soil. (b) Refer soil analysis, Akola. (iii) 30.6.1951. (iv) (a) and (b) N.A. (c) *Deshi* 18-20 lb./ac. and American 12-14 lb./ac. (d) 18"×9" *Deshi* and 24"×12" American. (e) N.A. (v) Nil. (vi) H-420 *Deshi* (medium) and American-0394 (late) (vii) Unirrigated. (viii) 4 hoeings and 2 weedings. (ix) 24.32". (x) Pickings on 15.11.1951, 10.12.1951 and 20.3.1952.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 4 rotations :  $R_1=H. 420$  after H. 420,  $R_2=H. 420$  after 0394,  $R_3=0394$  after 0394 and  $R_4=0394$  after H. 420.

(2) 2 levels of N :  $N_0=0$  and  $N_1=20$  lb./ac.

N as A/S drilled with seed.

## 3. DESIGN :

(i) 2×4 Fact. in R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 1/40 ac. (v) One row on either side of plot. (vi) Yes.

## 4. GENERAL :

(i) Normal. (ii) Nil. (iii) *Kapas* yield. (iv) (a) 1951—continued. (b) Yes. (c) N.A. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 1025 lb./ac.  
 (ii) 125.2 lb./ac.  
 (iii) Main effect of N alone is significant.  
 (iv) Av. yield of *kapas* in lb./ac.

	$R_1$	$R_2$	$R_3$	$R_4$	Mean
$N_0$	888	1053	943	970	963
$N_1$	1000	1198	1056	1093	1086
Mean	944	1125	999	1031	1025

S.E. of marginal mean of N =31.30 lb./ac.  
 S.E. of marginal mean of R =44.27 lb./ac.  
 S.E. of body of table =62.60 lb./ac.



Crop :- Cotton (*Kharif*).

Ref :- Mh. 52(118)/51(94).

Site :- Govt. Exptl. Farm, Akola.

Type :- 'MV'.

Object :- To study the effect of sowing *Deshi* and American Cotton successively in rotation with and without manures.

## 1. BASAL CONDITIONS :

(i) (a) As per treatments. (b) and (c) As per treatments. (ii) (a) Black cotton soil. (b) Refer soil analysis, Akola. (iii) 26.6.1952. (iv) (a) and (b) N.A. (c) *Deshi* 18—20 lb./ac. American 12—14 lb./ac. (d) 18"×12" *Deshi* and 24"×12" American. (e) N.A. (v) Nil. (vi) *Deshi*—H.420 (medium) and American-0394 (late). (vii) Unirrigated. (viii) 3 hoeings, 2 weedings and 1 thinning. (ix) 22.03". (x) Pickings on 28.10.1952, 27.11.1952, 16.12.1952 and 6.2.1953 (for both varieties).

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 4 rotations :  $R_1$  = H.420 after H.420,  $R_2$  = H.420 after 0394,  $R_3$  = 0394 after 0394 and  $R_4$  = 0394 after H.420.

(2) 2 levels of N :  $N_0$  = 0 and  $N_1$  = 20 lb./ac.

N as A/S drilled with seed.

## 3. DESIGN :

(i) 2×4 Fact. in R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 1/40 ac. (v) 1 row on either side of plot. (vi) Yes.

## 4. GENERAL :

(i) Normal. (ii) Nil. (iii) *kapas* yield. (iv) (a) 1951—continued. (b) Yes. (c) N.A. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 789 lb./ac.

(ii) 104.8 lb./ac.

(iii) Main effect of R and interaction  $N \times R$  are significant, while the main effect of N is not significant.

(iv) Av. yield of *kapas* in lb./ac.

	$R_1$	$R_2$	$R_3$	$R_4$	Mean
$N_0$	1091	523	445	1026	771
$N_1$	1098	539	535	1053	806
Mean	1095	531	490	1039	789

S.E. of marginal mean of N = 26.2 lb./ac.

S.E. of marginal mean of R = 37.0 lb./ac.

S.E. of body of table = 52.4 lb./ac.

Crop :- Cotton (*Kharif*).

Ref :- Mh. 53(176)/52(118)/51(94).

Site :- Govt. Exptl. Farm, Akola.

Type :- 'MV'.

Object :- To study the effect of sowing *Deshi* and American Cotton successively in rotation with and without manures.

## 1. BASAL CONDITIONS :

(i) (a) to (c) As per treatments. (ii) (a) Black cotton soil. (b) Refer soil analysis, Akola. (iii) 25.6.1953. (iv) (a) and (b) N.A. (c) *Deshi* 18-20 lb./ac. and American 12-14 lb./ac. (d) 18"×9" *Deshi* and 24"×12" American. (e) N.A. (v) Nil. (vi) *Deshi*—H.420 (medium) and American—0394 (late). (vii) Unirrigated. (viii) 6 hoeings and 3 weedings. (ix) 26.38". (x) Pickings on 21.11.1953, 17.12.1953 and 22.1.1954.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 4 rotations :  $R_1$ —H.420 after H.420,  $R_2$ —H.420 after 0394,  $R_3$ —0394 after 0394 and  $R_4$ —0394 after H.420.(2) 2 levels of N :  $N_0=0$  and  $N_1=20$  lb./ac.  
N as A/S drilled with seed.

## 3. DESIGN :

(i)  $2 \times 4$  Fact. in R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a) N.A. (b)  $66' \times 16.5'$  (v) 1 row on either side of plot. (vi) Yes.

## 4. GENERAL :

(i) Normal. (ii) Nil. (iii) *Kapas* yield. (iv) (a) 1951—continued. (b) Yes. (c) N.A. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 412.4 lb./ac.

(ii) 143.0 lb./ac.

(iii) Main effect of R, N and their interaction are significant.

(iv) Av. yield of *kapas* in lb./ac.

	$R_1$	$R_2$	$R_3$	$R_4$	Mean
$N_0$	318.9	633.3	250.7	161.3	341.1
$N_1$	428.2	742.5	521.9	242.0	483.6
Mean	373.5	687.9	386.3	201.6	412.4

S.E. of marginal mean of N = 35.76 lb./ac.

S.E. of marginal mean of R = 50.58 lb./ac.

S.E. of body of table = 71.52 lb./ac.

Crop :- Cotton (*Kharif*).

Ref :- Mh. 48(56).

Site :- Plant Breeding Stn., Latur.

Type :- 'MV'.

Object :- To study the response of improved varieties of Cotton to the application of G.N.C.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) *Kharif Jowar*. (c) N.A. (ii) (a) Deep black, clayey soil. (b) Refer soil analysis, Latur. (iii) Last week of June, 1948. (iv) (a) 3 *bakharings*. (b) Drilled in furrow by hand. (c) 15 lb./ac. (d) 18" spacing. (e) N.A. (v) N.A. (vi) As per treatments. (vii) Unirrigated. (viii) N.A. (ix) 34.84%. (x) N.A.

## 2. TREATMENTS :

Main-plot treatments :

3 levels of N :  $N_0=0$ ,  $N_1=20$  and  $N_2=40$  lb./ac.

Sub-plot treatments :

4 varieties :  $V_1$ —*Gaorani 12F*,  $V_2$ —*P-11-4335*,  $V_3$ —*Gaorani 4M-11-6* and  $V_4$ —*Gaorani-60*.

N as G.N.C. broadcasted just before sowing.

## 3. DESIGN :

(i) Split-plot. (ii) (a) 3 main-plots/block, 4 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a)  $62' \times 13\frac{1}{2}'$ .  $55' \times 9'$ . (v) 3.5' at either end, 1 row on either side and 1.5' for path at one end. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) N.A. (iii) *Kapas* yield. (iv) (a) 1947 to 1948. (b) No. (c) N.A. (v) (a) N.A. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 235 lb./ac.  
 (ii) (a) 108.4 lb./ac.  
 (b) 72.63 lb./ac.  
 (iii) Only main treatments and sub treatments effects are significant.  
 (iv) Av. yield of *kapas* in lb./ac.

	N <sub>0</sub>	N <sub>1</sub>	N <sub>2</sub>	Mean
V <sub>1</sub>	218	248	314	260
V <sub>2</sub>	190	171	217	192
V <sub>3</sub>	214	271	381	289
V <sub>4</sub>	142	227	233	201
Mean	191	229	286	235

## S.E. of difference of two

1. main-plot treatments = 38.34 lb./ac.  
 2. sub-plot treatments = 29.64 lb./ac.  
 3. sub-plot means at the same level of main-plot = 51.35 lb./ac.  
 4. main-plot means at the same level of sub-plot = 58.73 lb./ac.

Crop :- Cotton (*Kharif*).

Ref :- Mh. 49(44).

Site :- Plant Breeding Stn., Latur.

Type :- 'MV'.

Object :- To study the response of improved varieties of Cotton to the application of G.N.C.

## 1. BASAL CONDITIONS :

- (i) (a) N.A. (b) *Kharif Jowar*. (c) N.A. (ii) (a) Deep black, clayey soil. (b) Refer soil analysis, Latur.  
 (iii) Last week of June, 1949. (iv) (a) 1 ploughing and 2 *bakharings*. (b) Drilled by hand. (c) 16 lb./ac.  
 (d) 18" apart. (e) N.A. (v) N.A. (vi) As per treatments. (vii) Unirrigated. (viii) N.A. (ix) 49.75".  
 (x) 6. 11. 1949 to 3. 1. 1950.

## 2. TREATMENTS :

## Main-plot treatments :

3 levels of N : N<sub>0</sub>=0, N<sub>1</sub>=20 and N<sub>2</sub>=40 lb./ac.

## Sub-plot treatments :

4 varieties : V<sub>1</sub>=*Goarant-12F*, V<sub>2</sub>=*Goarant 4M-11-6*, V<sub>3</sub>=*Goarant 160* and V<sub>4</sub>=*P11-4335*.

N applied as A/S.

## 3. DESIGN :

- (i) Split-plot. (ii) (a) 3 main-plots/block, 4 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 62' × 13.5'.  
 (b) 55' × 9'. (v) 3½' at either end, 1 row at either end and 1.5' path at one side. (vi) Yes.

## 4. GENERAL :

- (i) Normal. (ii) N.A. (iii) Ginning %, halo length, height and *kapas* yield. (iv) (a) 1947 to 1949. (b) No. (c) N.A. (v) (a) Nil. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 334 lb./ac.  
 (ii) (a) 96.08 lb./ac.  
 (b) 174.1 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>	Mean
V <sub>1</sub>	305	251	413	323
V <sub>2</sub>	303	333	509	382
V <sub>3</sub>	247	349	329	308
V <sub>4</sub>	269	344	353	322
Mean	281	319	401	334

S.E. of difference of two

1. main-plot treatment means = 34.0 lb./ac.
2. sub-plot treatment means = 71.0 lb./ac.
3. sub-plot means at the same level of main-plot treatment = 123.1 lb./ac.
4. main-plot means at the same level of sub-plot treatment = 111.8 lb./ac.

Crop :- Cotton (*Kharif*).

Ref :- Mh. 52(201).

Site :- Govt. Exptl. Farm, Nagpur.

Type :- 'MV'.

Object :- To study the effect of application of N on different varieties of Cotton.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Cotton. (c) Nil. (ii) (a) Black cotton soil. (b) Refer soil analysis, Nagpur. (iii) 5 and 7.7.1952. (iv) (a) One deep and two shallow ploughing. (b) N.A. (c) 15 lb./ac. (d) N.A. (e) N.A. (v) 10 C.L./ac. of F.Y.M. (vi) As per treatments. (vii) Unirrigated. (viii) 3 weedings and 5 interculturings. (ix) 29.32". (x) November 1952 to January 1953.

## 2. TREATMENTS :

All combinations of (1), (2), (3) and (4)

- (1) 2 varieties : V<sub>1</sub>=H-420 and V<sub>2</sub>=Buri-0394.
- (2) 2 levels of N as A/S : N<sub>1</sub>=15 and N<sub>2</sub>=30 lb./ac. of N.
- (3) 2 times of application of N : T<sub>1</sub>=At sowing and T<sub>2</sub>=6 weeks after sowing.
- (4) 2 methods of application of N : M<sub>1</sub>=Drilling and M<sub>2</sub>=Broadcasting.

## 3. DESIGN :

(i) 2<sup>4</sup> Fact. in R.B.D. (ii) (a) 16. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 66' × 16½'. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Nil. (iii) *Kapas* yield. (iv) (a) 1951—N.A. (b) No. (c) N.A. (v) (a) N.A. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 1194 lb./ac.
- (ii) 293.64 lb./ac.
- (iii) Main effect of V is highly significant while that of N is significant. All other effects and interactions are not significant.
- (iv) Av. yield of *kapas* in lb./ac.

Differential response

	Mean response	V		N		M		T	
		-	+	-	+	-	+	-	+
V	-345	—	—	-402	-288	-272	-418	-348	-342
N	150	93	207	—	—	74	226	160	140
M	-67	6	-140	-143	9	—	—	-54	-80
T	-94	-97	-91	-84	-104	-81	-107	—	—

S.E. of mean response = 73.41 lb./ac.

S.E. of differential response = 103.80 lb./ac.

Crop :- Cotton (*Kharif*).

Ref :- Mh. 53(283).

Site :- Govt. Exptl. Farm, Nagpur.

Type :- 'MV'.

Object ; -To study the effect of application of N on different varieties of Cotton.

## 1. BASAL CONDITIONS :

(i) (a) Cotton—*Jowar*—Groundnut. (b) Groundnut. (c) Nil. (ii) (a) Black cotton. (b) Refer soil analysis, Nagpur. (iii) 30.6.1953 and 1.7.1953. (iv) (a) 1 ploughing. (b) N.A. (c) 15 lb./ac. (d) N.A. (e) N.A. (v) Nil. (vi) As per treatments. (vii) Unirrigated. (viii) 1 weeding and 3 interculturings. (ix) 39.34". (x) Picking on 3, 19.11.1953 and 6.12.1953.

## 2. TREATMENTS :

All combinations of (1), (2), (3) and (4)

(1) 2 varieties :  $V_1=H-420$  and  $V_2=Buri-0396$ .(2) 2 levels of N :  $N_1=15$  and  $N_2=30$  lb./ac.(3) 2 times of application of N :  $T_1=At$  sowing and  $T_2=6$  weeks after sowing.(4) 2 methods of application of N :  $M_1=Drilling$  and  $M_2=Broadcasting$ .

## 3. DESIGN :

(i)  $2^4$  Fact. in R.B.D. (ii) (a) 16. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 1/60th ac. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) Normal. (ii) Nil. (iii) Height and *kapas* yield. (iv) (a) 1951—N.A. (b) No. (c) N.A. (v) (a) N.A. (b) N.A. (vi) Nil. (vii) Design for the expt. was  $2^4$  confounded but since the confounded effects are not available, it is analysed as  $2^4$  Fact. in R.B.D.

## 5. RESULTS :

- (i) 931 lb./ac.  
(ii) 178.44 lb./ac.  
(iii) Main effect of V is highly significant. Main effect of N and interactions  $N \times T$  and  $M \times T$  are also significant. Other effects are not significant.  
(iv) Av. yield of *kapas* in lb./ac.

Differential response

	Mean response	V		N		M		T	
		-	+	-	+	-	+	-	+
V	-317	-	-	-3.0	-314	-243	-391	-259	-375
N	19	16	22	-	-	23	15	-104	142
M	-78	-4	-152	-74	-82	-	-	16	-172
T	-29	29	-87	-152	94	65	-123	-	-

S.E. of mean response =44.61 lb./ac.

S.E. of differential response =63.08 lb./ac.

Crop :- Cotton (*Kharif*).

Ref :- Mh. 52(136).

Site :- Govt. Exptl. Farm, Nagpur.

Type :- 'MV'.

Object :-To study the effect of N on different varieties of irrigated Cotton.

## 1. BASAL CONDITIONS :

(i) (a) Maize—Cotton—Sugarcane. (b) Maize. (c) Nil. (ii) (a) Black cotton. (b) Refer soil analysis, Nagpur. (iii) 4.6.1952. (iv) (a) *Bakharings* and ploughing. (b) Hand dibbling. (c) N.A. (d) American  $24" \times 18"$  and *deshi*  $24" \times 9"$ . (e) N.A. (v) 10 C.L./ac. of F.Y.M. (vi) As per treatments. (vii) Irrigated. (viii) 4 weedings and 5 intercultures. (ix) 29.32". (x) 25.10.1952 to 1.1.1953.

## 2. TREATMENTS :

Main-plot treatments :

4 varieties :  $V_1=Buri-0394$ ,  $V_2=Buri-0396$ ,  $V_3=No-91$  and  $V_4=H.420$ .

Sub-plot treatments :

2 levels of N :  $N_0=0$  and  $N_1=30$  lb./ac.

N applied as A/S, 6 weeks after sowing.

## 3. DESIGN :

(i) Split-plot. (ii) (a) 4 main-plots/block and 2 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 1/262th ac. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) Below normal. (ii) Nil. (iii) *Kapas* yield. (iv) (a) 1952 - N.A. (b) No. (c) N.A. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 132 lb./ac.  
 (ii) (a) 10.74 lb./ac.  
 (b) 15.36 lb./ac.  
 (iii) Main effect of V alone is highly significant.  
 (iv) Av. yield of *kapas* in lb./ac.

	V <sub>1</sub>	V <sub>2</sub>	V <sub>3</sub>	V <sub>4</sub>	Mean
N <sub>0</sub>	110	105	150	148	128
N <sub>1</sub>	112	113	165	152	135
Mean	111	109	157	150	132

## S.E. of difference of two

- V marginal means = 5.37 lb./ac.
- N marginal means = 5.43 lb./ac.
- N means at the same level of V = 10.86 lb./ac.
- V means at the same level of N = 9.41 lb./ac.

Crop :- Cotton (*Kharif*).

Site :- Govt. Exptl. Farm, Akola.

Ref :- Mh. 53(173).

Type :- 'C'.

Object :- To study the effect of different spacings and number of plants per hole on yield of Cotton.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Groundnut. (c) 20 lb./ac. of N, half as A/S and half as F.Y.M. top dressed. (ii) (a) Black cotton soil. (b) Refer soil analysis, Akola. (iii) 9.7.1953. (iv) (a) and (b) N.A. (c) As per treatments. (d) and (e) As per treatments. (v) 40 lb./ac. of N, half as F.Y.M. and half as A/S in two doses one at sowing and 2nd after one month. (vi) American 0394 (late). (vii) Unirrigated. (viii) 7 hoeings, 4 weedings and 1 thinning. (ix) 26.38°. (x) Pickings on 9.7.1953, 8.12.1953, 23.2.1954 and 21.3.1954.

## 2. TREATMENTS :

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

(1) 3 spacings : S<sub>1</sub>=24"×24", S<sub>2</sub>=30"×30" and S<sub>3</sub>=30"×24".

(2) 3 plants/hole : P<sub>1</sub>=1, P<sub>2</sub>=2 and P<sub>3</sub>=3.

and one control i.e., spacing 24"×12" with seed rate 12-14 lb./ac.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 10. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 44.5'×20'. (v) 1 row on either side of plot. (vi) Yes.

## 4. GENERAL :

(i) Normal. (ii) Nil. (iii) *Kapas* yield. (iv) (a) No. (b) No. (c) N.A. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 225.4 lb./ac.  
 (ii) 56.88 lb./ac.  
 (iii) Main effect of P and interaction S×P are significant, while the main effect of S is not significant.

(v) Av. yield of *kapas* in lb./ac.

Control=409.4 lb./ac.

	P <sub>1</sub>	P <sub>2</sub>	P <sub>3</sub>	Mean
S <sub>1</sub>	202.6	63.2	378.8 ✓	214.9
S <sub>2</sub>	126.9	182.0	226.9	178.6
S <sub>3</sub>	183.7	246.8	233.2	221.0
Mean	171.1	164.0	279.6	

S.E. of marginal mean of P = 16.13 lb./ac.

S.E. of marginal mean of S = 16.13 lb./ac.

S.E. of body of table = 27.94 lb./ac.

Crop :- Cotton (*Kharif*).

Ref :- Mh. 52(41).

Site :- Plant Breeding Stn., Latur.

Type :- 'C'.

Object :- To study the effect of different spacings on yield of Cotton.

#### 1. BASAL CONDITIONS :

(i) (a) Groundnut—Cotton. (b) Groundnut. (c) F.Y.M. at 10 C.L./ac. (ii) (a) Medium deep black clayey soil. (b) Refer soil analysis, Latur. (iii) 17.7.1952. (iv) (a) One ploughing and three harrowings. (b) Sowing by seed drill. (c) 16 lb./ac. (d) and (e) N.A. (v) Nil. (vi) *Gaorant*—12. (vii) Unirrigated. (viii) Hoing by planet junior hand hoe thrice and weeding once. (ix) 18.03°. (x) 17.11.1952.

#### 2. TREATMENTS :

Three spacings between rows : S<sub>1</sub>=12", S<sub>2</sub>=18" and S<sub>3</sub>=24".

#### 3. DESIGN :

(i) R.B.D. (ii) (a) 3. (b) N.A. (iii) 6. (iv) (a) S<sub>1</sub> : 127'×14', S<sub>2</sub> : 127'×15' and S<sub>3</sub> : 127'×16'. (b) 121'×12' in all cases. (v) One border row on each side of the plot and 3' on each side of the row. (vi) Yes.

#### 4. GENERAL :

(i) Unsatisfactory due to scanty rainfall. (ii) Heavy attack of boll worms. (iii) Plant height and *kapas* yield. (iv) (a) 1952—1954. (b) No. (c) N.A. (v) (a) Nanded. (b) N.A. (vi) and (vii) Nil.

#### 5. RESULTS :

(i) 180 lb./ac.

(ii) 41.7 lb./ac.

(iii) Treatments do not differ significantly.

(iv) Av. yield of *kapas* in lb./ac.

Treatment	Av. yield
S <sub>1</sub>	197
S <sub>2</sub>	169
S <sub>3</sub>	173
S.E./mean	= 17.0 lb./ac.

Crop :- Cotton (*Kharif*).  
 Site :- Plant Breeding Stn., Latur.

Ref :- Mh. 53(15).  
 Type :- 'C'.

Object :- To study the effect of different spacings on yield of Cotton.

1. BASAL CONDITIONS :

(i) (a) Wheat-Cotton. (b) Wheat. (c) F.Y.M. at 10 C.L./ac. (ii) (a) Deep black clayey soil. (b) Refer soil analysis, Latur. (iii) 16, 26.6.1953. (iv) (a) One ploughing, two harrowings and one cleaning. (b) Seeds sown through *Moghas*. (c) 16 lb./ac. (d) and (e) N.A. (v) Nil. (vi) *Gaorani-12*. (vii) Unirrigated. (viii) One weeding, three hoeings by planet junior and hand hoe. (ix) 41.10. (x) 13, 28.11.1953, 15.12.1953 and 15.1.1954.

2. TREATMENTS :

Three spacings between rows :  $S_1=12''$ ,  $S_2=18''$  and  $S_3=24''$ .

3. DESIGN :

(i) R.B.D. (ii) (a) 3. (b) N.A. (iii) 6. (iv) (a)  $S_1 : 127' \times 14'$ ,  $S_2 : 127' \times 15'$  and  $S_3 : 127' \times 16'$ . (b)  $121' \times 12'$  in all cases. (v) One border row on each side of the plot and 3' on each side of the row. (vi) Yes.

4. GENERAL :

(i) Shedding of bolls was much due to excessive rains in September and October 1953. (ii) Nil. (iii) Plant heights at maturity and *kapas* yield. (iv) (a) 1952-1954. (b) Yes. (c) N.A. (v) (a) Nanded. (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 300 lb./ac.  
 (ii) 40.8 lb./ac.  
 (iii) Treatments do not differ significantly.  
 (iv) Av. yield of *kapas* in lb./ac.

Treatment	Av. yield
$S_1$	235
$S_2$	192
$S_3$	173
S.E./mean	= 16.6 lb./ac.

Crop :- Cotton (*Kharif*).  
 Site :- Plant Breeding Stn., Latur.

Ref :- Mh. 53(18).  
 Type :- 'C'.

Object :- To study the effect of early sowing on the yield and quality of *Gaorani-12* Cotton.

1. BASAL CONDITIONS :

(i) (a) Groundnut-Cotton. (b) Groundnut. (c) F.Y.M. at 10 C.L./ac. (ii) (a) Deep black clayey. (b) Refer soil analysis, Latur. (iii) As per treatments. (iv) (a) Ploughing, cleaning and ridge formation. (b) to (e) N.A. (v) 20 C.L. of F.Y.M. applied in the beginning of May to cotton crop and 30 lb. of  $P_2O_5$  in the form of super to the crop of groundnut before sowing. (vi) *Gaorani-12*. (vii) Irrigated. (viii) Weeding and hoeing by hand hoe. (ix) 41.10. (x) Picking on 4, 19.11. 1953, 4. 12. 1953 and 4. 1. 1954.

2. TREATMENTS :

Three dates of sowing :  $D_1=20.5.1953$ ,  $D_2=5.6.1953$  and  $D_3=$ Normal sowing on 20.6.1953.

3. DESIGN :

(i) R.B.D. (ii) (a) 3. (b) N.A. (iii) 4. (iv) (a)  $30' \times 9'$ . (b)  $28' \times 6'$ . (v) One row at each flank and one foot at each extremity of the row. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) Plant height at flowering and *kapas* yield. (iv) (a) 1953 to 1955. (b) No. (c) N.A. (v) (a) Nanded. (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 550 lb./ac.  
 (ii) 108.9 lb./ac.  
 (iii) Treatments do not differ significantly.



(iv) Av. yield of *kapas* in lb./ac.

Treatment	Av. yield
D <sub>1</sub>	544
D <sub>2</sub>	622
D <sub>3</sub>	483
S.E./mean	=55.0 lb./ac.

Crop :- Cotton (*Khariif*).

Ref :- Mh. 52(47).

✓ Site :- Cotton Res. Stn., Nanded.

Type :- 'C'.

Object :- To study the effect of early sowing on yield and quality of *Gaorani-6* Cotton.

## 1. BASAL CONDITIONS :

(i) (a) Groundnut-Cotton. (b) Groundnut. (c) 30 lb./ac. of P<sub>2</sub>O<sub>5</sub> as Super. (ii) (a) Black cotton soil. (b) Refer soil. analysis, Nanded. (iii) As per treatments. (iv) (a) N.A. (b) Dibbling. (c) N.A. (d) 18" × 6". (e) 2. (v) 20 C.L. of F.Y.M./ac. in the beginning of May. (vi) *Gaorani-6*. (vii) Irrigated. (viii) Weedings. (ix) 28.81". (x) Picking on 8, 23.10.1952, 7, 22.11.1952 and 22.12.1952.

## 2. TREATMENTS :

Three dates of sowing : D<sub>1</sub>=20.5.1952, D<sub>2</sub>=5.6.1952 and D<sub>3</sub>=Normal sowing on 25.6.1952.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 3. (b) N.A. (iii) 4. (iv) (a) 30' × 9'. (b) 28' × 6'. (v) One row at each flank and 1' at each extremity of every row. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) No. (iii) Germination and final stand, plant height, boll and seed weight, ginning %, boll no. and fibre properties. Plant development observations and *kapas* yield. (iv) (a) 1952 to 1954. (b) No. (c) N.A. (v) (a) No. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 792 lb./ac.  
 (ii) 578.0 lb./ac.  
 (iii) Treatments differ highly significantly.  
 (iv) Av. yield of *kapas* in lb./ac.

Treatments	Av. yield
D <sub>1</sub>	1275
D <sub>2</sub>	779
D <sub>3</sub>	322
S.E./mean	=289.0 lb./ac.

Crop :- Cotton (*Khariif*).

Ref :- Mh. 53(27).

Site :- Agri. Res. Stn., Nanded.

Type :- 'C'.

Object :- To study the effect of early sowing on yield and quality of *Gaorani-6* Cotton.

## 1. BASAL CONDITIONS :

(i) (a) Groundnut-Cotton. (b) Groundnut. (c) 30 lb./ac. of P<sub>2</sub>O<sub>5</sub>. (ii) (a) Black cotton soil. (b) Refer soil analysis, Nanded. (iii) As per treatments. (iv) (a) Ploughing once and *bakharing* once. (b) Dibbling. (c) N.A. (d) 18" × 6". (e) 2 seeds/hole. (v) 20 C.L./ac. of F.Y.M. (vi) *Gaorani-6*. (vii) Irrigated. (viii) Hoeing once and 4 weedings. (ix) 45.13". (x) 1st picking on 30.9.1953, 2nd picking on 15.10.1953, 3rd picking on 30.10.1953, 4th picking on 30.11.1953 and 5th picking on 30.12.1953.

## 2. TREATMENTS:

Three dates of sowing : D<sub>1</sub>=20.5.1953, D<sub>2</sub>=5.6.1953 and D<sub>3</sub>=Normal sowing on 22.6.1953.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 3. (b) N.A. (iii) 4. (iv) (a) 30' × 9'. (b) 28' × 6'. (v) One row on either flank and 1' at each extremity of every row. (vi) Yes.

## 4. GENERAL :

(i) Normal. (ii) Nil. (iii) Germination and final stand, plant height, boll and seed weight, ginning %, boll no. and fibre properties, plant development observations and *kapas* yield. (iv) (a) 1952-1954. (b) No. (c) N.A. (v) (a) Latur. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 528 lb./ac.  
 (ii) 170 lb./ac.  
 (iii) Treatments do not differ significantly.  
 (iv) Av. yield of *kapas* in lb./ac.

Treatment	Av. yield
D <sub>1</sub>	697
D <sub>2</sub>	512
D <sub>3</sub>	376
S.E./mean	= 85.0 lb /ac.

Crop :- Cotton (*Kharif*).

Ref :- Mh. 52(215).

Site :- Agri. College Farm, Poona.

Type :- 'C'.

Object :- To study the effect of different methods of preparatory tillage on Cotton.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Nil. (c) Nil. (ii) (a) Medium black. (b) Refer soil analysis, Poona. (iii) 18.6.1952. (iv) (a) As per treatments. (b) Drilling. (c) 12 lb./ac. (d) Spacing between rows 24", between plants irregular. (e) N.A. (v) Nil. (vi) Jarilla 197-3. (vii) Unirrigated. (viii) 3 interculturings and 5 weedings. (ix) 22.03". (x) 25.11.1952, 11.12.1952 and 9.1.1953.

## 2. TREATMENTS :

4 cultural operations : C<sub>1</sub>=Harrowing only; C<sub>2</sub>=Ploughing every year; C<sub>3</sub>=Ploughing every alternate year and C<sub>4</sub>=Ploughing every third year.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 6. (iv) (a) 132' x 12'. (b) 124' x 6'. (v) 4' x 3'. (vi) Yes.

## 4. GENERAL :

(i) Due to draught period which was followed just after flowering, boll formation was delayed and hence the yield was poor. (ii) Nil. (iii) *Kapas* yield. (iv) (a) 1949-N.A. (b) and (c) No. (v) (a) and (b) Nil. (vi) Nil. (vii) This is the first year of collection of data though it was started in 1949-50 because the cycle of C<sub>4</sub> treatment is completed in 1952-1953.

## 5. RESULTS :

- (i) 447.2 lb./ac.  
 (ii) 233.0 lb./ac.  
 (iii) Treatments do not differ significantly.  
 (iv) Av. yield of *kapas* in lb./ac.

Treatment	Av. yield
C <sub>1</sub>	350.2
C <sub>2</sub>	469.8
C <sub>3</sub>	453.8
C <sub>4</sub>	517.4
S.E /mean	= 95.2 lb./ac.

Crop :- Cotton (*Kharif*).

Ref :- Mh. 53(263).

Site :- Agri. College Farm, Poona.

Type :- 'C'.

Object :- To study the effect of different methods of preparatory tillage on Cotton.

## 1. BASAL CONDITIONS :

(i) (a) Cotton—*Jowar*. (b) *Jowar*. (c) N.A. (ii) (a) Light soil. (b) Refer soil analysis, Poona. (iii) 5.6.1953. (iv) (a) As per treatments. (b) to (e) N.A. (v) Nil. (vi) Virnar 197-3. (vii) Unirrigated. (viii) 2 weedings and 5 interculturings. (ix) 22.38". (x) 12 to 17.11.1953 and 8 and 9.12.1953.

## 2. TREATMENTS :

4 cultural operations :  $C_1$ =Harrowing only,  $C_2$ =Ploughing every year,  $C_3$ =Ploughing every alternate year and  $C_4$ =Ploughing every third year.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 6. (iv) (a)  $132' \times 12'$ . (b)  $124' \times 8'$ . (v) 4' along length and 1 row along breadth. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) Nil. (iii) *Kapas* yield. (iv) (a) 1949—1956. (b) and (c) No. (v) (a) and (b) No. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 115.7 lb./ac.  
 (ii) 51.8 lb./ac.  
 (iii) Treatments do not differ significantly.  
 (iv) Av. yield of *kapas* in lb./ac.

Treatment	Av. yield
$C_1$	100.6
$C_2$	102.3
$C_3$	120.8
$C_4$	139.2
S.E./mean	=21.08 lb./ac.

Crop :- Cotton (*Kharif*).

Site :- Cotton Res. Stn., Nanded.

Ref :- Mh. 52(46).

Type :- 'CV'.

Object :- To study the effect of spacing on yield and quality of *Gaorani-6* and *Gaorani-6-E.3* varieties of Cotton.

## 1. BASAL CONDITIONS :

(i) (a) *Rabi Jowar*—Cotton. (b) *Rabi Jowar*. (c) B.M. at the rate of 30 lb./ac. of  $P_2O_5$  to  $\frac{1}{4}$  area and F.Y.M. at the rate of 10 C.L./ac. (ii) (a) Black cotton soil. (b) Refer soil analysis, Nanded. (iii) 28.6.1952. (iv) (a) 3 *bakharings*. (b) Drilling the seed through *moghas*. (c) 16 lb./ac. (d) As per treatments. (e) N.A. (v) Nil. (vi) As per treatments. (vii) Unirrigated. (viii) Hoeing twice and weeding once. (ix) 28.83°. (x) 10.11.1952, 10.12.1952 and 10.1.1953.

## 2. TREATMENTS :

All combinations of (1) and (2)

- (1) 2 varieties :  $V_1$ =*Gaorani-6* and  $V_2$ =*Gaorani-6 E.3*.  
 (2) 3 spacings :  $S_1=12''$ ,  $S_2=18''$  and  $S_3=24''$  between rows.

## 3. DESIGN :

(i)  $3 \times 2$  Fact. in R.B.D. (ii) (a) 6. (b) N.A. (iii) 5. (iv) (a)  $12''$  spacings :  $127' \times 14'$ ,  $18''$  spacing :  $127' \times 15'$  and  $24''$  spacing :  $127' \times 16'$ . (b)  $121' \times 12'$ . (v) 1 row on either side and 3' at either extremity of every row was treated as non-experimental. (vi) Yes.

## 4. GENERAL :

(i) GooJ. (ii) No. (iii) Germination and final stand, boll no., boll wt., plant height, ginning %, fibre properties and *kapas* yield. (iv) (a) 1952—1954. (b) No. (c) N.A. (v) (a) At Latur, only with one variety. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 214 lb./ac.  
 (ii) 26.70 lb./ac.  
 (iii) Only interaction  $S \times V$  is significant.

(iv) Av. yield of *kapas* in lb./ac.

	S <sub>1</sub>	S <sub>2</sub>	S <sub>3</sub>	Mean
V <sub>1</sub>	231	214	220	222
V <sub>2</sub>	177	215	227	206
Mean	204	214	224	214

S.E. of S marginal mean = 8.40 lb./ac.  
 S.E. of V marginal mean = 6.90 lb./ac.  
 S.E. of body of table = 11.90 lb./ac.

Crop :- Cotton (*Kharif*).

Ref :- Mh. 53(25).

Site :- Cotton Res. Stn., Nanded.

Type :- 'CV'.

Object :- To study the effect of spacing on yield and quality of *Gaorani-6* and *Gaorani-6-E-3* varieties of Cotton.

## 1. BASAL CONDITIONS :

(i) (a) *Rabi Jowar*—Cotton. (b) *Rabi Jowar*. (c) F.Y.M. at the rate of 20 C.L./ac. (ii) (a) Black cotton soil. (b) Refer soil analysis, Nanded. (iii) 26.6.1953. (iv) (a) 3 *bakharings*. (b) Drilling the seed through *moghas*. (c) 16 lb./ac. (d) As per treatments. (e) N.A. (v) Nil. (vi) As per treatments. (vii) Unirrigated. (viii) Hoeing twice and weeding twice. (ix) 45.13" (x) 12.11.1953, 12.12.1953 and 12.1.1954.

## 2. TREATMENTS :

All combinations of (1) and (2)

- (1) 2 varieties : V<sub>1</sub>=*Gaorani-6* and V<sub>2</sub>=*Gaorani-6 E.3*.  
 (2) 3 spacings : S<sub>1</sub>=12", S<sub>2</sub>=18" and S<sub>3</sub>=24" between rows.

## 3. DESIGN :

(i) 3×2 Fact. in R.B.D. (ii) (a) 6. (b) N.A. (iii) 5. (iv) (a) 12" spacings : 127'×14', 18" spacings : 127'×15' and 24" spacings : 127'×16'. (b) 121'×12'. (v) 1 row on either side and 3 ft. at each extremity of every row was treated as non-experimental. (vi) Yes.

## 4. GENERAL :

(i) Satisfactory. (ii) No. (iii) Plant height, boll no., boll weight, final stand, ginning %, fibre properties and *kapas* yield. (iv) (a) 1952—1954. (b) No. (c) N.A. (v) (a) At Latur, only with one variety. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 174 lb./ac.  
 (ii) 18.60 lb./ac.  
 (iii) None of the effects is significant.  
 (iv) Av. yield of *kapas* in lb./ac.

	S <sub>1</sub>	S <sub>2</sub>	S <sub>3</sub>	Mean
V <sub>1</sub>	157	191	164	171
V <sub>2</sub>	179	179	174	177
Mean	168	185	169	174

S.E. of S marginal mean = 5.90 lb./ac.  
 S.E. of V marginal mean = 4.80 lb./ac.  
 S.E. of body of table = 8.30 lb./ac.

Crop :- Cotton. (*Kharif*).

Ref :- Mh. 52(227).

Site :- Govt. Seed and Demonstration Farm, Achalpur. Type :- 'CM'.

Object :- To compare the effect of G.M., and F.Y.M. etc. along with different spacings on Cotton yield.

1. BASAL CONDITIONS :

(i) (a) Cotton-Jowar-Groundnut. (b) Jowar. (c) N.A. (ii) (a) Medium black. (b) N.A. (iii) 23,24,7. 1952. (iv) (a) 2 heavy and 3 light *bakharings*. (b) N.A. (c) 14 lb./ac. (d) and (e) N.A. (v) Nil. (vi) H-420. (medium). (vii) Unirrigated. (viii) 7 hoeings, 2 weedings and 1 thinning. (ix) 12.09" (x) Pickings from 10 to 26.11.1952 and from 8 to 31.12.1952.

2. TREATMENTS :

1. No manure-spacing 18".
2. F.Y.M. at 10 C.L./ac. as basal dressing-18" spacing.
3. A/S at 20 lb./ac. of N drilled at sowing-18" spacing.
4. A/S at 20 lb./ac. of N top dressed between 40-45 days of sowing-18" spacing.
5. Sann hemp without P<sub>2</sub>O<sub>5</sub>-spacing 9"
6. Sann hemp with 1 cwt. P<sub>2</sub>O<sub>5</sub> drilled at sowing-spacing 9".
7. *Udid* without P<sub>2</sub>O<sub>5</sub>-spacing 9".
8. *Udid* with 1 cwt. P<sub>2</sub>O<sub>5</sub> drilled at sowing-spacing 9".
9. No manure-spacing 24".
10. As in (2) -spacing 24".
11. As in (3) -spacing 24".
12. As in (4) -spacing 24".
13. As in (5) -spacing 12".
14. As in (6) -spacing 12".
15. As in (7) -spacing 12".
16. As in (8) -spacing 12".

Green manuring on 22.8.1952 and others top dressed on 23.8.1952.

3. DESIGN :

(i) R.B.D. (ii) (a) 16. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 1/100th acre. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) *Kapas* yield. (iv) (a) 1952 to 1954. (b) Yes. (c) N.A. (v) (a) Akola. (b) N.A. (vi) Nil. (viii) G.M. crops sown in between two lines of cotton at the time of cotton sowing.

Average G.M. applied.

Treatment No.	5	6	7	8	13	14	15	16
Amount in ton/ac.	2.75	1.68	1.46	1.29	1.89	1.77	1.33	1.22

5. RESULTS :

- (i) 746 lb./ac.  
 (ii) 131.6 lb./ac.  
 (iii) Treatments differ highly significantly.  
 (iv) Av. yield of *kapas* in lb./ac.

Treatment	Av. yield.	Treatment	Av. yield
1.	930 ✓	9.	797
2.	786	10.	925
3.	986	11.	1017 ✓
4.	753	12.	895
5.	594	13.	529
6.	635	14.	606
7.	616	15.	625
8.	586	16.	657

S.E./mean = 65.80 lb./ac.

Crop :- Cotton (Kharif).

Ref :-Mh. 53(291).

Site :- Govt. Seed &amp; Demonstration Farm, Achalpur.

Type :- 'CM'.

Object :- To study the residual effect of G.M. applied to previous cotton crop along with different spacings on Cotton yield.

## 1. BASAL CONDITIONS :

(i) (a) Cotton—Cotton. (b) Cotton. (c) As per treatments. (ii) (a) Medium black. (b) N.A. (iii) 23.6.53. (iv) (a) 2 heavy & 3 light bakharings. (b) N.A. (c) 14 lb./ac. (d) & (e) N.A. (v) Nil. (vi) H. 420 (medium). (vii) Un-irrigated. (viii) 5 hoeings, 2 weedings and thinning. (ix) 34.91". (x) Pickings on 31.10.1953, 11 to 27.11.1953, 19.12.1953 and 12.1.1954.

## 2. TREATMENTS :

1. No manure—spacing 18".
2. F.Y.M. at 10 C.L./ac. as basal dressing—18" spacing.
3. A/S at 20 lb./ac. of N drilled at sowing—18" spacing.
4. A/S at 20 lb./ac. of N top dressed between 40—45 days of sowing—18" spacing.
5. Sunhemp without  $P_2O_5$ —Spacing 9".
6. Sunhemp with 1 cwt.  $P_2O_5$  drilled at sowing—spacing 9".
7. Udid without  $P_2O_5$ —spacing 9".
8. Udid with 1 cwt.  $P_2O_5$  drilled at sowing—spacing 9".
9. No manure—spacing 24".
10. As in (2)—spacing 24".
11. As in (3)—spacing 24".
12. As in (4)—spacing 24".
13. As in (5)—spacing 12".
14. As in (6)—spacing 12".
15. As in (7)—spacing 12".
16. As in (8)—spacing 12".

Top dressing on 23.8.1952 and G.M. on 22.8.1952. Treatments were applied to the previous cotton crop and residual effects studied this year.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 16. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 1/100th acre. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) Normal. (ii) Nil. (iii) *Kapas* yield. (iv) (a) 1952 (residual effect from 1953—54)—N.A. (b) Yes. (c) N.A. (v) (a, b) N.A. (vi) Nil. (vii) Nil.

## 5. RESULTS :

(i) 1019 lb./ac.

(ii) 118.4 lb./ac.

(iii) Treatments differ highly significantly.

(iv) Av. yield of *kapas* in lb./ac. (*Kapas*).

Treatment	Av. yield	Treatment	Av. yield
1.	786	9.	989
2.	1034	10.	1000
3.	927	11.	1181
4.	1075	12.	1097
5.	898	13.	1053
6.	1029	14.	1022
7.	937	15.	1251
8.	917	16.	1095
	S.E./mean		= 59.2 lb./ac.

Crop :- Cotton (Kharif).

Ref :-Mh. 53(234).

Site :- Govt. Seed and Demonstration Farm, Achalpur.

Type :- 'CM'.

Object :- To compare the effect of G.M., F.Y.M. etc., along with different spacings, on Cotton yield.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Cotton. (c) N.A. (ii) (a) Medium black. (b) N.A. (iii) 3.7.1953. (iv) (a) 2 heavy and 3 light bakharings. (b) N.A. (c) 14 lb./ac. (d) & (e) N.A. (v) Nil. (vi) H. 420. (vii) Unirrigated. (viii) 7 hoeings, 1 thinning and 3 weedings. (ix) 34.91" (x) 5 to 13.11.1953, 12.12.1953 and 18.1.1954.

## 2. TREATMENTS :

1. Control—18" spacing line to line.
2. F.Y.M. 10 C.L./ac. & 18" spacing line to line.
3. A/S 20 lb./ac. of N & 18" spacing line to line.
4. A/S 40 lb./ac. of N & 18" spacing line to line.
5. G.M. with sann without  $P_2O_5$ —18" spacing line to line.
6. G.M. with sann with  $P_2O_5$  30 lb./ac.—18" spacing line to line.
7. G.M. with sann without  $P_2O_5$ —24" spacing line to line.
8. G.M. with sann with  $P_2O_5$  30 lb./ac.—24" spacing line to line.
9. G.M. with *Udid* without  $P_2O_5$ —18" spacing line to line.
10. G.M. with *Udid* 18" line to line spacing with 30 lb./ac.  $P_2O_5$ .
11. G.M. with *Udid* without  $P_2O_5$ —24" spacing line to line.
12. G.M. with *Udid*—24" line to line spacing with 30 lb./ac. of  $P_2O_5$ .

## 3. DESIGN :

(i) R.B.D. (ii) (a) 12. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 36.3'×12'. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) Satisfactory. (ii) Nil. (iii) *kapas* yield. (iv) (a) 1952 to 1957. (b) No. (c) N.A. (v) (a) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 820 lb./ac.

(ii) 118.8 lb./ac.

(iii) Treatments differ significantly.

(iv) Av. yield of *kapas* in lb./ac.

Treatment	Av. yield	Treatment	Av. yield
1.	734	7.	845
2.	817	8.	816
3.	933	9.	763
4.	1075	10.	816
5.	752	11.	767
6.	792	12.	733
S.E./mean = 59.4 lb./ac.			

Crop :- Cotton (*Kharif*).

Site :-Govt. Exptl. Farm, Akola.

Ref :-Mh. 48(42).

Type :-'CM'.

Object :-To find out the effect of spacing on American Cotton.

## 1. BASAL CONDITIONS .

(i) (a) Nil. (b) *Jowar*. (c) Nil. (ii) (a) Black cotton soil. (b) Refer soil analysis, Akola. (iii) 3.7.1948. (iv) (a) 1 ploughing and 2 *bakharings*. (b) Dibbling. (c) 12-14 lb./ac. (d) As per treatments. (e) N.A. (v) Nil. (vi) *Buri-107* (late). (vii) Unirrigated. (viii) 2 hoeings and 3 weedings. (ix) 31.52%. (x) Picking on 20.11.1948, 4.2.1949, 1.4.1949 and 16.4.1949.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 2 levels of N:  $N_0=0$  and  $N_1=40$  lb./ac.

(2) 3 spacings between plants :  $S_1=12"$ ,  $S_2=18"$  and  $S_3=24"$ .

Manure applied at 20 lb. of N as cattle dung+20 lb. of N as G.N.C. on 21.6.1948.

## 3. DESIGN :

(i) 2×3 Fact. in R.B.D. (ii) (a) 6. (b) N.A. (iii) 6. (iv) (a) N.A. (b) 66'×16½'. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Nil. (iii) *Kapas* yield. (iv) (a) 1945 to 1949. (b) No. (c) N.A. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 229.5 lb./ac.

(ii) 41.60 lb./ac.

(iii) Only the main effect of S and interaction S×N are significant.

(iv) Av. yield of *kapas* in lb./ac.

	S <sub>1</sub>	S <sub>2</sub>	S <sub>3</sub>	Mean
N <sub>0</sub>	210.0	203.0	187.0	200.0
N <sub>1</sub>	277.0	268.0	232.0	259.0
Mean	243.5	235.5	209.5	229.5

S.E. of marginal mean of N = 9.81 lb./ac.

S.E. of marginal mean of S = 12.01 lb./ac.

S.E. of body of table = 16.99 lb./ac.

Crop :- Cotton (*Kharif*).

Ref :- Mh. 49(69).

Site :- Govt. Exptl. Farm, Akola.

Type :- 'CM'.

Object :- To find out the effect of spacing on American Cotton.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Groundnut. (c) 1 C.L./ac. of F.Y.M. ; 240 lb./ac. of G.N.C. powder. (ii) (a) Black cotton soil. (b) Refer soil analysis, Akola. (iii) 28.6.1949. (iv) (a) 1 ploughing and 2 bakharings. (b) Dibbling. (c) 12-14 lb./ac. (d) As per treatments. (e) N.A. (v) Nil. (vi) Buri-107 (late). (vii) Unirrigated. (viii) 4 hoeings and 2 weedings. (ix) 42.93". (x) Picking on 21.11.1949, 13.12.1949, 20.1.1950 and 27.3.1950.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 2 levels of N : N<sub>0</sub>=0 and N<sub>1</sub>=40 lb./ac.(2) 3 spacings between plants : S<sub>1</sub>=12", S<sub>2</sub>=18" and S<sub>3</sub>=24".

Manure were applied at 20 lb./ac. N as cowdung + 20 lb./ac. N as G.N.C. on 22.6.1949.

## 3. DESIGN :

(i) 2 × 3 Fact. in R.B.D. (ii) (a) 6. (b) N.A. (iii) 6. (iv) (a) N.A. (b) 66' × 16½'. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) Satisfactory. (ii) Nil. (iii) *Kapas* yield. (iv) (a) 1945 to 1949. (b) No. (c) N.A. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 375.0 lb./ac.

(ii) 50.60 lb./ac.

(iii) Only the main effect of S and interaction S × N are significant. N effect is not significant.

(iv) Av. yield of *kapas* in lb./ac.

	S <sub>1</sub>	S <sub>2</sub>	S <sub>3</sub>	Mean
N <sub>0</sub>	325.0	340.0	280.0	315.0
N <sub>1</sub>	438.0	472.0	440.0	435.0
Mean	381.5	383.5	360.0	375.0

S.E. of marginal mean of N = 11.93 lb./ac.

S.E. of marginal mean of S = 14.60 lb./ac.

S.E. of body of table = 20.66 lb./ac.



Crop :-Cotton (*Kharif*).

Ref :-Mh. 53(270).

Site :-Govt. Exptl. Farm, Akola.

Type :-'CM'.

Object :- To study the effect of different spacings and no. of plants per hole on Cotton.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Groundnut. (c) 20 lb./ac. of N. (ii) (a) Deep black cotton soil. (b) Refer soil analysis, Akola. (iii) 8.7.1953. (iv) (a) 3 *bakharings*. (b) N.A. (c) 15 lb./ac. (d) 18"×9". (e) N.A. (v) 40 lb./ac of N, half as F.Y.M. and half as A/S. (vi) H. 420 (medium). (vii) Unirrigated. (viii) 5 hoeings, 2 thinnings and 3 weedings. (ix) 26.28". (x) 25.11.1953, 19.12.1953 and 11.2.1954.

## 2. TREATMENTS :

1. 18"×9" (control) 40 lb./ac. of N, half as F.Y.M. and remaining half as A/S in 2 doses, one at sowing and other after one month of sowing.
2. 18"×18" one plant at *choufali* and with manuring as in treatment No. 1 but F.Y.M. to be given at *choufali*.
3. 18"×18"—2 plants at *choufali* and rest as treatment No. 2.
4. 18"×18"—3 plants at *choufali* and rest as treatment No. 2.
5. 24"×18"—1 plant at *choufali* and rest as treatment No. 2.
6. 24"×18"—2 plants at *choufali* and rest as treatment No. 2.
7. 24"×18"—3 plants at *choufali* and rest as treatment No. 2.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 60.5'×18'. (v) One line on either side. (vi) Yes.

## 4. GENERAL :

(i) Excellent. Treatment having one plant at *choufali* has good growth. (ii) Nil. (iii) *Kapas* yield. (iv) (a) to (c) N.A. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 684.0 lb./ac.  
 (ii) 91.32 lb./ac.  
 (iii) Treatment differences are significant.  
 (iv) Av. yield of *kapas* in lb./ac.

Treatment	Av. yield
1.	712.4
2.	650.5
3.	731.1
4.	821.8
5.	549.3
6.	658.0
7.	664.9
S.E./mean	=45.66 lb./ac.

Crop :-Cotton (*Kharif*).

Ref :-Mh. 52(120).

Site :-Govt. Exptl. Farm, Akola.

Type :-'CM'.

Object :- To study the effect of different manures and spacings on Cotton.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Groundnut. (c) 4 C.L./ac. of F.Y.M.+100 lb./ac. of G.N.C.+50 lb./ac. of A/S. (ii) (a) Black cotton soil. (b) Refer soil analysis, Akola. (iii) N.A. (iv) (a) and (b) N.A. (c) 18-20 lb./ac. (d) As per treatments. (e) N.A. (v) Nil. (vi) H. 420 (medium). (viii) Unirrigated. (viii) N.A. (ix) 22.03". (x) N.A.

## 2. TREATMENTS

All combinations of (1) and (2)

(1) 2 spacings between rows :  $S_1=18''$  and  $S_2=24''$ .

(2) 8 manurial doses :  $M_0$ =No manure,  $M_1=10$  C.L./ac. of F.Y.M. as basal dressing,  $M_2=20$  lb./ac. of N as A/S drilled at sowing,  $M_3=20$  lb./ac. of N as A/S top dressed between 40-45 days,  $M_4$ =Sannhemp alone,  $M_5$ =Sannhemp with 1 cwt./ac. of  $P_2O_5$  drilled with seed,  $M_6$ =Udid alone and  $M_7$ =Udid with 1 cwt./ac. of  $P_2O_5$  drilled with seed.

## 3. DESIGN :

(i)  $2 \times 8$  Fact. in R.B.D. (ii) (a) 16. (b) N.A. (iii) 4. (iv) (a) N.A. (b)  $12' \times 36.3'$ . (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) Nil. (iii) *Kapas* yield. (iv) (a) 1952 to 1953. (modified with 12 treatments). (b) No. (c) N.A. (v) (a) and (b) N.A. (vi) Nil. (vii) Quantities of G.M. buried not available.

## 5. RESULTS :

(i) 401.8 lb./ac.

(ii) 71.86 lb./ac.

(iii) Only the main effect of M and interaction  $M \times S$  are significant.

(iv) Av. yield of *kapas* in lb./ac.

	$M_0$	$M_1$	$M_2$	$M_3$	$M_4$	$M_5$	$M_6$	$M_7$	Mean
$S_1$	517.5	541.0	545.3	515.5	224.3	215.8	375.2	358.0	411.6
$S_2$	478.2	495.2	478.2	444.0	282.7	281.5	369.0	308.0	392.1
Mean	497.9	518.1	511.8	479.8	253.5	248.6	372.1	333.0	401.8

S.E. of marginal mean of S = 12.71 lb./ac.  
S.E. of marginal mean of M = 25.41 lb./ac.  
S.E. of body of table = 35.93 lb./ac.

Crop :- Cotton (*Khnrif*).

Ref :- Mh. 53(267).

Site :- Govt. Exptl. Farm, Akola.

Type :- 'CM'.

Object :- To study the effect of G.M., F.Y.M. and A/S along with different spacings on Cotton yield.

## 1. BASAL CONDITIONS :

(i) (a) No definite crop rotation. (b) *Jowar*. (c) 10 lb./ac. of N as A/S top dressed. (ii) (a) Deep black cotton soil. (b) Refer soil analysis, Akola. (iii) 7.7.1953. (iv) (a) 3 *bakharings*. (b) N.A. (c) 15 lb./ac. (d) and (e) N.A. (v) Nil. (vi) H-420 cotton (medium). (vii) Unirrigated. (viii) 3 hoeings on 30.7.1953, 29.8.1953 and 17.9.1953, 2 weedings on 21.8.1953 and 17.9.1953. (ix) 26.28". (x) 1, 21.12.1953 and 29.1.1954.

## 2. TREATMENTS :

- No manure—18" line to line.
- F.Y.M. at 10 C.L./ac.—18" line to line.
- A/S at 20 lb./ac. of N—18" line to line.
- A/S at 40 lb./ac. of N—18" line to line.
- Sann without  $P_2O_5$ —18" line to line.
- Sann with  $P_2O_5$  at 30 lb./ac. —18" line to line.
- Sann without  $P_2O_5$ —24" line to line.
- Sann with 30 lb./ac. of  $P_2O_5$ —24" line to line.
- Udid without  $P_2O_5$ —18" line to line.
- Udid with 30 lb./ac. of  $P_2O_5$ —18" line to line.
- Udid without  $P_2O_5$ —24" line to line.
- Udid with 30 lb./ac. of  $P_2O_5$ —24" line to line.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 12. (b) N.A. (iii) 4. (iv) (a) N.A. (b)  $36.3' \times 12'$ . (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) Normal. (ii) Nil. (iii) *Kapas* yield. (iv) (a) 1952-1953 (modified with 12 treatments). (b) No. (c) N.A. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 543.6 lb./ac.  
 (ii) 232.7 lb./ac.  
 (iii) Treatments do not differ significantly.  
 (iv) Av. yield of *kapas* in lb./ac.

Treatment	Av. yield	Treatment	Av. yield
1.	372.0	7.	503.3
2.	654.8	8.	570.0
3.	560.8	9.	642.0
4.	682.8	10.	448.5
5.	387.3	11.	628.0
6.	621.5	12.	453.0

S.E./mean=116.35 lb./ac.

Crop :- Cotton (*Kharif*).

Ref :- Mh. 52(131).

Site :- Govt. Seed and Demonstration Farm, Buldana. Type :- 'CM'.

Object :- To compare the effect of G.M., F.Y.M. etc., along with different spacings, on Cotton yield.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) and (c) N.A. (ii) (a) Medium black. (b) Refer soil analysis, Buldana. (iii) 25.7.1952. (iv) (a) N.A. (b) Dibbling. (c) 14 lb./ac. (d) As per treatments. (e) N.A. (v) Nil. (vi) N.A. (vii) Unirrigated. (viii) 2 hoeings and 3 weedings. (ix) 21.81°. (x) Picking on 9.10.1952, 22.12.1952 and 7.1.1953.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 2 spacings between rows :  $S_1=18''$  and  $S_2=24''$ .

(2) 8 manurial doses :  $M_0$ =No manure,  $M_1=10$  C.L./ac. of F.Y.M.,  $M_2=20$  lb./ac. of N as A/S drilled at sowing,  $M_3=20$  lb./ac. of N as A/S top dressed 40-45 days, after sowing  $M_4$ =Sannhemp without Super,  $M_5$ =Sannhemp with 1 cwt./ac. of Super drilled at sowing,  $M_6=Udid$  without Super and  $M_7=Udid$  with 1 cwt./ac. of Super drilled at sowing.

Manures top-dressed on 8.9.1952. G.M. were given on 26.8.1952.

## 3. DESIGN :

(i) 8x2 Fact. in R.B.D. (ii) (a) 16. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 12'x36.3'. (v) 3' between plots. (vi) Yes.

## 4. GENERAL :

(i) Growth of crop was quite stunted for want of rains. (ii) Nil. (iii) Germination counts, height and *kapas* yield. (iv) (a) 1955—N.A. (b) No. (c) N.A. (v) (a) Akola and Washim. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 475 lb./ac.  
 (ii) 86.66 lb./ac.  
 (iii) Main effect of S is not significant. Main effect of M and their interaction  $S \times M$  are significant.  
 (iv) Av. yield of *kapas* in lb./ac.

	$M_0$	$M_1$	$M_2$	$M_3$	$M_4$	$M_5$	$M_6$	$M_7$	Mean
$S_1$	471	592	421	488	420	460	451	576	485
$S_2$	543	474	428	520	399	392	466	499	465
Mean	507	533	425	504	410	426	459	538	475

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

=30.64 lb./ac.  
 =15.32 lb./ac.  
 =43.33 lb./ac.

Crop :- Cotton (*Kharif*).

Ref :- Mh. 53(188).

Site :- Govt. Seed and Demonstration Farm, Buldana.

Type :- 'CM'.

Object :- To compare the effect of G.M. and F.Y.M. etc. along with different spacings on Cotton yield.

#### 1. BASAL CONDITIONS :

(i) (a) Nil. (b) N.A. (c) N.A. (iii) (a) Medium black cotton soil. (b) Refer soil analysis, Buldana. (iii) 8.7.1953. (iv) (a) and (b) N.A. (c) 14 lb./ac. (d) and (e) N.A. (v) Nil. (vi) H.420 (mid-late). (vii) Unirrigated. (viii) 2 weedings and 3 hoeings. (ix) 36.52". (x) Pickings on 18.11.1953, 1.12.1953, 21.12.1953 and 16.1.1954.

#### 2. TREATMENTS :

1. Control.
2. 10 C.L./ac. of F.Y.M.—18" line to line.
3. 20 lb./ac. of N as A/S—18" line to line.
4. 40 lb./ac. of N as A/S—18" line to line.
5. Sannhemp without P<sub>2</sub>O<sub>5</sub>—18" line to line.
6. Sannhemp with 30 lb./ac. of P<sub>2</sub>O<sub>5</sub>—18" line to line.
7. Sannhemp without P<sub>2</sub>O<sub>5</sub>—24" line to line.
8. Sannhemp with 30 lb./ac. of P<sub>2</sub>O<sub>5</sub>—24" line to line.
9. *Udid* without P<sub>2</sub>O<sub>5</sub>—18" line to line.
10. *Udid* with 30 lb./ac. of P<sub>2</sub>O<sub>5</sub>—18" line to line.
11. *Udid* without P<sub>2</sub>O<sub>5</sub>—24" line to line.
12. *Udid* with 30 lb./ac. of P<sub>2</sub>O<sub>5</sub>—24" line to line.
13. Fertiliser mixture—18" line to line.  
(Fertiliser mixture : 20 lb./ac. of N as 2 mds. of G.N.C. 2 weeks before sowing and  $\frac{1}{2}$  md. A/S at flowering).

#### 3. DESIGN :

(i) R.B.D. (ii) (a) 13. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 12' x 36.3'. (v) 3' between plots and 4' between replication. (vi) Yes.

#### 4. GENERAL :

(i) N.A. (ii) Nil. (iii) Germination, height and *kapas* yield. (iv) (a) 1952—N.A. (modified in 1953). (b) No. (c) N.A. (v) (a) Akola and Washim. (b) N.A. (vi) No reason for low yield is given. (vii) G.M. crop to be sown in between two cotton lines and to be green manured after 40-45 days. Sann green manured on 12.8.1950 and *Udid* green manured on 13.8.1953.

#### 5. RESULTS :

- (i) 279 lb./ac.  
(ii) 84.19 lb./ac.  
(iii) Treatments do not differ significantly.  
(iv) Av. yield of *kapas* in lb./ac.

Treatment	Av. yield	Treatment	Av. yield
1.	214	8.	214
2.	283	9.	284
3.	344	10.	274
4.	340	11.	282
5.	324	12.	244
6.	271	13.	269
7.	286		

S.E./mean = 42.10 lb./ac.

Crop :- Cotton (*Kharif*).

Ref :- Mh. 52(305).

Site :- Agri. Res. Stn., Kopergaon.

Type :- 'CM'.

Object :- To find out a suitable combination of manure and spacing for Cotton crop.

#### 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Gram. (c) Nil. (ii) (a) A type soil. (b) Refer soil analysis, Kopergaon. (iii) 24.5.1952. (iv) (a) 1 ploughing and 2 harrowings. (b) Dibbling. (c) 6 lb./ac. (d) As per treatments. (e) N.A. (v) 10 C.L./ac. of compost. (vi) N.A. (vii) Irrigated. (viii) 4 weedings. (ix) 11.73". (x) 13.11.1952 to 19.1.1953.

## 2. TREATMENTS :

## Main-plot treatments :

4 levels of N :  $N_1=30$ ,  $N_2=60$ ,  $N_3=90$  and  $N_4=120$  lb./ac.

## Sub-plot treatments :

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

(1) 2 levels of  $P_2O_5$  :  $P_0=0$  and  $P_1=60$  lb./ac.

(2) 2 levels of  $K_2O$  :  $K_0=0$  and  $K_1=120$  lb./ac.

(3) 2 spacings :  $S_1=2' \times 1.5'$  and  $S_2=3' \times 1.5'$ .

N supplied through A/S and G.N.C. in 1 : 1 ratio and  $P_2O_5$  and  $K_2O$  supplied through Super and Pot. Sul. respectively.

## 3. DESIGN :

(i) Split-plot. (ii) (a) 4 main-plots/block ; 8 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a)  $45' \times 12'$ , (b)  $39' \times 6'$ . (v) 3' around the net plot. (vi) Yes.

## 4. GENERAL :

(i) The growth was checked due to aphid and red leaf blight attack and also due to low rain fall. (ii) Aphid attack in the early stage and red leaf blight attack observed. (iii) *Kapas* yield. (iv) (a) 1952—1955. (b) and (c) No. (v) (a) Padegaon and Agri. College, Poona. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 874 lb./ac.  
 (ii) (a) 179.6 lb./ac.  
 (b) 171.1 lb./ac.  
 (iii) Main effect of N, P, S and interaction  $P \times S$  are highly significant. All other effects do not differ significantly.  
 (iv) Av. yield of *kapas* in lb./ac.

	$N_1$	$N_2$	$N_3$	$N_4$	Mean	$K_0$	$K_1$	$S_1$	$S_2$
$P_0$	688	783	918	845	809	802	814	872	745
$P_1$	827	933	971	1025		946	931	947	929
Mean	757	858	945	935	874	874	873		
$S_1$	762	894	1031	953	910	924	895		
$S_2$	752	822	859	917	837	824	850		
$K_0$	771	877	916	933					
$K_1$	743	838	973	938					

## S.E. of difference of two

1. N marginal means = 49.78 lb./ac.
2. P, K or S marginal means = 30.26 lb./ac.
3. P, K or S means at a level of N = 60.49 lb./ac.
4. N means at a level of P, K or S = 96.92 lb./ac.

Crop :- Cotton (*Kharif*).

Site :- Govt. Exptl. Farm, Nagpur.

Ref :- Mh. 52(152)

Type :- 'CM'.

Object : To study the effect of G.M. along with spacing and manures on Cotton yield.

## 1. BASAL CONDITIONS :

- (i) (a) Cotton-Jowar-Groundnut. (b) Groundnut. (c) Nil. (ii) (a) Black cotton soil. (b) Refer soil analysis, Nagpur. (iii) 26, 27.7.1952. (iv) (a) One deep and two shallow ploughings. (b) Dibbling. (c) 14 lb./ac. (d) 9". (e) N.A. (v) Nil. (vi) H.420 (medium). (vii) Unirrigated. (viii) One hand weeding. (ix) 29.32". (x) 6 pickings from 8.11.1953 to 22.1.1953.

## 2. TREATMENTS :

Main-plot treatments :

2 spacings :  $S_1=18''$  and  $S_2=24''$ .

Sub-plot treatments :

8 manures :  $M_0$ =Control,  $M_1$ =F.Y.M. at 10 C.L./ac.,  $M_2$ =N at 20 lb./ac. as A/S drilled at sowing,  $M_3$ =N at 20 lb./ac. as A/S top dressed,  $M_4$ =Sannhemp without Super,  $M_5$ =Sannhemp with Super,  $M_6$ =Udid without Super and  $M_7$ =Udid with Super.

## 3. DESIGN :

(i) Split-plot. (ii) (a) 2 main-plots/blocks ; 8 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) N.A. (b)  $36.3' \times 12.0'$ . (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) Very good. (ii) Nil. (iii) *Kapas* yield and height observations. (iv) (a) N.A. (b) No. (c) N.A. (v) (a) N.A. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 2734 lb./ac.

(ii) (a) 254.8 lb./ac.

(b) 191.3 lb./ac.

(iii) None of the effects is significant.

(iv) Av. yield of *kapas* in lb./ac.

	$M_0$	$M_1$	$M_2$	$M_3$	$M_4$	$M_5$	$M_6$	$M_7$	Mean
$S_1$	2792	2784	2830	2700	2933	2636	2636	2561	2734
$S_2$	2761	2711	2842	2880	2692	2648	2595	2745	2734
Mean	2776	2747	2836	2790	2813	2642	2616	2653	2734

S.E. of difference of two

1. S marginal means =63.7 lb./ac.
2. M marginal means =95.7 lb./ac.
3. M means at a level of S =141.8 lb./ac.
4. S means at a level of M =135.3 lb./ac.

Crop :-Cotton (*Kharif*).

Site :-Govt. Exptl. Farm, Nagpur.

Ref :-Mh. 53(220).

Type :-'CM'.

Object :-To study the effect of G.M. along with different manures and spacings on Cotton yield.

## 1. BASAL CONDITIONS :

(i) (a) Cotton-Jowar-Groundnut. (b) Groundnut. (c) Nil. (ii) (a) Black cotton soil. (b) Refer soil analysis, Nagpur. (iii) 20, 21.6. 1953. (iv) (a) 2 ploughings and 5 *bakharings*. (b) to (e) N.A. (v) Nil. (vi) No.91 (early). (vii) Unirrigated. (viii) N.A. (ix) 39.34". (x) Picking on 4, 20.11.1953. 8, 18.12.1953. 5, 19.1.1954.

## 2. TREATMENTS :

1. Control—18" spacing line to line.
2. F.Y.M. 10 C.L./ac.—18" spacing line to line.
3. A/S at 20 lb./ac. of N—18" spacing line to line.
4. A/S at 40 lb./ac. of N—18" spacing line to line.
5. Sannhemp without Super—18" spacing line to line.
6. Sannhemp with Super—18" spacing line to line.
7. Sannhemp without Super—24" spacing line to line.
8. Sannhemp with Super—24" spacing line to line.
9. Udid without Super—18" spacing line to line.
10. Udid with Super—18" spacing line to line.
11. Udid without Super—24" spacing line to line.
12. Udid with Super—24" spacing line to line.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 12. (b) N.A. (iii) 4. (iv) (a)  $18' \times 34.5'$ , (b)  $16.5' \times 34.5'$ . (v) 2' between plots. (vi) Yes.

## 4. GENERAL :

- (i) N.A. (ii) Nil. (iii) Heights and flower buds, *kapas* yield. (iv) (a) N.A. (b) No. (c) N.A. (v) (a) N.A. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 1167 lb./ac.  
 (ii) 179.8 lb./ac.  
 (iii) Treatments do not differ significantly.  
 (iv) Av. yield of *kapas* in lb./ac.

Treatment	Av. yield	Treatment	Av. yield
1.	1347	7.	1171
2.	1238	8.	1045
3.	1291	9.	985
4.	1211	10.	1008
5.	1182	11.	1117
6.	1221	12.	1192
	S.E./mean		=89.89 lb./ac.

Crop :- Cotton (*Kharif*).

Ref :- Mh. 53(219).

Site :- Govt. Exptl. Farm, Nagpur.

Type :- 'CM'.

Object :- To study the effect of different methods of sowing and influence of green manuring on Cotton.

## 1. BASAL CONDITIONS :

- (i) (a) Cotton—*Jowar*—Groundnut. (b) Groundnut. (c) Nil. (ii) (a) Black cotton. (b) Refer soil analysis, Nagpur. (iii) 22, 23.6.1953. (iv) (a) 4 to 5 ploughings. (b) As per treatments. (c) N.A. (d) 2' x 2'. (e) N.A. (v) Nil. (vi) Buri-0394 (late). (vii) Unirrigated. (viii) 5 hoeings and 4 weedings. (ix) 39.34°. (x) 11, 22.11.1953, 8, 25.12.1953 and 5.2.1954.

## 2. TREATMENTS :

All combinations of (1) and (2)

- (1) 3 methods of sowing :  $S_1$ =*Argada*,  $S_2$ =Hand dibbling one plant hole and  $S_3$ =Hand dibbling two plants hole.

- (2) 2 levels of green manuring :  $M_0$ =Nil and  $M_1$ =Green manuring.

Green manuring on 24.7.1953.

## 3. DESIGN :

- (i) 3 x 2 Fact. in R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) 30' x 28'. (b) 1/52th of an ac. (v) N.A. (vi) Yes.

## 4. GENERAL :

- (i) Normal. (ii) Nil. (iii) Heights of plants and *kapas* yield. (iv) (a) 1952—N.A. (b) No. (c) N.A. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 1891 lb./ac.  
 (ii) 99.32 lb./ac.  
 (iii) Only main effects of M and S are significant.  
 (iv) Av. yield of *kapas* in lb./ac.

	$M_0$	$M_1$	Mean
$S_1$	2056	1871	1963
$S_2$	1872	1334	1823
$S_3$	1976	1801	1888
Mean	1968	1815	1891

S.E. of marginal mean of M = 28.67 lb./ac.

S.E. of marginal mean of S = 35.12 lb./ac.

S.E. of body of table = 49.66 lb./ac.

Crop :- Cotton (*Kharif*).  
Site :- Agri. Res. Stn., Padegaon.

Ref :- Mh. 51(156).  
Type :- 'CM'.

Object :- To find out the optimum spacing and optimum doses of manures for Cotton.

### 1. BASAL CONDITIONS :

(i) (a) Nil. (b) and (c) N.A. (ii) (a) B type. (b) Refer soil analysis, Padegaon. (iii) 31.5.1951. (iv) (a) to (c) N.A. (d) As per treatments. (e) N.A. (v) Nil. (vi) CO. 4-B. 40. (vii) Irrigated. (viii) 2 gap-fillings, 4 weedings and 2 interculturings. (ix) 14.68". (x) 16.10.1951, 5.11.1951 and 28.11.1951.

### 2. TREATMENTS :

Main-plot treatments :

All combinations of (1) and (2)

(1) 2 spacings between rows :  $S_1=2'$  and  $S_2=3'$ .

(2) 2 spacings between plants :  $S_1'=12'$  and  $S_2'=18'$ .

Sub-plot treatments :

All combinations of (1) and (2)

(1) 3 levels of N :  $N_1=20$ ,  $N_2=40$  and  $N_3=60$  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 G.N.C. in 1 : 1 ratio and  $P_2O_5$  as Super.

### 3. DESIGN :

(i) Split-plot. (ii) (a) 4 main-plots/block ; 9 sub-plots/main-plot. (iii) 3. (iv) (a)  $29' \times 16'$ ,  $29' \times 18'$  for 2' and 3' spacings respectively. (b)  $22.68' \times 12'$ . (v) N.A. (vi) Yes.

### 4. GENERAL :

(i) The germination was rather poor. The general stand of the crop was healthy. (ii) Attack of aphids with negligible damage. (iii) *Kapas* yield. (iv) (a) to (c) No. (v) (a) and (b) N.A. (vi) and (vii) Nil.

### 5. RESULTS :

(i) 951 lb./ac.

(ii) (a) 320.7 lb./ac.

(b) 247.9 lb./ac.

(iii) Only the main effect of N and interaction  $N \times P$  are significant.

(iv) Av. yield of *kapas* in lb./ac.

	$N_1$	$N_2$	$N_3$	$S_1$	$S_2$	$S_1'$	$S_2'$	Mean
$P_0$	880	871	1011	1003	837	923	917	920
$P_1$	905	932	970	973	899	962	910	936
$P_2$	810	1137	1046	938	1057	1071	923	997
Mean	864	980	1009	971	931	985	917	951
$S_1'$	924	1013	1018	1019	952			
$S_2'$	804	947	1000	924	910			
$S_1$	893	972	1049					
$S_2$	836	988	969					

S.E. of difference of two

1. S or S' marginal means

=61.8 lb./ac.

2. N or P marginal means

=58.4 lb./ac.

3. N or P means at a level of S or S'

=82.9 lb./ac.

4. S or S' means at a level of N or P

=91.4 lb./ac.



Crop :- Cotton (*Kharif*).

Ref :- Mh. 52(188).

Site :- Agri. Res. Stn., Padegaon.

Type :- 'CM'.

Object :- To find out the optimum spacing and manurial requirements of Cotton.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Jowar*. (c) 32 lb./ac. of N as A/S+32 lb./ac. of  $P_2O_5$  as Super. (ii) (a) B type. (b) Refer soil analysis, Padegaon. (iii) 23.5.1952. (iv) (a) N.A. (b) Dibbled. (c) 10 lb./ac. (d) As per treatments. (e) 2 seed/dibble. (v) Nil. (vi) 170-CO. 2. (vii) Irrigated. (viii) 1 gap filling, 2 weedings and 2 interculturings. (ix) 11.01". (x) 4 pickings on 28.10.1952, 8.11.1952, 15.11.1952 and 20.12.1952.

## 2. TREATMENTS :

All combinations of (1), (2) and (3)+4 selective treatments.

(1) 4 levels of N as A/S :  $N_1=30$ ,  $N_2=60$ ,  $N_3=90$  and  $N_4=120$  lb./ac.(2) 2 levels of  $P_2O_5$  as Super :  $P_0=0$  and  $P_1=60$  lb./ac.(3) 2 spacings :  $S_1=2'$  and  $S_2=3'$ .and 4 selective treatments having a common dose of 120 lb./ac. of  $K_2O$  with 3' spacing :

(a) 60 lb./ac. of N.

(b) 60 lb./ac. of N+60 lb./ac. of  $P_2O_5$ .

(c) 120 lb./ac. of N.

(d) 120 lb./ac. of N+60 lb./ac. of  $P_2O_5$ .

## 3. DESIGN :

(i) R.B.D. (ii) (a) 20. (b) N.A. (iii) 4. (iv) (a) 2' spacing :  $29' \times 16'$ , 3' spacing :  $18' \times 19'$ . (b)  $12' \times 23'$ . (v) 2 rows on either side and 3' at ends. (vi) Yes.

## 4. GENERAL :

(i) Normal. (ii) Nil. (iii) *Kapas* yield. (iv) (a) 1952-1953. (b) No. (c) No. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 1546 lb./ac.

(ii) 273.4 lb./ac.

(iii) None of the effects is significant.

(iv) Av. yield of *kapas* in lb./ac.

Selective treatments	Av. yield
(a)	1494
(b)	1316
(c)	1655
(d)	1737

	$N_0$	$N_1$	$N_2$	$N_3$	Mean	$S_1$	$S_2$
$P_0$	1364	1675	1566	1388	1489	1561	1436
$P_1$	1565	1524	1659	1621	1592	1600	1584
Mean	1464	1599	1613	1504	1546	1580	1510
$S_1$	1539	1631	1563	1589			
$S_2$	1383	1569	1663	1420			

S.E. of marginal mean of N = 68.4 lb./ac.

S.E. of marginal mean of P or S = 48.3 lb./ac.

S.E. of body of  $N \times S$  or  $N \times P$  table = 96.7 lb./ac.S.E. of body of  $P \times S$  table = 68.4 lb./ac.

Crop :- Cotton (Kharif).

Ref. :- Mh. 53(277).

Site :- Agri. Res. Stn., Padegaon.

Type :- 'CM'.

Object :- To find out the optimum spacing and manurial requirements of Cotton.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Jowar. (c) N.A. (ii) (a) B type. (b) Refer soil analysis, Padegaon. (iii) 3.5.1953. (iv) (a) N.A. (b) Seed dibbled with hand. (c) 10 lb./ac. (d) Between rows 3'. (e) N.A. (v) Nil. (vi) 170 CO:2. (vii) Irrigated. (viii) 2 weedings and 1 interculturing. (ix) 16.35%. (x) 4 pickings on 7.10.1953, 20.10.1953, 5.11.1953 and 29.11.1953.

## 2. TREATMENTS :

All combinations of (1), (2) and (3)+4 selective treatments.

(1) 4 levels of N as A/S :  $N_1=30$ ,  $N_2=60$ ,  $N_3=90$  and  $N_4=120$  lb./ac.(2) 2 levels of  $P_2O_5$  as Super :  $P_0=0$  and  $P_1=60$  lb./ac.(3) 2 spacings :  $S_1=2'$  and  $S_2=3'$ .and 4 selective treatments having a common dose of 120 lb./ac. of  $K_2O$  with 3' spacing :

(a) 60 lb./ac. of N.

(b) 60 lb./ac. of N+60 lb./ac. of  $P_2O_5$ .

(c) 120 lb./ac. of N.

(d) 120 lb./ac. of N+60 lb./ac. of  $P_2O_5$ . $K_2O$  applied as Pot. Sulphate.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 20. (b) N.A. (iii) 4. (iv) (a) 2' spacing :  $15' \times 29'$ , 3' spacing :  $18' \times 29'$ . (b)  $12' \times 23'$ . (v) 2 rows on either side and 3' at either end. (vi) Yes.

## 4. GENERAL :

(i) Normal. (ii) Slight attack of blight and boll worm. (iii) *Kapas* yield. (iv) (a) 1952-1953. (b) and (c) No. (v) (a) and (b) N.A. (vi) Nil. (vii) Yield data of 4 selective treatments is N.A. at the regional head quarters.

## 5. RESULTS :

(i) 1878 lb./ac.

(ii) 288.4 lb./ac.

(iii) Main effect of S is highly significant while main effect of  $N_2$  interaction  $N \times S$  and  $P \times S$  differ significantly. Other effects are not significant.(iv) Av. yield of *kapas* in lb./ac.

	$N_1$	$N_2$	$N_3$	$N_4$	Mean	$S_1$	$S_2$
$P_0$	1778	1800	1874	1964	1854	1992	1716
$P_1$	1728	1839	1974	2064	1901	1971	1832
Mean	1753	1819	1924	2014	1878	1981	1773
$S_1$	1861	1977	2027	2061			
$S_2$	1645	1661	1820	1968			

S.E. of marginal mean of N = 72.0 lb./ac.

S.E. of marginal mean of P or S = 51.0 lb./ac.

S.E. of body of  $N \times S$  or  $N \times P$  table = 101.9 lb./ac.S.E. of body of  $P \times S$  table = 72.1 lb./ac.

Crop :- Cotton (*Kharif*).  
Site :- Agri. College Farm, Poona.

Ref :- Mh. 51(181).  
Type :- 'CM'.

Object :- To study the effect of deep and shallow tillages with and without F.Y.M. on yield of Cotton.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Jowar*. (c) N.A. (ii) (a) Medium black. (b) Refer soil analysis, Poona. (iii) 30.7.1951.  
(iv) (a) One ploughing. (b) Drilling. (c) 10 lb./ac. (d) Spacing between rows—24", Between plots irregular. (e) N.A. (v) N.A. (vi) *Jarilla*. (vii) Unirrigated. (viii) One thinning, 3 weedings and 5 interculturings. (ix) 26.62". (x) 12, 27. 11. 1951 and 15. 12. 1952.

2. TREATMENTS :

All combinations of (1) and (2)

(1) 2 levels of F.Y.M. :  $F_0=0$  and  $F_1=5$  C.L./ac.

(2) 2 cultural operations :  $C_1$ =Harrowing only and  $C_2$ =Ploughing to a depth of 6"—7".

3. DESIGN :

(i) 2×2 Fact. in R.B.D. (ii) (a) 4. (b) N.A. (iii) 8. (iv) (a) 132'×20'. (b) 124'×16'. (v) 4'×2'.  
(vi) Yes.

4. GENERAL :

(i) Not good due to late sowing and draught conditions. (ii) Attack of red cotton bug. (iii) No. of plants and *kapas* yield. (iv) (a) 1930. N.A. (b) and (c) No. (v) (a) and (b) Nil. (vi) and (vii) Nil.

5. RESULTS :

- (i) 234.0 lb./ac.  
(ii) 59.39 lb./ac.  
(iii) None of the effects differ significantly.  
(iv) Av. yield of *kapas* in lb./ac.

	$F_0$	$F_1$	Mean
$C_1$	231.0	236.0	233.5
$C_2$	220.0	248.0	234.0
Mean	225.0	242.0	234.0

S.E. of any marginal mean = 14.85 lb./ac.

S.E. of body of table = 21.00 lb./ac.

Crop :- Cotton (*Kharif*).  
Site :- Agri. College Farm, Poona.

Ref :- Mh. 52(214)  
Type :- 'CM'.

Object :- To study the effects of deep and shallow tillages with F.Y.M. on yield of Cotton.

1. BASAL CONDITIONS :

(i) (a) Cotton-*Jowar*. (b) *Jowar*. (c) N.A. (ii) (a) Medium black. (b) Refer soil analysis, Poona. (iii) 20, 21. 6. 1952. (iv) (a) 1 ploughing. (b) Drilling. (c) 10 lb./ac. (d) Spacing between rows—24" between plants irregular. (e) N.A. (v) Nil. (vi) 193-7-*Jarilla* (mid-late). (vii) Unirrigated. (viii) 4 intrculturings, 2 thinnings and 4 weedings. (ix) 22.03". (x) 11. 12. 1952, 1. 1. 1953 and 2. 2. 1953.

2. TREATMENTS :

All combinations of (1) and (2)

(1) 2 levels of F.Y.M. :  $F_0=0$  and  $F_1=5$  C.L./ac.

(2) 2 cultural operations :  $C_1$ =Harrowing only and  $C_2$ =Ploughing to a depth of 6"—7".

F.Y.M. applied on 20.6.1952.

3. DESIGN :

(i) 2×2 Fact. in R.B.D. (ii) (a) 4. (b) N.A. (iii) 8. (iv) (a) 132'×20.5'. (b) 124'×16'. (v) 4'×2.25'.  
(vi) Yes.

## 4. GENERAL:

(i) Germination good, but growth hampered due to lack of rains. (ii) Nil. (iii) *Kapas* yield. (iv) (a) 1930—N.A. (b) and (c) N.A. (v) (a) and (b) Nil (vi) and (vii) Nil.

## 5. RESULTS:

- (i) 431.0 lb./ac.  
 (ii) 110.9 lb./ac.  
 (iii) Main effects of F and C differ significantly while interaction is not significant.  
 (iv) Av. yield of *kapas* in lb./ac.

	F <sub>0</sub>	F <sub>1</sub>	Mean
C <sub>1</sub>	307.0	459.0	383.0
C <sub>2</sub>	412.0	545.0	579.0
Mean	359.0	503.0	431.0

S.E. of any marginal mean = 27.74 lb./ac.  
 S.E. of body of table = 39.24 lb./ac.

Crop :- Cotton (*Kharif*).

Ref :- Mh. 53(166).

Site :- Agri. College Farm, Poona.

Type :- 'CM'.

Object :—To study the effect of deep and shallow tillage with or without F.Y.M. on yield of Cotton.

## 1. BASAL CONDITIONS:

(i) (a) Cotton—*Jowar*. (b) *Jowar*. (c) 5 C.L./ac. of F.Y.M. (ii) (a) Medium black. (b) Refer soil analysis, Poona. (iii) 15.6.1953. (iv) (a) As per treatments. (b) to (e) N.A. (v) Nil. (vi) *Virnar* 197-3. (vii) Unirrigated. (viii) 5 interculturings, thinning and 3 weedings. (ix) 16.64°. (x) 21 to 24.11.1953, 24 to 25.12.1953 and 5.1.1954.

## 2. TREATMENTS:

All combinations of (1) and (2)

(1) 2 levels of F.Y.M. : F<sub>0</sub>=0 and F<sub>1</sub>=5 C.L./ac.

(2) 2 cultural operations : C<sub>1</sub>=Harrowing only and C<sub>2</sub>=Ploughing only to a depth of 6"-7".

## 3. DESIGN:

(i) 2×2 Fact. in R.B.D. (ii) (a) 4. (b) N.A. (iii) 8. (iv) (a) 132'×20' 7.5". (b) 124'×16'. (v) N.A. (vi) Yes.

## 4. GENERAL:

(i) Poor germination, growth unsatisfactory. (ii) No. (iii) *Kapas* yield. (iv) (a) 1933—N.A. (b) and (c) No. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS:

- (i) 100.1 lb./ac.  
 (ii) 53.34 lb./ac.  
 (iii) Main effect of F alone is significant.  
 (iv) Av. yield of *kapas* in lb./ac.

	F <sub>0</sub>	F <sub>1</sub>	Mean
C <sub>1</sub>	47.4	108.4	77.8
C <sub>2</sub>	106.7	138.1	122.4
Mean	77.0	123.2	100.1

S.E. of any marginal mean = 15.40 lb./ac.  
 S.E. of body of table = 20.77 lb./ac.

Crop :- Cotton (*Kharif*).

Ref :- Mh. 52(322).

Site :- Agri. College Farm, Poona.

Type :- 'CM'.

Object :- To find out a suitable combination of manure and spacing for Cotton crop.

**1. BASAL CONDITIONS :**

(i) (a) N.A (b) Wheat. (c) Nil. (ii) (a) Medium black soil. (b) Refer soil analysis, Poona. (iii) 27, 28.5.1952. (iv) (a) 1 ploughing. (b) Dibbling. (c) 16 lb./ac. (d) As per treatments. (e) 6-7 seeds/hill. (v) 10 C.L./ac. (vi) CO.4. (vii) Irrigated. (viii) 4 interculturings and 3 weedings. (ix) 20.03". (x) 7 pickings from 3.11.1952 to 17.3.1953.

**2. TREATMENTS :**

Main-plot treatments :

4 levels of N as A/S :  $N_1=30$ ,  $N_2=60$ ,  $N_3=90$  and  $N_4=120$  lb./ac.

Sub-plot treatments :

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

(1) 2 levels of  $P_2O_5$  as Super :  $P_0=0$  and  $P_1=60$  lb./ac.(2) 2 levels of  $K_2O$  as Pot. Sulphate :  $K_0=0$  and  $K_1=120$  lb./ac.(3) 2 spacings between rows :  $S_1=2'$  and  $S_2=3'$ .**3. DESIGN :**

(i) Split-plot. (ii) (a) 4 main-plots/block ; 8 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a)  $36' \times 15'$ . (b)  $30' \times 9'$ . (v) 3' around the plot. (vi) Yes.

**4. GENERAL :**

(i) Normal. (ii) Attack of stem-borer, pink boll worm, red cotton bugs and aphids was noticed. (iii) *Kapas* yield. (iv) (a) 1952 -1954. (b) and (c) Nil. (v) (a) Padegaon and Kopergaon. (b) N.A. (vi) and (vii) Nil.

**5. RESULTS :**

(i) 1270 lb./ac.

(ii) (a) 353.0 lb./ac.

(b) 370.0 lb./ac.

(iii) Only main effects of N, S and interaction  $S \times P$  differ significantly.(iv) Av. yield of *kapas* in lb./ac.

	$N_0$	$N_1$	$N_2$	$N_3$	Mean	$K_0$	$K_1$	$S_1$	$S_2$
$P_0$	1133	1259	1149	1434	1245	1194	1296	1395	1095
$P_1$	1234	1126	1334	1489	1295	1272	1318	1290	1299
Mean	1184	1192	1241	1460	1270	1233	1307		
$S_1$	1194	1276	1267	1634	1342	1303	1382		
$S_2$	1174	1108	1216	1287	1197	1163	1231		
$K_0$	1096	1242	1218	1373					
$K_1$	1272	1142	1266	1548					

S.E. of difference of two

1. N marginal means = 88.3 lb./ac.
2. P, K or S marginal means = 65.4 lb./ac.
3. P, K or S means at a level of N = 130.8 lb./ac.
4. N means at a level of P, K or S = 127.8 lb./ac.

Crop :- Cotton.

Ref :- Mh. 53(71).

Site :- Agri. College Farm, Poona.

Type :- 'CM'.

Object :- To study the effect of N, P and K in combination with spacing on the yield of Cotton.

## 1. BASAL CONDITIONS :

(i) (a) G.M.—Wheat—Cotton—*Mug.* (b) G.M. and Wheat. (c) G.M., 320 lb. of manure mixture and 25 lb./ac. of N. (ii) (a) Deep black. (b) Refer soil analysis, Poona. (iii) 13.5.1953. (iv) (a) Ploughing, discing and 2 harrowings. (b) Dibbling. (c) to (e) N.A. (v) 10 C.L./ac. of F.Y.M. spread and mixed during preparatory tillage. (vi) CO. 4 (late). (vii) Irrigated. (viii) 1 gapfilling, 3 weedings, 4 inter-culturings by cultivator and once earthing up. (ix) 16.64". (x) 25.12.1953, 23.1.1954 and 19.2.1954.

## 2. TREATMENTS :

Main-plot treatments :

4 levels of N as A/S:  $N_1=30$ ,  $N_2=60$ ,  $N_3=90$  and  $N_4=120$  lb./ac. of N.

Sub-plot treatments :

All combinations of (1) and (2)

(1) 2 levels of  $P_2O_5$ :  $P_0=0$  and  $P_1=60$  lb./ac. of  $P_2O_5$ .(2) 2 levels of  $K_2O$ :  $K_0=0$  and  $K_1=120$  lb./ac. of  $K_2O$ .(3) 2 spacings:  $S_1=2' \times 3'$  and  $S_2=3' \times 3'$ .

## 3. DESIGN :

(i) Split-plot. (ii) (a) 4 main-plots/block; 8 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a)  $36' \times 15'$ . (b)  $24' \times 9'$ . (v) Two lines on either side and  $3'$  at each end of the plot. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Red leaf blight disease in early stage. No control measure. Iarnids (pest) aphids, control measure taken: Nicotin Sulphate Solution and fish oil rosin soap. (iii) *Kapas* yield. (iv) (a) 1952—1954 (b) and (c) No. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 1753 lb./ac.  
 (ii) (a) 717.9 lb./ac.  
 (b) 402.9 lb./ac.  
 (iii) Main effect of P and interaction  $N \times S$  alone are significant.  
 (iv) Av. yield of *kapas* in lb./ac.

	$N_1$	$N_2$	$N_3$	$N_4$	$K_0$	$K_1$	$S_1$	$S_2$	Mean
$P_0$	1544	1839	1676	1532	1715	1580	1768	1527	1648
$P_1$	1708	1843	2016	1868	1842	1876	1956	1762	1859
Mean	1626	1841	1846	1700	1778	1728	1862	1644	1753
$S_1$	1790	1792	1924	1941	1872	1852			
$S_2$	1462	1889	1768	1459	1684	1604			
$K_0$	1589	1977	1872	1677					
$K_1$	1663	1705	1820	1723					

## S E. of difference of two

1. N marginal means = 179.7 lb./ac.
2. P, K or S marginal means = 71.2 lb./ac.
3. P, K or S means at the same level of N = 142.4 lb./ac.
4. N means at the same level of P, K or S = 205.8 lb./ac.
5. means in body of  $P \times K$ ,  $P \times S$  or  $K \times S$  table = 100.7 lb./ac.

Crop :- Cotton (*Kharif*).

Ref :- Mh. 52(127).

Site :- Govt. Seed and Demonstration Farm, Washim. Type :- 'CM'.

Object :- To study the effect of manures and spacing on yield of Cotton.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Wheat. (c) N.A. (ii) (a) Medium black. (b) N.A. (iii) 27, 28.6.1952. (iv) (a) 3 *bakharings*. (b) Sowing by *Argada*. (c) 15 lb./ac. (d) and (e) N.A. (v) Nil. (vi) H. 420. (vii) Unirrigated. (viii) 2 hoeings, 3 interculturings, 3 weedings and 3 thinnings. (ix) 17.95°. (x) 15.11.1952 and 18.12.1952.

## 2. TREATMENTS :

Main-plot treatments :

2 spacings between rows :  $S_1=18''$  and  $S_2=24''$ .

Sub-plot treatments :

8 manures :  $M_0$ =No manure,  $M_1$ =10 C.L./ac. of F.Y.M. as basal dose,  $M_2$ =20 lb./ac. of N as A/S drilled at sowing,  $M_3$ =20 lb./ac. of N as A/S top dressed 40—45 days after sowing,  $M_4$ =Sann without  $P_2O_5$ ,  $M_5$ =Sann with 1 cwt/ac. of Super at sowing,  $M_6$ =*Udid* without  $P_2O_5$  and  $M_7$ =*Udid* with 1 cwt/ac. of Super at sowing.

## 3. DESIGN :

(i) Split-plot. (ii) (a) 2 main-plots/block ; 8 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 36.3' x 12'. (v) 3' between plots. (vi) Yes.

## 4. GENERAL :

(i) Soil was cracked all over and flower buds were shedding for want of rains. (ii) Nil. (iii) Germination counts and *kapas* yield. (iv) (a) 1952—continued. (b) and (c) No. (v) (a) Akola. (b) N.A. (vi) Nil. (vii)  $P_2O_5$  as Super. Seedrate :—Sann=100 lb./ac. and *Udid*=25 lb./ac. Sann and *Udid* were buried in the soil on 13.8.1952. Sann and *Udid* seeds were sown exactly in between two rows of cotton.

## 5. RESULTS :

(i) 575.1 lb./ac.

(ii) (a) 75.50 lb./ac.

(b) 82.96 lb./ac.

(iii) Main effect of S is highly significant. Others are not significant.

(iv) Av. yield of *kapas* in lb./ac.

	$M_0$	$M_1$	$M_2$	$M_3$	$M_4$	$M_5$	$M_6$	$M_7$	Mean
$S_1$	470.5	475.3	542.0	528.2	497.0	473.5	462.5	444.2	474.1
$S_2$	692.2	678.2	689.2	683.0	595.5	735.7	703.2	631.5	676.1
Mean	581.3	576.7	615.6	605.6	496.2	604.6	582.9	537.9	575.1

S.E. of difference of two

1. S marginal means = 18.88 lb./ac.

2. M marginal means = 41.49 lb./ac.

3. M means at the same level of S = 58.67 lb./ac.

4. S means at the same level of M = 58.02 lb./ac.

Crop :- Cotton (*Kharif*).

Ref :- Mh. 53(165)/52(127).

Site :- Govt. Seed and Demonstration Farm, Washim. Type :- 'CM'.

Object :- To study the residual effect of manures and different spacings on yield of Cotton

## 1. BASAL CONDITIONS:

(i) (a) Nil. (b) Cotton. (c) As per treatments. (ii) (a) Medium black. (b) N.A. (iii) 28.6.1953. (iv) (a) 4 *bakharings*. (b) Sowing by *Argada* and *sarfa* with *bakhar* behind it. (c) 20 lb./ac. (d) and (e) N.A. (v) Nil. (vi) H-420 (medium). (vii) Unirrigated. (viii) 7 hoeings, 2 hand interculturings, 3 weedings and 1 thinning. (ix) 38.55°. (x) 7.12.1953 ; 6.1.1954.

## 2. TREATMENTS :

Main-plot treatments :

2 spacings between rows :  $S_1=18''$  and  $S_2=24''$ .

Sub-plot treatments :

8 manures :  $M_0$ =No manure,  $M_1=10$  C.L./ac. of F.Y.M.,  $M_2=20$  lb./ac. of N as A/S drilled with seed,  $M_3=20$  lb./ac. of N as A/S top dressed,  $M_4$ =Sann alone,  $M_5$ =Sann with 1 cwt./ac. of Super drilled with seed,  $M_6=Udid$  alone,  $M_7=Udid$  with 1 cwt./ac. of Super drilled with seed.

Treatments applied during 1952-53 and residual effect studied this year.

## 3. DESIGN :

(i) Split-plot. (ii) (a) 2 main-plots/block; 8 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) N.A. (b)  $12' \times 36.3'$ . (v) 3' between plots. (vi) Yes.

## 4. GENERAL :

(i) Normal. (ii) Nil. (iii) *Kapas* yield. (iv) (a) 1952-53 (residual effect from 1953-54)—continued. (b) Yes. (c) N.A. (v) (a) Akola ; Buldana. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 237.5 lb./ac.  
 (ii) (a) 78.83 lb./ac.  
 (b) 40.10 lb./ac.  
 (iii) Only interaction MS is significant.  
 (iv) Av. yield of *kapas* in lb./ac.

	$M_0$	$M_1$	$M_2$	$M_3$	$M_4$	$M_5$	$M_6$	$M_7$	Mean
$S_1$	238.0	233.0	264.0	226.0	264.0	244.0	218.0	234.0	240.0
$S_2$	198.0	234.0	273.0	231.0	248.0	221.0	228.0	246.0	235.0
Mean	218.0	233.5	268.5	228.5	256.0	232.5	223.0	240.0	237.5

S.E. of difference of two

1. S marginal means =19.70 lb./ac.  
 2. M Marginal means =20.04 lb./ac.  
 3. M means at the same level of S =28.33 lb./ac.  
 4. S means at the same level of M =33.00 lb./ac.

Crop :- Cotton (*Kharif*).

Ref :- Mh. 53(167).

Site :- Govt. Seed and Demonstration Farm, Washim.

Type :- 'CM'.

Object :- To study the effect of manuring and spacing on yield of Cotton.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Jowar*. (c) N.A. (ii) Medium black. (b) N.A. (iii) 29.6.1953. (iv) (a) 4 *bakharings*. (b) N.A. (c) 15 lb./ac. (d) and (e) N.A. (v) Nil. (vi) H.420 (medium). (vii) Unirrigated. (viii) 4 hoeings ; 3 weedings, and 1 interculturing. (ix) 38.55%. (x) 2.12.1953 ; 22.12.1953 and 16.1.1954.

## 2. TREATMENTS :

Manure	Spacing between rows.	Manure	spacing between rows.
(1) Control (no manure)	—18".	(7) G.M. with Sann	—24".
(2) 10 C.L./ac. of F.Y.M.	—18".	(8) G.M. with Sann+30 lb./ac. of $P_2O_5$	—24".
(3) 20 lb./ac. of N as A/S	—18".	(9) G.M. with <i>Udid</i>	—18".
(4) 40 lb./ac. of N as A/S	—18".	(10) G.M. with <i>Udid</i> +30 lb./ac. of $P_2O_5$	—18".
(5) G.M. with Sann	—18".	(11) G.M. with <i>Udid</i>	—24".
(6) G.M. with Sann+30 lb./ac. of $P_2O_5$	—18".	(12) G.M. with <i>Udid</i> +30 lb./ac. of $P_2O_5$	—24".

## 3. DESIGN :

(i) R.B.D. (ii) (a) 12. (b) N.A. (iii) 4. (iv) (a) N.A. (b)  $12' \times 36.3'$ . (v) 3' between plots. (vi) Yes.



## 4. GENERAL :

(i) Normal. (ii) Mild attack of Aphids, which was controlled by lady-bird beetles. (iii) *Kapas* yield. (iv) (a) 1952-53 (modified in 1953-54) continued. (b) and (c) No. (v) (a) Akola, Buldana. (b) N.A. (vi) Nil. (vii) G.M. buried in soil on 29.7.1953.

Seed rates : Sann            *Udid*  
                  100 lb./ac.        25 lb./ac.

## 5. RESULTS :

(i) 381.6 lb./ac.  
(ii) 37.47 lb./ac.  
(iii) Treatments differ highly significantly.  
(iv) Av. yield of *kapas* in lb./ac.

Treatment	Av. yield	Treatment	Av. yield
1.	264.0	7.	310.0
2.	333.0	8.	373.0
3.	463.0	9.	344.0
4.	518.0	10.	454.0
5.	347.0	11.	407.0
6.	376.0	12.	390.0
S.E./mean		=18.73 lb./ac.	

Crop :- Cotton (*Kharif*).

Ref :- Mh. 52(180).

Site :- Govt. Exptl. Farm, Yeotmal.

Type :- 'CM'.

Object :- To study the effect of manuring and spacing on yield of Cotton.

## 1. BASAL CONDITIONS :

(i) (a) *Jowar*-Groundnut-Cotton. (b) Groundnut. (c) N.A. (ii) (a) Medium black loam. (b) Refer soil analysis, Yeotmal. (iii) 29.6.1952. (iv) (a) 4 *bakharings*. (b) Sowing by hand dibbling. (c) N.A. (d) As per treatments. (e) N.A. (v) Nil. (vi) H.420 (medium) (vii) Unirrigated. (viii) 4 weedings. (ix) 40.28". (x) Pickings from 2nd week of October 1952 to 1st week of January 1953.

## 2. TREATMENTS :

1. Control—18" spacing.
2. F.Y.M. 10 C.L./ac.—18" spacing
3. A/S at 20 lb./ac. of N drilled at sowing—18" spacing.
4. A/S at 20 lb./ac. of N top dressed after 40 days of sowing—18" spacing.
5. Sann without Super 9".
6. Sann with Super at 1 cwt./ac. drilled at sowing—9" spacing.
7. *Udid* without Super—9" spacing.
8. *Udid* with Super at 1 cwt./ac.—9" spacing.
9. Control—24" spacing.
10. F.Y.M. 10 C.L./ac.—24" spacing.
11. A/S at 20 lb./ac. of N at the time of sowing—24" spacing.
12. A/S at 20 lb./ac. of N top dressed after 40 days of sowing—24" spacing.
13. Sann without Super—12" spacing.
14. Sann with Super at 1 cwt./ac. drilled at sowing—12" spacing.
15. *Udid* without Super—12" spacing.
16. *Udid* with Super at sowing—12" spacing.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 16. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 36.3' × 12'. (v) 4 plants and one row on each side. (vi) Yes.

## 4. GENERAL :

(i) Satisfactory. (ii) Nil. (iii) *Kapas* yield. (iv) (a) 1952—contd. (b) No. (c) N.A. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 923 lb./ac.  
(ii) 148.0 lb./ac.  
(iii) Treatment differences are highly significant.

(iv) Av. yield of *kapas* in lb./ac.

Treatment	Av. yield	Treatment	Av. yield
1.	1028	9.	767
2.	1086	10.	702
3.	1394	11.	914
4.	978	12.	822
5.	845	13.	767
6.	783	14.	835
7.	1171	15.	762
8.	1062	16.	858
S.E./mean		=74.0 lb./ac.	

Crop :- Cotton (*Kharif*).

Ref :- Mh. 53(297).

Site :- Govt. Exptl. Farm, Yeotmal.

Type :- 'CM'.

Object :- To study the effect of manuring and spacing on yield of Cotton.

## 1. BASAL CONDITIONS :

(i) (a) *Jowar*-Groundnut-Cotton. (b) Groundnut. (c) N.A. (ii) (a) Black medium soil. (b) Refer soil analysis, Yeotmal. (iii) 27.6.1953. (iv) (a) 3 *bakharings*. (b) and (c) N.A. (d) As per treatments. (e) N.A. (v) Nil. (vi) H.420 (medium). (vii) Unirrigated. (viii) 1 weeding and thinning. (ix) 37.63". (x) 14, 11, 1953, 1, 29.12. 1953.

## 2. TREATMENTS :

- Control—18" spacing between rows.
- F.Y.M. at 10 C.L./ac.—18" spacing.
- A/S at 20 lb./ac. of N drilled at sowing—18" spacing.
- A/S at 20 lb./ac. of N top dressed after 40 days—18" spacing.
- Sann without Super—9" spacing.
- Sann with Super at 1 cwt./ac. drilled at sowing 9" spacing.
- Udid* without Super—9" spacing.
- Udid* with Super at 1 cwt./ac. drilled at sowing—9" spacing.
- Control—24" spacing.
- F.Y.M. at 10 C.L./ac.—24" spacing.
- A/S at 20 lb./ac. of N at the time of sowing—24" spacing.
- A/S at 20 lb./ac. of N top dressed after 40 days—24" spacing.
- Sann without Super—12" spacing.
- Sann with Super at 1 cwt./ac. drilled at sowing—12" spacing.
- Udid* without Super—12" spacing.
- Udid* with Super at 1 cwt./ac. drilled at sowing—12" spacing.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 16. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 1/100 ac. (v) N.A. (vi) Ycs.

## 4. GENERAL :

(i) Good. (ii) Nil. (iii) *Kapas* yield. (iv) (a) 1592—N.A. (b) No. (c) N.A. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- 494 lb./ac.
- 125.0 lb./ac.
- Treatments do not differ significantly.
- Av. yield of *Kapas* in lb./ac.

Treatment	Av. yield	Treatment	Av. yield
1.	441	9.	402
2.	462	10.	494
3.	475	11.	662
4.	428	12.	613
5.	478	13.	442
6.	425	14.	528
7.	530	15.	530
8.	553	16.	445
S.E./mean		=62.5 lb./ac.	

Crop :- Cotton (*Kharif*).  
Site :- Govt. Exptl. Farm, Nagpur.

Ref :- Mh. 53(221);  
Type :- 'CMV'.

Object :- To study the effect of manuring on different Cotton varieties along with different spacings.

1. BASAL CONDITIONS :

(i) (a) Cotton—*Jowar*—Groundnut. (b) Groundnut. (c) Nil. (ii) (a) Black cotton soil. (b) Refer soil analysis, Nagpur. (iii) 11 and 12.6.1953. (iv) (a) 5 ploughings. (b) to (e) N.A. (v) Nil. (vi) As per treatments. (vii) Irrigated. (viii) N.A. (ix) 39.34". (x) Pickings on 28.10.1953, 5,10,21.11.1953, 9, 25.12.1953 and 9.1.1954.

2. TREATMENTS :

All combinations of (1) and (2)

(1) 4 spacings cum varieties :  $S_1V_1$ =Variety No. 91 spacings  $9'' \times 18''$ ,  $S_2V_1$ =Variety No. 91 spacing  $9'' \times 24''$ ,  $S_3V_2$ =Variety Buri-0394 spacing  $12'' \times 24''$  and  $S_4V_2$ =Variety Buri-0394 spacing  $12'' \times 36''$ .

(2) 3 manurial doses :  $M_0$ =Control (no manure),  $M_1$ =30 lb./ac. of N and  $M_2$ =30 lb./ac. of N+30 lb./ac. of  $P_2O_5$ .  
Manuring on 20.7.1953.

3. DESIGN :

(i)  $3 \times 4$  Fact. in R.B.D. (ii) (a) 12. (b) N.A. (iii) 4. (iv) (a) N.A. (b)  $24' \times 14'$ . (v) N.A. (vi) Yes.

4. GENERAL :

(i) Good. (ii) Nil. (iii) Height, flower bud observation and *kapas* yield. (iv) (a) N.A. (b) No. (c) N.A. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 1947 lb./ac.  
(ii) 295.4 lb./ac.  
(iii) Only the effect of SV is highly significant.  
(iv) Av. yield of *kapas* in lb./ac.

	$S_1V_1$	$S_2V_1$	$S_3V_2$	$S_4V_2$	Mean
$M_0$	2077	1978	1954	2011	2006
$M_1$	2149	1942	1708	1746	1886
$M_2$	2093	2294	1640	1767	1949
Mean	2106	2071	1769	1841	1947

S.E. of SV marginal mean = 85.3 lb./ac.  
S.E. of M marginal mean = 73.9 lb./ac.  
S.E. of body of table = 147.7 lb./ac.

Crop :- Cotton (*Kharif*).  
Site :- Govt. Exptl. Farm, Nagpur.

Ref :- Mh. 51(167).  
Type :- 'CMV'.

Object :- To study the effect of manuring on different Cotton varieties along with different spacings.

1. BASAL CONDITIONS :

(i) (a) Cotton—*Jowar*. (b) *Jowar*. (c) Nil. (ii) (a) Black cotton soil. (b) Refer soil analysis, Nagpur. (iii) 9,10.7.1951. (iv) (a) N.A. (b) Sowing by hand dibbling. (c) to (e) N.A. (v) Nil. (vi) As per treatments. (vii) Unirrigated. (viii) 2 hoeings and 2 weedings. (ix) 38.29". (x) Pickings on 21.11.1951, 13.12.1951 and 11.1.1952.

2. TREATMENTS

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

(1) 3 varieties :  $V_1$ =Verun-434,  $V_2$ =H.420 and  $V_3$ =Buri-0396.

(3) 3 levels of N :  $N_0=0$ ,  $N_1=15$  and  $N_2=30$  lb./ac.

(2) 3 spacings :  $S_1=6''$ ,  $S_2=12''$  and  $S_3=18''$ .

**3. DESIGN :**

(i)  $3^3$  confounded, partially confounding VNS<sup>2</sup> and VN<sup>2</sup>S effects. (ii) (a) 9 plots/block ; 3 blocks/replication. (b) N.A. (iii) 2. (iv) (a) N.A. (b) 66' × 16.5'. (v) N.A. (vi) Yes.

**4. GENERAL :**

(i) Normal. (ii) Nil. (iii) *Kapas* yield. (iv) (a) N.A. (b) No. (c) N.A. (v) (a) and (b) N.A. (vi) and (vii) Nil.

**5. RESULTS :**

- (i) 896 lb./ac.  
 (ii) 414.4 lb./ac.  
 (iii) All the main effects and their interactions are not significant.  
 (iv) Av. yield of *kapas* in lb./ac.

	V <sub>1</sub>	V <sub>2</sub>	V <sub>3</sub>	Mean	S <sub>1</sub>	S <sub>2</sub>	S <sub>3</sub>
N <sub>0</sub>	864	724	703	764	809	751	730
N <sub>1</sub>	985	1000	768	918	1073	878	802
N <sub>2</sub>	1159	1085	772	1005	1013	1087	917
Mean	1003	936	748	896	965	905	816
S <sub>1</sub>	1066	1089	740				
S <sub>2</sub>	1042	840	835				
S <sub>3</sub>	901	880	668				

S.E. of any marginal mean = 97.7 lb./ac.  
 S.E. of body of any table = 169.2 lb./ac.

Crop :- Cotton (*Khari*).

Ref :- Mh. 52(153).

Site :- Govt. Exptl. Farm, Nagpur.

Type :- 'CMV'.

Object :- To study the effect of manuring on different Cotton varieties along with different spacings.

**1. BASAL CONDITIONS :**

- (i) (a) Cotton—*Jowar*. (b) *Jowar*. (c) Nil. (ii) (a) Black cotton soil. (b) Refer soil analysis, Nagpur. (iii) 1.7.1952. (iv) (a) 1 deep and one shallow *bakharing*. (b) to (e) N.A. (v) Nil. (vi) As per treatments. (vii) Unirrigated. (viii) 3 weeding, 5 interculturings and 1 thinning. (ix) 29.32". (x) 5 pickings from 7.11.1952 to 22.1.1953.

**2. TREATMENTS :**

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

- (1) 3 varieties : V<sub>1</sub>=Verun-434, V<sub>2</sub>=H.420 and V<sub>3</sub>=Buri-0396.  
 (2) 3 doses of N : N<sub>0</sub>=0, N<sub>1</sub>=15 and N<sub>2</sub>=30 lb./ac.  
 (3) 3 spacings : S<sub>1</sub>=6", S<sub>2</sub>=12" and S<sub>3</sub>=18".

**3. DESIGN :**

(i)  $3^3$  confounded, partially confounding VNS<sup>2</sup> and VN<sup>2</sup>S effects. (ii) (a) 9 plots/block ; 3 blocks/replication. (b) N.A. (iii) 2. (iv) (a) N.A. (b) 66' × 16.5'. (v) Nil. (vi) Yes.

**4. GENERAL :**

(i) Very good. (ii) Nil. (iii) *Kapas* yield. (iv) (a) 1950—N.A. (b) No. (c) N.A. (v) (a) N.A. (b) N.A. (vi) Nil. (vii) These are high yields and no reason given by A.R.S.

**5. RESULTS :**

- (i) 3380 lb./ac.  
 (ii) 88.48 lb./ac.  
 (iii) Main effects of V and N only are highly significant.

(iv) Av. yield of *Kapas* in lb./ac.

	V <sub>1</sub>	V <sub>2</sub>	V <sub>3</sub>	Mean	S <sub>1</sub>	S <sub>2</sub>	S <sub>3</sub>
N <sub>0</sub>	3312	3140	2608	3020	3115	3162	2786
N <sub>1</sub>	3651	3453	3168	3424	3475	3490	3307
N <sub>2</sub>	3718	3838	3528	3695	3579	3763	3742
Mean	3560	3477	3101	3380	3390	3472	3279
S <sub>1</sub>	3595	3339	3235				
S <sub>2</sub>	3629	3618	3168				
S <sub>3</sub>	3459	3477	2901				

S.E. of any marginal mean = 20.85 lb./ac.

S.E. of body of any table = 36.12 lb./ac.

Crop :- Cotton (*Kharif*).

Ref :- Mh. 50(115).

Site :- Agri. Res. Stn., Padegaon.

Type :- 'CMV'.

Object :—To find out the best combination of spacing and manure for different Cotton varieties.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) N.A. (c) N.A. (ii) (a) B type. (b) Refer soil analysis, Padegaon. (iii) 25.5.1950. (iv) (a) to (c) N.A. (d) As per treatments. (e) N.A. (v) Nil. (vi) As per treatments. (vii) Irrigated. (viii) 8 weedings. (ix) 22.91%. (x) 17.10.1950, 12.11.1950 and 3.12.1950.

## 2. TREATMENTS :

Main-plot treatments :

All combinations of (1) and (2)

(1) 4 varieties : V<sub>1</sub>=CO.4, V<sub>2</sub>=197-3, V<sub>3</sub>=CO.4-B<sub>4</sub>D and V<sub>4</sub>=P-American.(2) 2 spacings between rows : S<sub>1</sub>=2' and S<sub>2</sub>=3'.

Sub-plot treatments :

All combinations of (1) and (2)

(1) 3 levels of N as A/S and G.N.C. in 1 : 1 ratio : N<sub>0</sub>=0, N<sub>1</sub>=20 and N<sub>2</sub>=40 lb./ac.(2) 2 spacings between plants : S'<sub>1</sub>=9" and S'<sub>2</sub>=12".

## 3. DESIGN :

(i) Split-plot. (ii) (a) 8 main-plots/block ; 6 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) Sub-plot: 36' × 42' for 2' spacing and 36' × 42' for 3' spacing. (b) 24' × 36'. (v) 3 rows on either side for 2' spacing and 2 rows on either side for 3' spacing. (vi) Yes.

## 4. GENERAL :

(i) Low yield. (ii) Affected with aphid, leaf curl and red cotton bug. Season abnormal, heavy rains in August and September. (iii) Seed cotton and *Kapas* yield. (iv) (a) No. (b) and (c) No. (v) (a) and (b) N.A. (vi) Nil. (vii) Plot wise yield data N.A. Hence not analysed.

## 5. RESULTS :

(i) 603 lb./ac.

(ii) N.A.

(iii) N.A.

(iv) Av. yield of *kapas* in lb./ac.

	V <sub>1</sub> S <sub>1</sub>	V <sub>2</sub> S <sub>1</sub>	V <sub>3</sub> S <sub>1</sub>	V <sub>4</sub> S <sub>1</sub>	V <sub>1</sub> S <sub>2</sub>	V <sub>2</sub> S <sub>2</sub>	V <sub>3</sub> S <sub>2</sub>	V <sub>4</sub> S <sub>2</sub>	Mean
N <sub>0</sub> S' <sub>1</sub>	570	702	746	466	55	444	513	358	544
N <sub>1</sub> S' <sub>1</sub>	714	802	624	268	582	690	652	335	583
N <sub>2</sub> S' <sub>1</sub>	642	875	669	612	449	764	691	432	642
N <sub>0</sub> S' <sub>1</sub>	720	610	762	417	527	456	606	343	555
N <sub>1</sub> S' <sub>2</sub>	544	889	629	588	533	652	722	327	610
N <sub>2</sub> S' <sub>2</sub>	647	1074	887	538	489	660	620	592	688
Mean	637	825	720	481	522	611	634	398	603

S.E.s—N.A.

Crop :- Cotton (*Kharif*).

Ref :- Mh. 53(9).

Site :- Cotton Res. Stn., Parbhani.

Type :- 'D'.

Object :- To study the effect of treating seed with perenox on Cotton yield and on black arm disease.

## 1. BASAL CONDITIONS :

(i) Cotton—Groundnut. (b) Cotton. (c) Nil. (ii) (a) Medium black cotton soil. (b) Refer soil analysis, Parbhani. (iii) 14.7.1953. (iv) (a) One ploughing and 2 harrowings. (b) Dibbling. (c) 81 seeds/row of 21'. (d) 18". (e) N.A. (v) Nil. (vi) *Gaorani*—12. (vii) Unirrigated. (viii) 2 weedings and 2 hoeings. (ix) 40.32%. (x) Picking on 16.12.1953, 7 27.1.1954 and 10.2.1954.

## 2. TREATMENTS :

- Control (untreated).
- Seed treated with perenox before sowing at the rate of one ounce of perenox for 10 lb. of seed.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 2. (b) N.A. (iii) 4. (iv) (a) 21'×4½'. (b) 19'×4½'. (v) One non-experimental row at either end and one after each replication. (vi) Yes.

## 4. GENERAL :

(i) Not satisfactory due to late sowing and rains. (ii) Nil. (iii) Final stand, yield of *kapas*, halo length, ginning and weight of 100 seeds. (iv) (a) 1953—1954. (b) and (c) Nil. (v) (a) Badnapur. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 295.2 lb./ac.  
(ii) 106.9 lb./ac.  
(iii) Treatment differences are not significant.  
(iv) Av. yield of *kapas* in lb./ac.
- | Treatment | Av. yield     |
|-----------|---------------|
| 1.        | 299           |
| 2.        | 289           |
| S.E./mean | =52.8 lb./ac. |

Crop :- Cotton (*Kharif*).

Ref :- Mh. 53(10).

Site :- Cotton Res. Stn., Parbhani.

Type :- 'D'.

Object :- To study the effect of treating seed with perenox on Cotton yield and on black arm disease.

## 1. BASAL CONDITIONS :

(i) (a) Cotton—Groundnut. (b) Cotton. (c) Nil. (ii) (a) Medium black cotton soil. (b) Refer soil analysis, Parbhani. (iii) 14.7.1953. (iv) (a) One ploughing and 2 harrowings. (b) Drilling. (c) 42 seeds per row of 21'. (d) 18". (e) N.A. (v) Nil. (vi) Parbhani American I. (vii) Unirrigated. (viii) 2 weedings and 2 hoeings. (ix) 40.32%. (x) Picking on 16.12.1953, 7.1.1954, 27.1.1954 and 10.2.1954.

## 2. TREATMENTS :

1. Control (untreated).
2. Treated with perenox before sowing at the rate of one ounce of perenox for 10 lb. of seed.

## 3. DESIGN :

- (i) R.B.D. (ii) (a) 2. (b) N.A. (iii) 4. (iv) (a) 21'×4½'. (b) 19'×4½'. (v) One non-experimental row at either end and one after each replication. (vi) Yes.

## 4. GENERAL :

- (i) Growth not satisfactory due to late sowing and rains. (ii) Nil. (iii) Final stand, yield of *kapas*, halo length and ginning %. (iv) (a) 1953—1954. (b) and (c) No. (v) (a) Badnapur. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 162.9 lb./ac.  
 (ii) 34.10 lb./ac.  
 (iii) Treatment differences are not significant.  
 (iv) Av. yield of *kapas* in lb./ac.

Treatment	Av. yield
1.	153
2.	172
S.E./mean	=17.00 lb./ac.

Crop :- Cotton (*Kharif*).

Ref :- Mh. 52(178).

Site :- Govt. Exptl. Farm, Yeotmal.

Type :- 'D'.

Object :- To study the effect of Agrosan G.N. on Cotton.

## 1. BASAL CONDITIONS :

- (i) (a) *Jowar*-Groundnut-Cotton. (b) Groundnut. (c) N.A. (ii) (a) Black medium soil. (b) Refer soil analysis, Yeotmal. (iii) 4.7.1952. (iv) (a) 5 *bakharings*. (b) Dibbling. (c) to (e) N.A. (v) F.Y.M. at 5 C.L./ac. during May 52. (vi) H.420. (medium). (vii) Unirrigated. (viii) 2 weedings and 4 hoeings. (ix) 40.28". (x) 1st week of Nov. 1952 to 1st week of Jan. 1953.

## 2. TREATMENTS :

1. Seeds treated with Agrosan G.N.
2. Seeds untreated.

## 3. DESIGN :

- (i) R.B.D. (ii) (a) 2. (b) N.A. (iii) 2. (iv) (a) N.A. (b) 1/40th of an acre. (v) N.A. (vi) Yes.

## 4. GENERAL :

- (i) Satisfactory and uniform. (ii) Nil. (iii) *Kapas* yield. (iv) (a) No. (b) No. (c) N.A. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 691 lb./ac.  
 (ii) 42.80 lb./ac.  
 (iii) Treatments do not differ significantly.  
 (iv) Av. yield of *kapas* in lb./ac.

Treatment	Av. yield.
1.	707
2.	675
S.E./mean	=30.27 lb./ac.

Crop :- Cotton (*Kharif*).

Ref :- Mh. 53(16).

Site :- Plant Breeding Stn., Latur.

Type :- 'D'.

Object :- To study the effect of treating seed with perenox on Cotton yield and on black arm disease.

**1. BASAL CONDITIONS :**

(i) (a) *Jowar*-Groundnut-Cotton. (b) *Kharif Jowar*. (c) F.Y.M. at 10 C.L./ac. (ii) (a) Medium Deep black clayey soil. (b) Refer soil analysis, Latur. (iii) 22.6.1953. (iv) (a) One ploughing, once cleaning and bunding of drain channels. (b) Drilling. (c) 16 lb./ac. (d) and (e) N.A. (v) F.Y.M. at 10 C.L./ac. (vi) As per treatments. (vii) Unirrigated. (ix) 41.10". (x) Picking on 17.11.1953, 2.12.1953, 17.12.1953, and 16.1.1954.

**2. TREATMENTS :**

Main-plot treatments :

4 varieties :-  $V_1 = \text{Gaorani-12}$ ,  $V_2 = \text{Jarilla}$ ,  $V_3 = 2204$  and  $V_4 = 226$ .

Sub-plot treatments :

2 seed dressings :  $D_0 = \text{untreated seed}$  and  $D_1 = \text{seed dressed with perenox at 1 oz. of perenox for 10 lb. of seed, previously treated with cowdung paste.}$ **3. DESIGN :**

(i) Split-plot. (ii) (a) 4 main-plots/block; 2 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 64' x 9'. (b) 60' x 6'. (v) One row on each flank of the plot and 2' distance on each extremity of the row. (vi) Yes.

**4. GENERAL :**

(i) Not satisfactory. (ii) Nil. (iii) *Kapas* yield. (iv) (a) 1953-1955. (b) No. (c) N.A. (v) (a) Nanded. (b) N.A. (vi) Nil. (vii) The attack of blackarm on dressed and undressed plots till September was quite obvious ; later on the difference was negligible.

**5. RESULTS ;**

- (i) 88 lb./ac.  
 (ii) (a) 38.81 lb./ac.  
 (b) 20.12 lb./ac.  
 (iii) None of the effects is significant.  
 (iv) Av. yield of *kapas* in lb./ac.

	$V_1$	$V_2$	$V_3$	$V_4$	Mean
$D_0$	65	84	87	119	89
$D_1$	63	76	91	115	86
Mean	64	80	89	117	88

S.E. of difference of two

1. V marginal means = 19.40 lb./ac.  
 2. D marginal means = 7.11 lb./ac.  
 3. D means at the same level of V = 14.23 lb./ac.  
 4. V means at the same level of D = 21.86 lb./ac.

Crop :- Cotton (*Kharif*).

Ref :- Mh. 53(26).

Site :- Cotton Res. Stn., Nanded.

Type :- 'D'.

Object :- To test the efficacy of treating seeds with perenox on yield of Cotton and on black arm disease.

**1. BASAL CONDITIONS :**

(i) (a) N.A. (b) *Rabi Jowar*. (c) F.Y.M. at the rate of 30 C.L./ac. (ii) (a) Black cotton soil. (b) Refer soil analysis, Nanded. (iii) 25.6.1953. (iv) (a) *Bakharing* thrice. (b) Drilling. (c) 168 seeds per row of 42' length. (d) and (e) N.A. (v) Nil. (vi) As per treatments. (vii) Unirrigated. (viii) Weeding twice and hoeing once. (ix) 45.13". (x) Picking on 27.11.1953, 12.12.1953 and 12.1.1954.



## 2. TREATMENTS:

## Main-plot treatments :

4 varieties :  $V_1$ =Gaorani-6,  $V_2$ =Gaorani-12,  $V_3$ =1422, and  $V_4$ =Jarilla.

## Sub-plot treatments :

2 seed dressings :  $D_0$ =Control (undressed seed), and  $D_1$ =Seed dressed with perenox.

Dressing with perenox was done at the rate of 1 ounce of perenox to 10 lb. of seed, previously treated with cowdung paste.

## 3. DESIGN:

(i) Split-plot. (ii) (a) 4 main-plots/block ; 2 sub-plots/main-plot. (b) N.A. (iii) 6. (iv) (a) 9'x42'. (b) 6'x40'. (v) One row on each flank and 1' at each extremity of every row. (vi) Yes.

## 4. GENERAL :

(i) Not satisfactory due to heavy rains. (ii) Incidence of black arm. (iii) Germination and final stand, weekly infection of black arm, boll weight, ginning percentage, fibre properties and kapas yield. (iv) (a) 1953 to 1954. (b) No. (c) N.A. (v) (a) Latur. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 199 lb./ac.

(ii) (a) 45.57 lb./ac.

(b) 37.24 lb./ac.

(iii) Only V effect is significant.

(iv) Av. yield of *Kapas* in lb./ac.

	$V_1$	$V_2$	$V_3$	$V_4$	Mean
$D_0$	150	194	232	218	198
$D_1$	161	230	208	202	200
Mean	156	212	220	210	199

## S.E. of difference of two

1. V marginal means = 18.67 lb./ac.
2. D marginal means = 10.75 lb./ac.
3. D means at the same level of V = 21.40 lb./ac.
4. V means at the same level of D = 24.00 lb./ac.

Crop :- Groundnut (*Kharif*).

Site :- Govt. Exptl. Farm, Akola.

Ref :- Mh. 48(40).

Type :- 'M'.

Object :- To study the effect of different doses of G.N.C. on Groundnut.

## 1. BASAL CONDITIONS :

(i) (a) Groundnut—*Jowar*. (b) *Jowar*. (c) Nil. (ii) (a) Black cotton soil. (b) Refer soil analysis, Akola. (iii) 4.7.1948. (iv) (a) 1 ploughing and 2 *bakharings*. (b) Sowing by 4 typed country plough. (c) 90 lb./ac. (d) 12'x6'. (e) N.A. (v) Nil. (vi) AK 12—24 (medium). (vii) Unirrigated. (viii) 1 hoeing and 2 weedings. (ix) 31.52'. (x) 14.10.1948.

## 2. TREATMENTS :

1. No manure.
2. 10 lb./ac. of N as G.N.C.
3. 20 lb./ac. of N as G.N.C.
4. 30 lb./ac. of N as G.N.C.
5. 40 lb./ac. of N as G.N.C.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 6. (iv) (a) N.A. (b) 33'x33'. (v) One row on either side of each plot. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Aphids attack noticed in August. No control measures taken. (iii) Pods and tops yield. (iv) (a) 1945 to 1949. (b) No. (c) N.A. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 853 lb./ac.  
 (ii) 156.9 lb./ac.  
 (iii) Treatments do not differ significantly.  
 (iv) Av. yield of pods in lb./ac.

Treatment	Av. yield
1.	808
2.	960
3.	840
4.	825
5.	833
S.E./mean	=64.08 lb./ac.

Crop :- Groundnut (*Kharif*).  
 Site :- Govt Exptl. Farm, Akola.

Ref :- Mh. 49(67).  
 Type :- 'M'.

Object :- To study the effect of different doses of G.N.C. on Groundnut.

## 1. BASAL CONDITIONS :

(i) (a) Groundnut-*Jowar*. (b) *Jowar*. (c) Nil. (ii) (a) Black cotton soil. (b) Refer soil analysis, Akola. (iii) 3.7.1949. (iv) (a) 2 heavy and 1 light *bakharings*. (b) By *Argada*. (c) 90 lb./ac. (d) 18" x 12". (e) N.A. (v) Nil. (vi) AK 12-24. (vii) Unirrigated. (viii) 3 hoeings and 2 weedings. (ix) 42.93". (x) 25.10.1949.

## 2. TREATMENTS :

- No manure.
- 10 lb./ac. of N as G.N.C.
- 20 lb./ac. of N as G.N.C.
- 30 lb./ac. of N as G.N.C.
- 40 lb./ac. of N as G.N.C.

Manures applied on 20.6.1949.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 6. (iv) (a) N.A. (b) 33' x 33'. (v) One row on either side of each plot. (vi) Yes.

## 4. GENERAL :

(i) Normal. (ii) Attack of Aphids; No control measures taken. (iii) Pods and tops yield. (iv) (a) 1945-1949. (b) No. (c) N.A. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 858 lb./ac.  
 (ii) 127.8 lb./ac.  
 (iii) Treatments do not differ significantly.  
 (iv) Av. yield of pods in lb./ac.

Treatment	Av. yield
1.	783
2.	922
3.	873
4.	832
5.	878
S.E./mean	=52.18 lb./ac.

Crop :- Groundnut.

Ref :- Mh. 50(87).

Site :- Govt. Seed and Demonstration Farm, Buldana.

Type :- 'M'.

Object :- To study the residual effect of organic and inorganic manures applied to *Jowar* on Groundnut.

## 1. BASAL CONDITIONS :

- (i) (a) *Jowar*—Groundnut. (b) *Jowar*. (c) As per treatments. (ii) (a) Medium black. (b) Refer soil analysis, Buldana. (iii) 14.7.1950. (iv) (a) One ploughing and two *bakharings*. (b) N.A. (c) 80 lb./ac. (d) 12" x 6". (e) N.A. (v) Nil. (vi) AK-12-24 (medium). (vii) Unirrigated. (viii) 1 weeding and 1 hoeing. (ix) 29.11". (x) 22.12.1950.

## 2. TREATMENTS :

1. Control (no manure).
2. T.C. at 20 lb./ac. of N.
3. T.C. at 40 lb./ac. of N.
4. F.Y.M. at 20 lb./ac. of N.
5. F.Y.M. at 40 lb./ac. of N.
6. G.N.C. at 10 lb./ac. of N.
7. G.N.C. at 20 lb./ac. of N.
8. A/S at 10 lb./ac. of N.
9. A/S at 20 lb./ac. of N.

Manures applied to previous crop *Jowar*.

## 3. DESIGN :

- (i) R.B.D. (ii) (a) 9. (b) N.A. (iii) 6. (iv) (a) N.A. (b) 66' x 16.5'. (v) N.A. (vi) Yes.

## 4. GENERAL :

- (i) Normal. (ii) Nil. (iii) Top and pod yield. (iv) (a) 1950—continued. (b) Yes. (c) N.A. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 968 lb./ac.  
 (ii) 315.4 lb./ac.  
 (iii) Treatments do not differ significantly.  
 (iv) Av. yield of pod in lb./ac.

Treatment	Av. yield	Treatment	Av. yield
1.	1048	6.	752
2.	952	7.	1152
3.	1132	8.	880
4.	920	9.	808
5.	1064		
	S.E./mean		= 128.8 lb./ac.

Crop :- Groundnut (*Kharif*).

Ref :- Mh. 51(112).

Site :- Govt. Seed and Demonstration Farm, Buldana.

Type :- 'M'.

Object :- To study the residual effect of organic and inorganic manures applied to *Jowar* on Groundnut.

## 1. BASAL CONDITIONS :

- (i) (a) *Jowar*—Groundnut. (b) *Jowar*. (c) As per treatments. (ii) (a) Medium black. (b) Refer soil analysis, Buldana. (iii) 28.6.1951. (iv) (a) 1 ploughing. (b) N.A. (c) 80 lb./ac. (d) 12" x 6". (e) N.A. (v) Nil. (vi) AK—12-24 (mid-late). (vii) Unirrigated. (viii) 1 weeding and 1 hoeing. (ix) 33.22". (x) 31.10.1951.

## 2. TREATMENTS :

1. Control (no manure).
2. T.C. at 20 lb./ac. of N.
3. T.C. at 40 lb./ac. of N.
4. F.Y.M. at 20 lb./ac. of N.
5. F.Y.M. at 40 lb./ac. of N.
6. G.N.C. at 10 lb./ac. of N.
7. G.N.C. at 20 lb./ac. of N.
8. A/S at 10 lb./ac. of N.
9. A/S at 20 lb./ac. of N.

Manures applied to previous *Jowar* crop.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 9. (b) N.A. (iii) 6. (iv) (a) N.A. (b) 66' x 16.5'. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) Normal. (ii) Nil. (iii) Pod and top yield. (iv) (a) 1950—continued. (b) Yes. (c) N.A. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 1332 lb./ac.  
(ii) 273.5 lb./ac.  
(iii) Treatments do not differ significantly.  
(iv) Av. yield of pod in lb./ac.

Treatment	Av. yield	Treatment	Av. yield
1.	1239	6.	1268
2.	1238	7.	1283
3.	1275	8.	1389
4.	1295	9.	1571
5.	1429		
	S.E./mean		=111.7 lb./ac.

Crop :- Groundnut (*Kharif*).

Ref :- Mh. 51(71).

Site :- Agri. Res. Stn., Chas.

Type :- 'M'.

Object :- To study the effect of different doses of Boron and Manganese on Groundnut.

## 1. BASAL CONDITIONS :

(i) (a) Groundnut—*Bajra+Tur*. (b) *Bajra+Tur*. (c) Nil. (ii) (a) *Kharif* light soils. (b) N.A. (iii) 30.6.1951.  
(iv) (a) 1 ploughing and 2 harrowings. (b) N.A. (c) 60 lb./ac. (d) 12' between rows. (e) N.A. (v) Nil.  
(vi) Big Japan. (vii) Unirrigated. (viii) 1 interculturing. (ix) 20.62". (x) 24.11.1951.

## 2. TREATMENTS :

All the combinations of (1) and (2)

- (1) 4 levels of boron:  $B_0=0$ ,  $B_1=2$ ,  $B_2=4$  and  $B_3=6$  lb./ac.  
(2) 4 levels of manganese:  $M_0=0$ ,  $M_1=3$ ,  $M_2=6$  and  $M_3=9$  lb./ac.  
Boron as borax and Manganese as  $Mn SO_4$ .

## 3. DESIGN :

(i) 4 x 4 Fact. in R.B.D. (ii) (a) 16. (b) N.A. (iii) 4. (iv) (a) 29' x 13'. (b) 25' x 9'. (v) 2' ring round the net plot. (vi) Yes.

## 4. GENERAL :

(i) Normal. (ii) Nil. (iii) Pod yield. (iv) (a) 1951—1955. (b) No. (c) N.A. (v) (a) Sholapur and Jeur. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 1490 lb./ac.  
(ii) 292.1 lb./ac.  
(iii) None of the effects is significant.  
(iv) Av. yield of pod in lb./ac.

	$B_0$	$B_1$	$B_2$	$B_3$	Mean
$M_0$	1353	1489	1482	1431	1439
$M_1$	1567	1492	1682	1503	1561
$M_2$	1283	1513	1474	1344	1403
$M_3$	1586	1682	1395	1567	1558
Mean	1447	1544	1508	1461	1490

S.E. of any marginal mean = 73.0 lb./ac.  
S.E. of body of table = 146.1 lb./ac.

Crop :- Groundnut (*Kharif*).  
Site :- Agri. Res. Stn., Chas.

Ref :- Mh. 52(100).  
Type :- 'M'.

Object :- To study the effect of different doses of Boron and Manganese on Groundnut.

1. BASAL CONDITIONS :

(i) (a) Groundnut—*Bajra+Tur.* (b) *Bajra+Tur.* (c) Nil. (ii) (a) *Kharif* light soil. (b) N.A. (iii) 6.6.1952.  
(iv) (a) 1 ploughing and 2 harrowings. (b) N.A. (c) 60 lb./ac. (d) 12" between rows. (e) N.A. (v) Nil. (vi) Big Japan (late). (vii) Unirrigated. (viii) 1 interculturing. (ix) 9.70". (x) 5.12.1952.

2. TREATMENTS :

All combinations of (1) and (2)

(1) 4 levels of Boron :  $B_0=0$ ,  $B_1=2$ ,  $B_2=4$  and  $B_3=6$  lb./ac.

(2) 4 levels of Manganese :  $M_0=0$ ,  $M_1=3$ ,  $M_2=6$  and  $M_3=9$  lb./ac.

Boron as borax and Manganese as  $Mn SO_4$

3. DESIGN :

(i) 4x4 Fact. in R.B.D. (ii) (a) 16. (b) N.A. (iii) 4. (iv) (a) 29'x13'. (b) 25'x9'. (v) 2' ring round the net plot. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) 3 counts and pod yield. (iv) (a) 1951—1955. (b) No. (c) N.A. (v) (a) Sholapur and Jeur. (b) N.A. (vi) No reasons given for low yield. (vii) Nil.

5. RESULTS :

(i) 604 lb./ac.

(ii) 124.3 lb./ac.

(iii) None of the effects is significant.

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

	$B_0$	$B_1$	$B_2$	$B_3$	Mean
$M_0$	484	581	581	629	569
$M_1$	678	581	581	629	617
$M_2$	678	629	629	629	641
$M_3$	678	484	653	532	587
Mean	629	569	611	605	604

S.E. of any marginal mean = 31.0 lb./ac.

S.E. of body of table = 62.2 lb./ac.

Crop :- Groundnut (*Kharif*).  
Site :- Agri. Res. Stn., Chas.

Ref :- Mh. 53(152).  
Type :- 'M'

Object :- To study the effect of different doses of Boron and Manganese on Groundnut.

1. BASAL CONDITIONS :

(i) (a) Groundnut—*Bajra+Tur.* (b) *Bajra+Tur.* (c) Nil. (ii) (a) *Kharif* light soil. (b) N.A. (iii) 3.7.1953. (iv) (a) 1 ploughing and 2 harrowings. (b) N.A. (c) 60 lb./ac. (d) 12" between rows. (e) N.A. (v) Nil. (vi) Big Japan. (vii) Unirrigated. (viii) 1 interculturing. (ix) 21.00". (x) 4.12.1953

2. TREATMENTS :

All combinations of (1) and (2)

(1) 4 levels of Boron :  $B_0=0$ ,  $B_1=2$ ,  $B_2=4$  and  $B_3=6$  lb./ac.

(2) 4 levels of Manganese :  $M_0=0$ ,  $M_1=3$ ,  $M_2=6$  and  $M_3=9$  lb./ac.

Boron as borax and Manganese as  $Mn SO_4$ .

3. DESIGN :

(i) 4x4 Fact. in R.B.D. (ii) (a) 16. (b) N.A. (iii) 6. (iv) (a) 29'x13'. (b) 25'x9'. (v) 2' ring round the net plot. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) 3 counts and pod yield. (iv) (a) 1951—1955. (b) No. (c) N.A. (v) (a) Sholapur and Jeur. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 2350 lb./ac.  
 (ii) 688.2 lb./ac.  
 (iii) None of the effects is significant.  
 (iv) Av. yield of pod in lb./ac.

	B <sub>0</sub>	B <sub>1</sub>	B <sub>2</sub>	B <sub>3</sub>	Mean
M <sub>0</sub>	2323	2194	2678	2355	2388
M <sub>1</sub>	2130	2420	2646	2549	2436
M <sub>2</sub>	2420	2226	2226	2581	2363
M <sub>3</sub>	2420	2162	2194	2065	2210
Mean	2323	2251	2436	2388	2350

S.E. of any marginal mean = 140.5 lb./ac.  
 S.E. of body of table = 281.0 lb./ac.

Crop :- Groundnut. (*Kharif*).  
 Site :- Agri. Res. Stn., Chas.

Ref :- Mh. 51(70).  
 Type :- 'M'.

Object :- To find out the optimum dose and method of application of P<sub>2</sub>O<sub>5</sub> to Groundnut.

## 1. BASAL CONDITIONS :

- (i) (a) Groundnut—*Bajra* + *Tur*. (b) *Bajra* + *Tur*. (c) G.N.C. (amount N.A.) (ii) (a) Light *kharif* soil. (b) N.A. (iii) 1.7.1951. (iv) (a) 1 ploughing and 2 harrowings. (b) N.A. (c) 60 lb./ac. (d) 12" between rows. (e) N.A. (v) Nil. (vi) Big Japan (late). (vii) Unirrigated. (viii) 1 interculturing. (ix) 20.62°. (x) 26.11.1951.

## 2. TREATMENTS :

All combinations of (1) and (2) + a control (no manure).

(1) 3 doses of P<sub>2</sub>O<sub>5</sub> :- P<sub>1</sub>=10, P<sub>2</sub>=20 and P<sub>3</sub>=30 lb./ac.

(2) 3 methods of application of P<sub>2</sub>O<sub>5</sub> : M<sub>1</sub>=Broadcasting., M<sub>2</sub>=Drilling in rows and M<sub>3</sub>=Drilling in between rows.

P<sub>2</sub>O<sub>5</sub> applied as Super.

## 3. DESIGN :

- (i) R.B.D. (ii) (a) 10. (b) N.A. (iii) 4. (iv) (a) 55'×20'. (b) 51'×16'. (v) 2' ring round the net plot. (vi) Yes.

## 4. GENERAL :

- (i) Normal. (ii) Nil. (iii) 2 counts and pod yield. (iv) (a) 1951—1955. (b) No. (c) N.A. (v) (a) Sholapur and Jeur. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 1549 lb./ac.  
 (ii) 262.5 lb./ac.  
 (iii) None of the effects is significant.  
 (iv) Av. yield of pod in lb./ac.

Control=1802 lb./ac.

	M <sub>1</sub>	M <sub>2</sub>	M <sub>3</sub>	Mean
P <sub>1</sub>	1601	1681	1401	1561
P <sub>2</sub>	1495	1521	1508	1508
P <sub>3</sub>	1721	1121	1641	1494
Mean	1606	1441	1517	1521

S.E. of any marginal mean = 75.8 lb./ac.  
 S.E. of body of table = 131.3 lb./ac.

Crop :- Groundnut. (*Kharif*).

Ref :- Mh. 52(99).

Site :- Agri. Res. Stn., Chas.

Type :- 'M'.

Object :- To find out the optimum dose and method of application of  $P_2O_5$  to Groundnut.

## 1. BASAL CONDITIONS :

(i) (a) Groundnut-Bajra+Tur. (b) Bajra+Tur. (c) Nil. (ii) (a) Light *Kharif* soil. (b) N.A. (iii) 23.6.1952. (iv) (a) 1 ploughings and 2 harrowings. (b) N.A. (c) 60 lb./ac. (d) 12" between rows. (e) N.A. (v) Nil. (vi) Big Japan (late). (vii) Unirrigated. (viii) 2 interculturings. (ix) 9.70". (x) 31.12.1952.

## 2. TREATMENTS :

All the combinations of (1) and (2) + a control (no manure)

(1) 3 doses of  $P_2O_5$  :  $P_1=10$ ,  $P_2=20$  and  $P_3=30$  lb./ac.(2) 3 methods of application of  $P_2O_5$  :  $M_1$ =Broadcasting,  $M_2$ =Drilling in rows and  $M_3$ =Drilling in between rows. $P_2O_5$  applied as Super.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 10. (b) N.A. (iii) 4. (iv) (a) 55'x20'. (b) 51'x16'. (v) 2' ring round the net plot. (vi) Yes.

## 4. GENERAL :

(i) Normal. (ii) Nil. (iii) 2 counts and pod yield. (iv) (a) 1951-1955. (b) No. (c) N.A. (v) (a) Sholapur and Jeur. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 1285 lb./ac.

(ii) 127.6 lb./ac.

(iii) Only control vs others effect is highly significant.

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

Control = 527 lb./ac.

	$M_1$	$M_2$	$M_3$	Mean
$P_1$	1387	1367	1327	1361
$P_2$	1367	1287	1527	1394
$P_3$	1440	1347	1274	1354
Mean	1398	1334	1376	1369

S.E. of any marginal mean = 36.8 lb./ac.  
S.E. of body of table = 63.8 lb./ac.

Crop :- Groundnut (*Kharif*).

Ref :- Mh. 53(151).

Site :- Agri. Res. Stn., Chas.

Type :- 'M'.

Object :- To find out the optimum dose and method of application of  $P_2O_5$  to Groundnut.

## 1. BASAL CONDITIONS :

(i) (a) Groundnut-Bajra+Tur. (b) Bajra+Tur. (c) Nil. (ii) (a) Light *kharif* soil. (b) N.A. (iii) 1.7.1953. (iv) (a) 1 ploughing and 2 harrowings. (b) N.A. (c) 60 lb./ac. (d) 12" between rows. (e) N.A. (v) Nil. (vi) Big Japan (late). (vii) Unirrigated. (viii) 2 interculturings. (ix) 21.00". (x) 30.11.1953.

## 2. TREATMENTS :

All combinations of (1) and (2) + a control (no manure)

(1) 3 doses of  $P_2O_5$  :  $P_1=10$ ,  $P_2=20$  and  $P_3=30$  lb./ac.(2) 3 methods of application of  $P_2O_5$  :  $M_1$ =Broadcasting,  $M_2$ =Drilling in rows and  $M_3$ =Drilling in between rows. $P_2O_5$  applied as Super.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 10. (b) N.A. (iii) 4. (iv) (a) 55'x20'. (b) 51'x16'. (v) 2' ring round the net plot. (vi) Yes.

## 4. GENERAL :

(i) Normal. (ii) Nil. (iii) 3 counts and pod yield. (iv) (a) 1951-1955. (b) No. (c) N.A. (v) (a) Sholapur and Jeur. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 1959 lb./ac.  
 (ii) 440.6 lb./ac.  
 (iii) None of the effects is significant.  
 (iv) Av. yield of pod in lb./ac.

Control=1721 lb./ac.

	M <sub>1</sub>	M <sub>2</sub>	M <sub>3</sub>	Mean
P <sub>1</sub>	1655	2282	2069	2002
P <sub>2</sub>	1962	1935	1935	1944
P <sub>3</sub>	1615	2122	2295	2011
Mean	1744	2113	2100	1986

S.E. of any marginal mean =127.2 lb./ac.  
 S.E. of body of table =220.3 lb./ac.

Crop :- Groundnut (*Kharif*).

Ref :- 52(326).

Site :- Agri. Res. Stn., Dhulia.

Type :- 'M'.

Object :- To study the effect of Boron and Manganese on the yield of Groundnut.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) Wheat. (c) N.A. (ii) (a) Medium black. (b) N.A. (iii) 11.7.1952. (iv) (a) N.A. (b) Drilled. (c) 73 lb./ac. (d) 14" between rows. (e) —. (v) Nil. (vi) Spanish (improved). (vii) Irrigated. (viii) 2 weedings and one interculturing. (ix) N.A. (x) 23.10.1952.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 2 levels of Boron : B<sub>0</sub>=0 and B<sub>1</sub>=4 lb./ac.(2) 2 levels of Manganese : M<sub>0</sub>=0 and M<sub>1</sub>=6 lb./ac.

Boron as Borax and Manganese as Manganese Sulphate.

## 3. DESIGN :

(i) 2x2 Fact. in R.B.D. (ii) (a) 4. (b) N.A. (iii) 2. (iv) (a) 78'x7.5'. (b) 64'x12.8'. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) Unsatisfactory growth due to *Tikka* attack and lack of rains during sowing time. (ii) Mild attack of *Tikka* disease. (iii) Yield of pod. (iv) (a) 1952-N.A. (b) No. (c) Nil. (v) (a) Kopergaon and Karad. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 442 lb./ac.  
 (ii) 172.8 lb./ac.  
 (iii) None of the effects is significant.  
 (iv) Av. yield of pod in lb./ac.

	B <sub>0</sub>	B <sub>1</sub>	Mean
M <sub>0</sub>	361	481	421
M <sub>1</sub>	441	484	462
Mean	401	482	442

S.E. of any marginal mean =172.8 lb./ac.  
 S.E. of body of table =122.2 lb./ac.



Crop :- Groundnut (*Kharif*).  
Site :- Agri. Res. Stn., Jalagaon.

Ref :- Mh. 49(28).  
Type :- 'M'.

Object :- To find the effects of applying  $P_2O_5$  to leguminous crop (Groundnut) and its after effects on the succeeding cereal crop (*Jowar*).

1. BASAL CONDITIONS :

(i) (a) Groundnut-*Jowar*. (b) *Jowar*. (c) N.A. (ii) (a) Deep black. (b) Refer soil analysis, Jalagaon. (iii) 2.7.1949. (iv) (a) N.A. (b) Drilled. (c) 40 lb./ac. (d) 12". (e) N.A. (v) Nil. (vi) Spanish peanut (early). (vii) Unirrigated. (viii) 3 weedings and 2 hoeings. (ix) 44.17". (x) 25.10.1949.

2. TREATMENTS :

1. Control (no  $P_2O_5$ ).
2. 50 lb./ac. of  $P_2O_5$  as Super.
3. 100 lb./ac. of  $P_2O_5$  as Super.
4. 150 lb./ac. of  $P_2O_5$  as Super.
5. Fallow for Groundnut and sown for *Jowar*.  
 $P_2O_5$  drilled with reeds of Groundnut.

3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 5. (iv) (a) 42' x 30'. (b) 30' x 18'. (v) 6' ring round the net plot. (vi) Yes.

4. GENERAL :

(i) N.A. (ii) Aphis attack on groundnut crop was observed. Rains in the third week of Sept. washed away the Aphis. Also tobacco decoction helped much in removing the attack. (iii) Pod and chaff yield. (iv) (a) 1949 (*kharif*) to 1954 (*kharif*). (b) No. (c) N.A. (v) (a) and (b) No. (vi) and (vii) Nil.

5. RESULTS :

- (i) 684 lb./ac.
- (ii) 81.52 lb./ac.
- (iii) Treatments do not differ significantly.
- (iv) Av. yield of pod in lb./ac.

Treatment	Av. yield
1.	600
2.	687
3.	710
4.	740
5.	Fallow
S.E./mean	=36.44 lb./ac.

Crop :- Groundnut (*Kharif*)  
Site :- Agri. Res. Stn., Jalagaon.

Ref :- Mh. 50(39).  
Type :- 'M'.

Object :- To find the effects of applying  $P_2O_5$  to leguminous crop (Groundnut) and its after effects on the succeeding cereal crop (*Jowar*).

1. BASAL CONDITIONS :

(i) (a) Groundnut-*Jowar*. (b) N.A. (c) N.A. (ii) (a) Deep black. (b) Refer soil analysis, Jalagaon. (iii) 12.7.50. (iv) (a) N.A. (b) Drilled. (c) 60 lb./ac. (d) 12". (e) N.A. (v) Nil. (vi) Spanish peanut (early). (vii) Unirrigated. (viii) 3 weedings and 3 hoeings. (ix) 21.73". (x) 29.10.1950.

2. TREATMENTS :

1. Control (no  $P_2O_5$ ).
2. 50 lb./ac. of  $P_2O_5$  as Super.
3. 100 lb./ac. of  $P_2O_5$  as Super.
4. 150 lb./ac. of  $P_2O_5$  as Super.
5. Fallow for Groundnut and sown in *Robi*.  
 $P_2O_5$  drilled with the seeds of Groundnut.

3. DESIGN:

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 5. (iv) (a) 42' x 30'. (b) 30' x 18'. (v) 6' ring round the net plot. (vi) Yes.

## 4. GENERAL:

(i) Normal growth. (ii) Attack of Aphis and *Tikka* disease observed on groundnut. (iii) Pod and chaff yield. (iv) (a) 1949 to 1954. (b) No. (c) N.A. (v) (a) No. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS:

- (i) 990 lb./ac.  
 (ii) 323.7 lb./ac.  
 (iii) Treatments do not differ significantly.  
 (iv) Av. yield of pod in lb./ac.

Treatment	Av. yield
1.	875
2.	876
3.	1003
4.	1207
5.	Fallow
S.E./mean	=144.7 lb./ac.

Crop :- Groundnut (*Kharif*).

Ref :- Mh. 51(42).

Site :- Agri. Res. Stn., Jalagaon.

Type :- 'M'.

Object :- To find the effect of applying  $P_2O_5$  to leguminous crop (Groundnut) and its after effects on the succeeding cereal crop (*Jowar*).

## 1. BASAL CONDITIONS:

(i) (a) Groundnut—*Jowar*. (b) N.A. (c) N.A. (ii) (a) Deep black. (b) Refer soil analysis, Jalagaon. (iii) 16.7.1951. (iv) (a) N.A. (b) Drilled. (c) 60 lb./ac. (d) Between rows 18" and between plants irregular. (e) N.A. (v) Nil. (vi) Spanish peanut (early). (vii) Unirrigated. (viii) Once weeding and 3 hoeings. (ix) 20.14". (x) 16.11.1951.

## 2. TREATMENTS:

- Control (no  $P_2O_5$ ).
- 50 lb./ac of  $P_2O_5$  as Super.
- 100 lb./ac. of  $P_2O_5$  as Super.
- 150 lb./ac. of  $P_2O_5$  as Super.
- Fallow for Groundnut and sown for *Jowar* and *Udid*.  
 $P_2O_5$  drilled along with the seeds of groundnut.

## 3. DESIGN:

(i) R.B.D. (ii) (a) 3. (b) N.A. (iii) 5. (iv) (a) 42' x 30'. (b) 30' x 18'. (v) 6' ring round the net plot. (vi) Yes.

## 4. GENERAL:

(i) Normal growth. (ii) Attack of Aphis observed. (iii) Pod and chaff yield. (iv) (a) 1949—1954. (b) No. (c) N.A. (v) (a) and (b) No. (vi) and (vii) Nil.

## 5. RESULTS:

- (i) 922 lb./ac.  
 (ii) 216.5 lb./ac.  
 (iii) Treatments do not differ significantly.  
 (iv) Av. yield of pod in lb./ac.

Treatment	Av. yield
1.	975
2.	912
3.	1032
4.	772
5.	Fallow
S.E./mean	= 96.8 lb./ac.

Crop :-Groundnut (*Kharif*).

Ref :-Mh. 52(69).

Site :-Agri. Res. Stn., Jalagaon.

Type :- 'M'.

Object :-To find out the effects of applying  $P_2O_5$  to the leguminous crop (Groundnut) and its after effects on the succeeding cereal crop (*Jowar*).

## 1. BASAL CONDITIONS :

(i) (a) Groundnut—*Jowar*. (b) and (c) N.A. (ii) (a) Deep black. (b) Refer soil analysis, Jalagaon. (iii) 29.6.1952. (iv) (a) N.A. (b) Drilled. (c) 60 lb./ac. (d) [Between rows—12" and between plants irregular. (e) N.A. (v) Nil. (vi) Spanish peanut (early). (vii) Unirrigated. (viii) 2 weeding and 3 hoeings. (ix) 17.61". (x) 1.11.1952.

## 2. TREATMENTS :

1. Control (no  $P_2O_5$ ).
2. 50 lb./ac. of  $P_2O_5$  as Super.
3. 100 lb./ac. of  $P_2O_5$  as Super.
4. 150 lb./ac. of  $P_2O_5$  as Super.
5. Fallow for Groundnut and sown for *Jowar* and *Udid*.  
 $P_2O_5$  drilled along with the seeds of Groundnut.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 5. (iv) (a) 42'×30'. (b) 30'×18'. (v) 6' ring round the net plot. (vi) Yes.

## 4. GENERAL :

(i) Normal growth. (ii) Attack of long-smut. Attack of Aphis, *Tikka* and Root-rot disease. (iii) Pod and chaff yield. (iv) (a) 1949—1954. (b) No. (c) N.A. (v) (a) and (b) No. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 563 lb./ac.  
 (ii) 234.9 lb./ac.  
 (iii) Treatments do not differ significantly.  
 (iv) Av. yield of pod in lb./ac.

Treatment	Av. yield
1.	516
2.	556
3.	585
4.	597
5.	Fallow
S.E./mean	= 105.0 lb./ac.

Crop :-Groundnut (*Kharif*).

Ref :-Mh. 53(130).

Site :-Agri. Res. Stn., Jalagaon.

Type :-'M'.

Object :-To find out the effects of applying  $P_2O_5$  to leguminous crop (Groundnut) and its after effects on the succeeding cereal crop (*Jowar*).

## 1. BASAL CONDITIONS :

(i) (a) Groundnut—*Jowar*. (b) and (c) N.A. (ii) (a) Deep black. (b) Refer soil analysis, Jalagaon. (iii) 25.6.1953. (iv) (a) N.A. (b) Drilled. (c) 60 lb./ac. (d) Between rows—12" and between plants irregular. (e) N.A. (v) Nil. (vi) Spanish peanut (early). (vii) Unirrigated. (viii) 2 hoeings and 2 weeding. (ix) 23.77". (x) 24.10.1953.

## 2. TREATMENTS:

1. Control (no  $P_2O_5$ ).
2. 50 lb./ac. of  $P_2O_5$  as Super.
3. 100 lb./ac. of  $P_2O_5$  as Super.
4. 150 lb./ac. of  $P_2O_5$  as Super.
5. Fallow for Groundnut and sown for *Jowar* and *Udid*.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 5. (iv) (a) 42'×30'. (b) 30'×18'. (v) 6' ring round the net plot. (vi) Yes.

## 4. GENERAL

(i) The general growth and condition was satisfactory. (ii) Attack of Aphis, Root-rot and Tikka was observed. (iii) Pod and chaff yield. (iv) (a) 1949—1954. (b) No. (c) N.A. (v) (a) and (b) No. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 1273 lb./ac.

(ii) 118.2 lb./ac.

(iii) Treatment differences are highly significant.

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

Treatment	Av yield
1.	1056
2.	1307
3.	1317
4.	1412
5.	Fallow
S.E./mean	=52.8 lb./ac.

Crop :-Groundnut (*Kharif*).

Site :-Agri. Res. Stn., Jeur.

Ref :-Mh. 51(103).

Type :-'M'.

Object :-To study the optimum dose and method of application of  $P_2O_5$ .

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Jowar* and gram. (c) Nil. (ii) (a) Medium black. (b) N.A. (iii) 24.7.1951. (iv) (a) 2 harrowings. (b) Drilled. (c) 80 lb./ac. (d) Between plants—12". (e) N.A. (v) Nil. (vi) Big Japan. (vii) Unirrigated. (viii) 1 hand weeding. (ix) N.A. (x) 4 to 8.12.1951.

## 2. TREATMENTS :

All combinations of (1) and (2) + a control (no manure).

(1) 3 levels of  $P_2O_5$ :  $P_1=10$ ,  $P_2=20$  and  $P_3=30$  lb./ac.

(2) 3 methods of application of  $P_2O_5$ :  $M_1=$ By broadcasting,  $M_2=$ By drilling in rows and  $M_3=$ By drilling in between rows.

$P_2O_5$  applied as Super.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 10. (b) N.A. (iii) 4. (iv) (a) 114'×16'. (b) 108'×10'. (v) 3' all round the net plot. (vi) Yes.

## 4. GENERAL :

(i) Normal. (ii) Nil. (iii) Pod yield. (iv) (a) 1951—1956. (b) No. (c) N.A. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 499 lb./ac.

(ii) 103.2 lb./ac.

(iii) None of the effects is significant.

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

Control = 471 lb./ac.

	$P_1$	$P_2$	$P_3$	Mean
$M_1$	478	555	469	501
$M_2$	461	509	484	485
$M_3$	492	548	524	521
Mean	477	537	492	502

S.E. of any marginal mean =29.8 lb./ac.  
S.E. of body of table =51.6 lb./ac.

Crop :- Groundnut (*Kharif*).

Ref :- Mh. 53(180).

Site :- Agri. Res. Stn., Jeur.

Type :- 'M'.

Object :- To study the optimum dose and method of application of  $P_2O_5$ .

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Jowar*. (c) Nil. (ii) (a) Medium deep. (b) N.A. (iii) 29.7.1953. (iv) (a) 2 harrowings. (b) Drilled. (c) 80 lb./ac. (d) 12" apart. (e) N.A. (v) Nil. (vi) Big Japan. (vii) Unirrigated. (viii) 1 interculturing and 1 hand weeding. (ix) 16.62". (x) 8.12.1953.

## 2. TREATMENTS :

All combinations of (1) and (2)+a control (no manure).

(1) 3 levels of  $P_2O_5$  :  $P_1=10$ ,  $P_2=20$  and  $P_3=30$  lb./ac.(2) 3 methods of application of  $P_2O_5$  :  $M_1$ =by broadcasting,  $M_2$ =by drilling in rows, and  $M_3$ =by drilling in between rows. $P_2O_5$  applied as Super.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 10. (b) N.A. (iii) 4. (iv) (a) 114'×16'. (b) 108'×10'. (v) 3' all round the net plot. (vi) Yes.

## 4. GENERAL :

(i) Normal. (ii) Nil. (iii) Top and pod yield. (iv) (a) 1951—1956. (b) No. (c) N.A. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 605 lb./ac.

(ii) 109.3 lb./ac.

(iii) None of the effects is significant.

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

Control =635 lb./ac.				
	$P_1$	$P_2$	$P_3$	Mean
$M_1$	562	688	626	625
$M_2$	540	544	636	573
$M_3$	666	608	542	605
Mean	589	613	601	601

S.E. of any marginal mean =31.6 lb./ac.

S.E. of body of table =54.6 lb./ac.

Crop :-Groundnut (*Kharif*).

Ref :-Mh. 51(102).

Site :-Agri. Res. Stn., Jeur.

Type :-'M'.

Object :- To study the effect of Boron and Manganese on Groundnut.

## 1. BASAL CONDITIONS :

(i) (a) Groundnut—*Jowar* or Gram. (b) *Jowar* or Gram. (c) N.A. (ii) (a) Medium deep. (b) N.A. (iii) 26.7.1951. (iv) (a) 3 harrowings. (b) Drilled. (c) 80 lb./ac. (d) 12". (e) N.A. (v) Nil. (vi) Big Japan. (vii) Unirrigated. (viii) 2 hand weedings. (ix) N.A. (x) 10.12.1951.

## 2. TREATMENTS :

All combinations of (1) and (2).

(1) 4 levels of Boron :  $B_0=0$ ,  $B_1=2$ ,  $B_2=4$  and  $B_3=6$  lb./ac.(2) 4 levels of Manganese :  $M_0=0$ ,  $M_1=3$ ,  $M_2=6$  and  $M_3=9$  lb./ac.Boron as Borax and Manganese as  $Mn SO_4$ .

## 3. DESIGN :

(i) 4×4 Fact. in R.B.D. (ii) (a) 16. (b) N.A. (iii) 4. (iv) (a) 30'×18'. (b) 26'×14'. (v) 2' all round the net plot. (vi) Yes.

## 4. GENERAL :

(i) Not good. (ii) Nil. (iii) Pod yield. (iv) (a) 1951—1956. (b) No. (c) N.A. (v) (a) Nil. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 384 lb./ac.  
 (ii) 102.9 lb./ac.  
 (iii) None of the effects is significant.  
 (iv) Av. yield of pod in lb./ac.

	B <sub>0</sub>	B <sub>1</sub>	B <sub>2</sub>	B <sub>3</sub>	Mean
M <sub>0</sub>	318	404	333	443	374
M <sub>1</sub>	369	391	318	350	357
M <sub>2</sub>	282	460	325	411	369
M <sub>3</sub>	449	492	406	391	434
Mean	354	437	345	399	384

S.E. of any marginal mean = 25.7 lb./ac.

S.E. of body of table = 51.5 lb./ac.

Crop :- Groundnut.

Site :- Agri. Res. Stn., Jeur.

Ref :- Mh. 53(179).

Type :- 'M'.

Object :- To study the effect of Boron and Manganese on Groundnut yield.

## 1. BASAL CONDITIONS :

(i) (a) Groundnut—*Jowar*. (b) *Jowar*. (c) Nil. (ii) (a) Medium deep. (b) N.A. (iii) 28.7.1953. (iv) (a) 2 harrowings. (b) Drilled. (c) 80 lb./ac. (d) 12". (e) N.A. (v) Nil. (vi) Big Japan. (vii) Unirrigated. (viii) One interculturing and one hand weeding. (ix) 16.62". (x) 3.12.1953.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 4 levels of Boron : B<sub>0</sub>=0, B<sub>1</sub>=2, B<sub>2</sub>=4 and B<sub>3</sub>=6 lb./ac.

(2) 4 levels of Manganese : M<sub>0</sub>=0, M<sub>1</sub>=3, M<sub>2</sub>=6 and M<sub>3</sub>=9 lb./ac.

Boron as Borax and Manganese as Mn SO<sub>4</sub>.

## 3. DESIGN :

(i) 4×4 Fact. in R.B.D. (ii) (a) 16. (b) N.A. (iii) 5. (iv) (a) 30'×18'. (b) 26'×14'. (v) 2' all round the net plot. (vi) Yes.

## 4. GENERAL :

(i) Normal. (ii) Nil. (iii) Top and pod yield. (iv) (a) 1951—1956. (b) No. (c) N.A. (v) (a) Nil. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 631 lb./ac.  
 (ii) 134.0 lb./ac.  
 (iii) None of the effects is significant.

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

	B <sub>0</sub>	B <sub>1</sub>	B <sub>2</sub>	B <sub>3</sub>	Mean
M <sub>0</sub>	567	646	540	694	612
M <sub>1</sub>	619	637	525	587	592
M <sub>2</sub>	639	588	642	702	643
M <sub>3</sub>	666	707	690	637	675
Mean	623	645	599	655	631

S.E. of any arginal mean = 29.95 lb./ac.

S.E. of body of table = 59.91 lb./ac.

Crop :- Groundnut (*Kharif*).

Ref :- Mh. 52(27).

Site :- Agri. Res. Stn., Karad.

Type :- 'M'.

Object :- To find out the P<sub>2</sub>O<sub>5</sub> and K<sub>2</sub>O requirements of Groundnut.

## 1. BASAL CONDITIONS :

(i) (a) Groundnut—*Bajra*. (b) *Bajra*. (c) 5 C.L./ac. of F.Y.M. (ii) (a) Clay loam. (b) N.A. (iii) N.A.  
 (iv) (a) 1 ploughing and 3 harrowings. (b) to (e) N.A. (v) 5 C.L./ac. of F.Y.M. applied about one month prior to sowing and mixed by harrowing. (vi) Karad-4-11 (late). (vii) Unirrigated. (viii) N.A.  
 (ix) 27.10°. (x) N.A.

## 2. TREATMENTS :

- Control (no manure).
- Super at 60 lb./ac. of P<sub>2</sub>O<sub>5</sub>.
- Super at 120 lb./ac. of P<sub>2</sub>O<sub>5</sub>.
- Potassium Sulphate at 60 lb./ac. of K<sub>2</sub>O.
- Potassium Sulphate at 120 lb./ac. of K<sub>2</sub>O.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 5. (iv) (a) 25'×8'. (b) 23'×6'. (v) 1' all round the net plot.  
 (vi) Yes.

## 4. GENERAL :

(i) Satisfactory. (ii) Nil. (iii) Pod yield. (iv) (a) No. (b) No. (c) N.A. (v) (a) N.A. (b) N.A.  
 (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 2706 lb./ac.  
 (ii) 376.3 lb./ac.  
 (iii) Treatments do not differ significantly.  
 (iv) Av. yield of pod in lb./ac.

Treatment	Av. yield
1.	2652
2.	2951
3.	2624
4.	2904
5.	2399
S.E./mean	= 168.3 lb./ac.

Crop :- Groundnut (*Kharif*).  
Site :- Agri. Res. Stn., Karad.

Ref :- Mh. 52(221).  
Type :- 'M'.

Object :- To find out the effect of rare elements (Boron and Manganese) on yield of the Groundnut.

1. BASAL CONDITIONS :

(i) (a) Groundnut-*Jowar*. (b) *Jowar*. (c) 5 C.L./ac. of F.Y.M. (ii) (a) Medium black. (b) N.A. (iii) 20.8.1952. (iv) (a) 1 ploughing and 2 harrowings. (b) to (e) N.A. (v) 5 C.L./ac. of F.Y.M. one month before sowing. (vi) Spanish-5 (early). (vii) Unirrigated. (viii) N.A. (ix) 33°. (x) 12.1.1953.

2. TREATMENTS :

All combinations of (1) and (2)

(1) 2 levels of Boron :  $B_0=0$  and  $B_1=4$  lb./ac.

(2) 2 levels of Manganese :  $M_0=0$  and  $M_1=6$  lb./ac.

Boron as Borax and Manganese as  $MnSO_4$ .

3. DESIGN :

(i)  $2 \times 2$  Fact. in R.B.D. (ii) (a) 4. (b) N.A. (iii) 2. (iv) (a)  $29' \times 8'$ . (b)  $27' \times 6'$ . (v) 1' ring on all sides. (vi) Yes.

4. GENERAL :

(i) Poor. (ii) Nil. (iii) Pod yield. (iv) (a) 1952-N.A. (b) N.A. (c) N.A. (v) (a) N.A. (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 296 lb./ac.

(ii) 106.5 lb./ac.

(iii) None of the effects is significant.

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

	$B_0$	$B_1$	Mean
$M_0$	302	252	277
$M_1$	344	286	315
Mean	323	269	296

S.E. of any marginal mean = 53.2 lb./ac.

S.E. of body of table = 75.3 lb./ac.

Crop :- Groundnut (*Kharif*).  
Site :- Agri. Res. Stn., Karad.

Ref :- Mh. 53(301).  
Type :- 'M'.

Object :- To study the effect of rare elements (Manganese and Boron) on Groundnut.

1. BASAL CONDITIONS :

(i) (a) Groundnut-*Jowar*. (b) *Jowar*. (c) 5 C.L./ac. of F.Y.M. (ii) (a) Medium black. (b) N.A. (iii) 11.7.1953. (iv) (a) 1 ploughing and 2 harrowings. (b) to (e) N.A. (v) 5 C.L./ac. of F.Y.M. one month before sowing. (vi) Padegaon-2 (medium). (vii) Unirrigated. (viii) N.A. (ix) 38°. (x) N.A.

2. TREATMENTS :

All combinations of (1) and (2)

(1) 2 levels of Boron :  $B_0=0$  and  $B_1=4$  lb./ac.

(2) 2 levels of Manganese :  $M_0=0$  and  $M_1=6$  lb./ac.

Boron as Borax and Manganese as  $MnSO_4$ .

3. DESIGN :

(i)  $2 \times 2$  Fact. in R.B.D. (ii) (a) 4. (b) N.A. (iii) 2. (iv) (a) and (b)  $30' \times 25'$ . (v) Nil. (vi) Yes.



## 4. GENERAL :

(i) Normal. (ii) Nil. (iii) Pod yield. (iv) (a) 1952-N. A. (b) No. (c) N.A. (v) (a) N.A. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 1738 lb./ac.  
 (ii) 261.9 lb./ac.  
 (iii) None of the effects is significant.  
 (iv) Av. yield of pod in lb./ac.

	B <sub>0</sub>	B <sub>1</sub>	Mean
M <sub>0</sub>	1672	1768	1720
M <sub>1</sub>	1726	1786	1756
Mean	1699	1777	1738

S.E. of any marginal mean = 131.0 lb./ac.  
 S.E. of body of table = 185.3 lb./ac.

Crop :- Groundnut (*Kharif*).

Ref :- M h.53(250).

Site :- Agri. Res. Stn., Kopergaon.

Type :- 'M'.

Object :- To study the effect of application of Manganese and Boron on Groundnut.

## 1. BASAL CONDITIONS :

(i) (a) No. (b) Wheat. (c) Nil. (ii) (a) A type. (b) Refer soil analysis, Kopergaon. (iii) 11.7.1953.  
 (iv) (a) 1 ploughing and 2 harrowings. (b) to (e) N.A. (v) Nil. (vi) Groundnut—Spanish improved (early). (vii) Irrigated. (viii) 1 weeding and 2 hoeings. (ix) 17.22". (x) 25.10.1953.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 2 levels of Boron : B<sub>0</sub>=0 and B<sub>1</sub>=4 lb./ac.

(2) 2 levels of Manganese : M<sub>0</sub>=0 and M<sub>1</sub>=6 lb./ac.

Boron as Borax and Manganese as MnSO<sub>4</sub>.

## 3. DESIGN :

(i) 2x2 Fact. in R.B.D. (ii) (a) 4. (b) N.A. (iii) 2. (iv) (a) 46'x36'. (b) 36'x30'. (v) 5'x3'. (vi) Yes.

## 4. GENERAL :

(i) The growth of the crop was good. (ii) Slight attack of *Tikka* disease. (iii) Pod yield. (iv) (a) 1952—N.A. (b) No. (c) N.A. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 3171 lb./ac.  
 (ii) 128.8 lb./ac.  
 (iii) None of the effects is significant.  
 (iv) Av. yield of pod in lb./ac.

	B <sub>0</sub>	B <sub>1</sub>	Mean
M <sub>0</sub>	3275	3115	3195
M <sub>1</sub>	3139	3155	3147
Mean	3207	3135	3171

S.E. of any marginal mean = 64.4 lb./ac.  
 S.E. of body of table = 91.1 lb./ac.

Crop :- Groundnut (*Kharif*).

Ref :- Mh. 52(349).

Site :- Agri. Res. Stn., Mohol.

Type :- 'M'.

Object :- To find out the effect of Boron and Manganese on yield of Groundnut.

**1. BASAL CONDITIONS :**

(i) (a) No. (b) *Jowar*. (c) Nil. (ii) (a) Medium black. (b) Refer soil analysis, Mohol. (iii) N.A. (iv) (a) 2 harrowings. (b) Drilled. (c) 80 lb./ac. (d) 12" between rows. (e) N.A. (v) Nil. (vi) Spanish (improved). (vii) Unirrigated. (viii) 2 interculturings. (ix) 17.49". (x) N.A.

**2. TREATMENTS :**

All combinations of (1) and (2)

(1) 2 levels of Boron :  $B_0=0$  and  $B_1=4$  lb./ac.(2) 2 levels of Manganese :  $M_0=0$  and  $M_1=6$  lb./ac.Boron as Borax and Manganese as  $Mn SO_4$ .**3. DESIGN :**(i)  $2 \times 2$  Fact. in R.B.D. (ii) (a) 4. (b) N.A. (iii) 2. (iv) (a)  $62' \times 27'$ . (b)  $52' \times 21'$ . (v) N.A. (vi) Yes.**4. GENERAL :**

(i) N.A. (ii) N.A. (iii) Pod yield. (iv) (a) 1952-53. (b) N.A. (c) N.A. (v) (a) and (b) N.A. (vi) and (vii) Nil.

**5. RESULTS :**

(i) 304 lb./ac.

(ii) 74.59 lb./ac.

(iii) Main effect of B alone is highly significant.

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

	$B_0$	$B_1$	Mean
$M_0$	379	219	299
$M_1$	419	199	309
Mean	399	209	304

S.E. of any marginal mean = 37.29 lb./ac.

S.E. of body of table = 52.75 lb./ac.

Crop : Groundnut. (*Kharif*).

Ref :- Mh. 53(358).

Site :- Agri. Res. Stn., Mohol.

Type :- 'M'.

Object :- To find out the effect of Boron and Manganese on the yield of Groundnut.

**1. BASAL CONDITIONS :**

(i) (a) No. (b) and (c) N.A. (ii) (a) Medium black. (b) Refer soil analysis, Mohol (iii) N.A. (iv) (a) 2 harrowings. (b) Drilled. (c) 80 lb./ac. (d) 12" between rows. (e) —. (vi) Nil. (vi) Spanish improved. (vii) Unirrigated. (viii) 1 interculturing. (ix) 36.13". (x) N.A.

**2. TREATMENTS :**

All combinations of (1) and (2)

(1) 2 levels of Boron :  $B_0=0$  and  $B_1=4$  lb./ac.(2) 2 levels of Manganese :  $M_0=0$  and  $M_1=6$  lb./ac.Boron as Borax and Manganese as  $Mn SO_4$ .**3. DESIGN :**(i)  $2 \times 2$  Fact. in R.B.D. (ii) (a) 4. (b) N.A. (iii) 2. (iv) (a) N.A. (b)  $52' \times 21'$ . (v) N.A. (vi) Yes.**4. GENERAL :**

(i) N.A. (ii) N.A. (iii) Pod yield. (iv) (a) 1952—1953. (b) No. (c) Nil. (v) (a) and (b) N.A. (iv) and (vii) Nil.

## 5. RESULTS:

- (i) 1486 lb./ac.  
(ii) 152.8 lb./ac.  
(iii) None of the effects is significant.  
(iv) Av. yield of pod in lb./ac.

	B <sub>0</sub>	B <sub>1</sub>	Mean
M <sub>0</sub>	1456	1456	1456
M <sub>1</sub>	1536	1496	1516
Mean	1496	1476	1486

S.E. of any marginal mean = 76.4 lb./ac.  
S.E. of body of table = 108.18 lb./ac.

Crop :- Groundnut (*Kharif*).  
Site :- Agri. Res. Stn., Mohol.

Ref :- Mh. 53(205).  
Type :- 'M'.

Object :- To study the effect of the leguminous crop Groundnut raised with and without P<sub>2</sub>O<sub>5</sub> on succeeding cereal crop Wheat.

## 1. BASAL CONDITIONS :

- (i) (a) Nil. (b) *Jowar*. (c) Nil. (ii) (a) Medium black. (b) Refer soil analysis, Mohol. (iii) 7.8.1953.  
(iv) (a) N.A. (b) Drilled with 3 coultered drill. (c) Nil. (d) 18°. (e) N.A. (v) Nil. (vi) Pondicherry  
(vii) Unirrigated. (viii) N.A. (ix) 36.93°. (x) 4.1.1954.

## 2. TREATMENTS :

1. Control (no P<sub>2</sub>O<sub>5</sub>).
  2. 50 lb./ac. of P<sub>2</sub>O<sub>5</sub>.
  3. 100 lb./ac. of P<sub>2</sub>O<sub>5</sub>.
  4. 150 lb./ac. of P<sub>2</sub>O<sub>5</sub>.
  5. Fallow.
- P<sub>2</sub>O<sub>5</sub> applied as Super on 7.8.1953.

## 3. DESIGN :

- (i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 5. (iv) (a) 42'×30'. (b) 30'×18'. (v) 6' around the net plot.  
(vi) Yes.

## 4. GENERAL :

- (i) Stunted growth. (ii) Nil. (iii) Pod yield. (iv) (a) 1952-1954. (b) No. (c) N.A. (v) (a) Nil. (b) N.A. (vi) Nil. (vii) The crop was sown late owing to non-availability of Super. This had bad effect on the growth of the crop.

## 5. RESULTS :

- (i) 602 lb./ac.  
(ii) 121.8 lb./ac.  
(iii) Treatments do not differ significantly.  
(iv) Av. yield of pod in lb./ac.

Treatment	Av. yield
1.	591
2.	645
3.	527
4.	644
5.	Fallow
S.E./mean	= 54.5 lb./ac.

Crop :- Groundnut (*Kharif*).  
Site :- Agri. Res. Stn., Mohol.

Ref :- Mh. 53(206).  
Type :- 'M'.

Object :—To study the effect of the leguminous crop Groundnut grown with and without Super on the succeeding cereal crop *Jowar*.

1. BASAL CONDITIONS :

(i) (a) *Jowar*-Groundnut-*Jowar*. (b) *Jowar*. (c) Nil. (ii) (a) Medium black. (b) Refer soil analysis, Mohol. (iii) 7.8.1953. (iv) (a) N.A. (b) Drilled with 3 coultered drill. (c) 80 lb./ac. (d) 18". (e) N.A. (v) Nil. (vi) Pondicherry—8. (vii) Unirrigated. (viii) N.A. (ix) 36.93". (x) 31.12.1953.

2. TREATMENTS :

1. Control (no  $P_2O_5$ ).
2. 50 lb./ac. of  $P_2O_5$ .
3. 100 lb./ac. of  $P_2O_5$ .
4. 150 lb./ac. of  $P_2O_5$ .
5. Fallow in *kharif* and sown in *rabi*.  
 $P_2O_5$  as Super applied on 7.8.1953.

3. DESIGN :

(i) R.B.D. (ii) (a) 5. (b) N.A. (iii) 5. (iv) (a) 42'×30'. (b) 30'×18'. (v) 6' all round net plot. (vi) Yes.

4. GENERAL :

(i) The growth of the crop was stunted due to late sowing which is caused by the late receipt of Super. (ii) Nil. (iii) Pod yield. (iv) (a) 1952—1953. (b) No. (c) N.A. (v) (a) Nil. (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

- (i) 512 lb./ac.
- (ii) 49.6 lb./ac.
- (iii) Treatments do not differ significantly.
- (iv) Av. yield of pod in lb./ac.

Treatment	Av. yield
1.	505
2.	485
3.	507
4.	550
5.	Fallow
S.E./mean	=22.1 lb./ac.

Crop :- Groundnut (*Kharif*).  
Site :- Agri. College Farm, Poona.

Ref :- Mh. 53(72).  
Type :- 'M'.

Object :—To study the effect of F.Y.M. in combination with N, P and K on the yield of Groundnut.

1. BASAL CONDITIONS :

(i) (a) Green manure-Groundnut-Chillies-*Jowar*. (b) Green manure and *Jowar*. (c) Green manuring. (ii) (a) Medium black. (b) Refer soil analysis, Poona. (iii) 20.6.1953. (iv) (a) Ploughing given by tractor on 14.4.1953 clods were disced 2 times on 23.5.1953. The plots were harrowed 2-3 times after 1st shower and kept ready for sowing. Top dressing done at the time of sowing. (b) Sown with 4 coultered 12" seed drill. (c) 12". (d) N.A. (e) N.A. (v) 10 C.L./ac. of compost. (vi) Spanish pea-nut (early). (vii) Unirrigated. (viii) 2 interculturations and 2 weedings. (ix) 10.85". (x) 29.9.1953.

2. TREATMENTS :

All combinations of (1), (2), (3) and (4).

- (1) 2 levels of F.Y.M. :  $F_0=0$  and  $F_1=5$  C.L./ac.
- (2) 2 levels of N as A/S :  $N_0=0$  and  $N_1=20$  lb./ac. of N.
- (3) 3 levels of  $P_2O_5$  as Super :  $P_0=0$ ,  $P_1=20$  and  $P_2=40$  lb./ac. of  $P_2O_5$ .
- (4) 3 levels of  $K_2O$  as Pot. sulphate :  $K_0=0$ ,  $K_1=20$  and  $K_2=40$  lb./ac. of  $K_2O$ .

3. DESIGN :

(i) 3×3×2×2 Fact. in R.B.D. (ii) (a) 36. (b) N.A. (iii) 3. (iv) (a) 44'×8'. (b) 40'×6'. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) Normal. (ii) Nil. (iii) Pod yield. (iv) (a) 1952—N.A. (b) and (c) No. (v) (a) and (b) No. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 2932 lb./ac.  
 (ii) 366.3 lb./ac.  
 (iii) Only the main effect of F and interactions NP and NF are significant. Others are not significant.  
 (iv) Av. yield of pod in lb./ac.

	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>	N <sub>0</sub>	N <sub>1</sub>	F <sub>0</sub>	F <sub>1</sub>	Mean
K <sub>0</sub>	2726	2814	3028	2843	2869	2939	2773	2856
K <sub>1</sub>	3235	2985	2926	2961	3136	3199	2898	3048
K <sub>2</sub>	2939	2727	3004	2831	2949	2904	2876	2890
Mean	2967	2842	2986	2878	2985	3014	2849	
F <sub>0</sub>	3153	2888	3001	3046	2982			
F <sub>1</sub>	2781	2795	2971	2711	2988			
N <sub>0</sub>	2902	2676	3057					
N <sub>1</sub>	3033	3008	2915					

S.E. of marginal mean of P or K = 61.0 lb./ac.  
 S.E. of marginal mean of N or F = 49.8 lb./ac.  
 S.E. of body of table P×K = 105.7 lb./ac.  
 S.E. of body of table N×F = 70.6 lb./ac.  
 S.E. of body of table N×K or N×P or F×K or F×P = 86.3 lb./ac.

Crop :- Groundnut (*Kharif*).

Site :- Agri. Res. Stn., Sholapur.

Ref :- Mh. 51(68).

Type :- 'M'.

Object :- To study the optimum dose and method of application of P<sub>2</sub>O<sub>5</sub> to Groundnut.

## 1. BASAL CONDITIONS :

(i) *Bajra+Tur*—Groundnut. (b) *Jowar*. (c) Nil. (ii) (a) Medium black. (b) Refer soil analysis, Sholapur. (iii) 30.6.1951. (iv) (a) 2 harrowings. (b) N.A. (c) 80 lb./ac. (d) 12". (e) N.A. (v) Nil. (vi) Big-Japan(late). (vii) Unirrigated. (viii) Nil. (ix) 23". (x) 18.11.1951.

## 2. TREATMENTS :

All combinations of (1) and (2)+a Control (no manure).

(1) 3 doses of P<sub>2</sub>O<sub>5</sub> : P<sub>1</sub>=10, P<sub>2</sub>=20 and P<sub>3</sub>=30 lb./ac.

(2) 3 methods of application of P<sub>2</sub>O<sub>5</sub> : M<sub>1</sub>=Broadcasting, M<sub>2</sub>=Drilling in rows and M<sub>3</sub>=Drilling in between rows.

P<sub>2</sub>O<sub>5</sub> applied as Super.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 10. (b) N.A. (iii) 4. (iv) (a) 40'×36'. (b) 34'×30'. (v) 3' ring round the net plot. (vi) Yes.

## 4. GENERAL :

(i) Normal. (ii) Nil. (iii) Pod yield. (iv) (a) 1951—1955. (b) No. (c) N.A. (v) (a) Chas and Jeur. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 1484 lb./ac.  
 (ii) 206.7 lb./ac.  
 (iii) None of the effects is significant.

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

Control=1331 lb./ac.

	M <sub>1</sub>	M <sub>2</sub>	M <sub>3</sub>	Mean
P <sub>1</sub>	1484	1299	1708	1497
P <sub>2</sub>	1566	1566	1331	1488
P <sub>3</sub>	1509	1533	1516	1519
Mean	1520	1466	1518	1501

S.E. of any marginal mean = 59.7 lb./ac.  
 S.E. of control vs any marginal mean = 119.4 lb./ac.  
 S.E. of body of table = 103.4 lb./ac.

Crop :- Groundnut (*Kharif*).

Ref :- Mh. 52(96).

Site :- Agri. Res. Stn., Sholapur.

Type :- 'M'.

Object :- To study the optimum dose and method of application of P<sub>2</sub>O<sub>5</sub> to Groundnut.

## 1. BASAL CONDITIONS :

(i) *Bajra+Tur*—Groundnut. (b) *Bajra+Tur*. (c) Nil. (ii) (a) Medium black. (b) Refer soil analysis, Sholapur. (iii) 22.6.1952. (iv) (a) One ploughing and 2 harrowings. (b) N.A. (c) 80 lb./ac. (d) 12". (e) N.A. (v) Nil. (vi) Big-Japan (late). (vii) Unirrigated. (viii) One interculturing. (ix) 17". (x) 25.11.1952.

## 2. TREATMENTS :

All combinations of (1) and (2)+a Control (no manure).

(1) 3 doses of P<sub>2</sub>O<sub>5</sub> as Super : P<sub>1</sub>=10, P<sub>2</sub>=20 and P<sub>3</sub>=30 lb./ac.(2) 3 methods of application of P<sub>2</sub>O<sub>5</sub> : M<sub>1</sub>=Broadcasting, M<sub>2</sub>=Drilling in rows and M<sub>3</sub>=Drilling in between rows.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 10. (b) N.A. (iii) 4. (iv) (a) 48.5'×30'. (b) 42.5'×24'. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) Not satisfactory. (ii) Nil. (iii) Pod yield. (iv) (a) 1951—1955. (b) No. (c) N.A. (v) (a) Chas and Jeur. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 462 lb./ac.  
 (ii) 106.9 lb./ac.  
 (iii) None of the effects is significant.  
 (iv) Av. yield of pod in lb./ac.

Control=482 lb./ac.

	M <sub>1</sub>	M <sub>2</sub>	M <sub>3</sub>	Mean
P <sub>1</sub>	437	514	494	482
P <sub>2</sub>	565	441	468	491
P <sub>3</sub>	456	347	422	408
Mean	486	434	461	460

S.E. of any marginal mean = 30.9 lb./ac.  
 S.E. of control vs. any other marginal mean = 61.7 lb./ac.  
 S.E. of body of table = 53.4 lb./ac.

Crop :- Groundnut (*Kharif*).

Ref :- Mh. 53(149).

Site :- Agri. Res. Stn. Sholapur.

Type :- 'M'.

Object :- To study the optimum dose and method of application of  $P_2O_5$  to Groundnut.

## 1. BASAL CONDITIONS :

(i) (a) *Bajra+Tur*—Groundnut. (b) *Bajra+Tur*. (c) Nil. (ii) (a) Medium black. (b) Refer soil analysis, Sholapur. (iii) 24.7.1953. (iv) (a) 2 harrowings. (b) N.A. (c) 80 lb./ac. (d) 12". (e) N.A. (v) Nil. (vi) Big-Japan (late). (vii) Unirrigated. (viii) 1 weeding by hand. (ix) 34". (x) 7.1.1954.

## 2. TREATMENTS :

All combinations of (1) and (2) + a Control (no manure).

(1) 3 doses of  $P_2O_5$  :  $P_1=10$ ,  $P_2=20$  and  $P_3=30$  lb./ac.(2) 3 methods of application of  $P_2O_5$  :  $M_1$ =Broadcasting,  $M_2$ =Drilling in rows and  $M_3$ =Drilling in between rows.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 10. (b) N.A. (iii) 4. (iv) (a) 40'×36'. (b) 34'×30'. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) Not satisfactory. (ii) Nil. (iii) Pod yield. (iv) (a) 1951—1955. (b) No. (c) N.A. (v) (a) Chas and Jeur. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 1034 lb./ac.

(ii) 136.8 lb./ac.

(iii) None of the effects is significant.

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

Control=1025 lb./ac.

	$M_1$	$M_2$	$M_3$	Mean
$P_1$	1084	1142	982	1069
$P_2$	1046	1030	982	1019
$P_3$	940	1030	1078	1016
Mean	1023	1068	1014	

S.E. of any marginal mean = 39.48 lb./ac.

S.E. of control vs. any marginal mean = 78.97 lb./ac.

S.E. of body of table = 68.39 lb./ac.

Crop :- Groundnut (*Kharif*).

Ref :- Mh. 51(67).

Site :- Agri. Res. Stn., Sholapur.

Type :- 'M'.

Object :- To study the effect of rare elements Borax and  $MnSO_4$  alone and in combination on leguminous crop Groundnut.

## 1. BASAL CONDITIONS :

(i) (a) Groundnut—*Bajra+Tur*—Groundnut. (b) *Jowar*. (c) Nil. (ii) (a) Medium black. (b) Refer soil analysis, Sholapur. (iii) 1.7.1951. (iv) (a) 2 harrowings. (b) N.A. (c) 80 lb./ac. (d) 12". (e) N.A. (v) Nil. (vi) Big-Japan (late). (vii) Unirrigated. (viii) 2 interculturings. (ix) 23". (x) 19.11.1951.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 4 levels of Boron :  $B_0=0$ ,  $B_1=2$ ,  $B_2=4$  and  $B_3=6$  lb./ac.(2) 4 levels of Manganese :  $M_0=0$ ,  $M_1=3$ ,  $M_2=6$  and  $M_3=9$  lb./ac.

Boron as Borax and Manganese as Manganese sulphate.

## 3. DESIGN :

(i) 4×4 Fact. in R.B.D. (ii) (a) 16. (b) N.A. (iii) 4. (iv) (a) 36'×14'. (b) 33'×11'. (v) 1.5' all round the net plot. (vi) Yes,

## 4. GENERAL :

(i) Normal. (ii) Nil. (iii) Pod yield. (iv) (a) 1951—1955. (b) and (c) No. (v) (a) Chas and Jeur. (b) N.A. (vi) and (vii) Nil,

## 5. RESULTS :

- (i) 1023 lb./ac.  
 (ii) 262.0 lb./ac.  
 (iii) Main effects of M and B are significant. Interaction is not significant.  
 (iv) Av. yield of pod in lb./ac.

	B <sub>0</sub>	B <sub>1</sub>	B <sub>2</sub>	B <sub>3</sub>	Mean
M <sub>0</sub>	720	870	1110	1290	997
M <sub>1</sub>	900	840	900	900	885
M <sub>2</sub>	990	1170	1380	900	1110
M <sub>3</sub>	1080	930	1260	1140	1102
Mean	922	952	1162	1057	1023

S.E. of any marginal mean = 66.0 lb./ac.

S.E. of body of table = 131.0 lb./ac.

Crop :-Groundnut (*Kharif*).

Site :-Agri. Res. Stn., Sholapur.

Ref :-Mh. 52(97).

Type :-'M'.

Object :—To study the effect of rare elements of Borax and MnSO<sub>4</sub> alone and in combination on the leguminous crop Groundnut.

## 1. BASAL CONDITIONS :

(i) (a) Groundnut-*Bajra*+*Tur*. (b) *Bajra*+*Tur*. (c) Nil. (ii) (a) Medium black. (b) Refer soil analysis, Sholapur: (iii) 21.6.1952. (iv) (a) One ploughing and 2 harrowings. (b) N.A. (c) 80 lb./ac. (d) 12". (e) N.A. (v) Nil. (vi) Big-Japan. (vii) Unirrigated. (viii) One interculturing. (ix) 17". (x) 26.11.1952.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 4 levels of Boron : B<sub>0</sub>=0, B<sub>1</sub>=2, B<sub>2</sub>=4 and B<sub>3</sub>=6 lb./ac.

(2) 4 levels of Manganese : M<sub>0</sub>=0, M<sub>1</sub>=3, M<sub>2</sub>=6 and M<sub>3</sub>=9 lb./ac.

Boron as Borax and Manganese as Manganese Sulphate.

## 3. DESIGN :

(i) 4×4 Fact- in R.B.D. (ii) (a) 16. (b) N.A. (iii) 6. (iv) (a) 36'×14'. (b) 33'×11'. (v) 1.5' ring round the net plot. (vi) Yes.

## 4. GENERAL :

(i) Normal. (ii) Nil. (iii) Pod yield. (iv) (a) 1951-1955. (b) No. (c) N.A. (v) (a) Chas and Jeur. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 491 lb./ac.  
 (ii) 85.7 lb./ac.  
 (iii) None of the effects is significant.



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

	B <sub>0</sub>	B <sub>1</sub>	B <sub>2</sub>	B <sub>3</sub>	Mean
M <sub>0</sub>	397	485	471	491	461
M <sub>1</sub>	506	435	471	472	471
M <sub>2</sub>	525	519	521	512	519
M <sub>3</sub>	555	491	485	515	511
Mean	496	483	487	497	491

S.E. of any marginal mean = 17.0 lb./ac.  
S.E. of body of table = 35.0 lb./ac.

Crop :- Groundnut (*Kharif*).

Ref : Mh. 53(148).

Site :- Agri. Res. Stn., Sholapur.

Type :- 'M'.

Object :—To study the effect of rare elements Borax and MnSO<sub>4</sub> alone and in combination on the leguminous crop of Groundnut.

## 1. BASAL CONDITIONS :

(i) (a) Groundnut-Bajra+Tur. (b) Bajra+Tur. (c) Nil. (ii) (a) Medium black. (b) Refer soil analysis, Sholapur. (iii) 17.7.1953. (iv) (a) 2 harrowings. (b) N.A. (c) 80 lb./ac. (d) 12°. (e) N.A. (v) Nil. (vi) Big-Japan (late). (vii) Unirrigated. (viii) One interculturing and One weeding. (ix) 35°. (x) 6.12.1953.

## 2. TREATMENTS :

All combinations of (1) and (2)

(1) 4 levels of Boron : B<sub>0</sub>=0, B<sub>1</sub>=2, B<sub>2</sub>=4 and B<sub>3</sub>=6 lb./ac.(2) 4 levels of Manganese : M<sub>0</sub>=0, M<sub>1</sub>=3, M<sub>2</sub>=6 and M<sub>3</sub>=9 lb./ac.

Boron as Borax and Manganese as Manganese Sulphate.

## 3. DESIGN :

(i) 4×4 Fact. in R.B.D. (ii) (a) 16. (b) N.A. (iii) 6. (iv) (a) 36'×14'. (b) 33'×12'. (v) 1.5' ring round the net plot. (vi) Yes.

## 4. GENERAL :

(i) Normal. (ii) Nil. (iii) Pod yield. (iv) (a) 1951-1955. (b) No. (c) N.A. (v) (a) Chas and Jour. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 656 lb./ac.

(ii) 79.1 lb./ac.

(iii) Main effect of B alone is significant.

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

	B <sub>0</sub>	B <sub>1</sub>	B <sub>2</sub>	B <sub>3</sub>	Mean
M <sub>0</sub>	525	570	675	735	626
M <sub>1</sub>	615	585	705	630	634
M <sub>2</sub>	660	615	690	675	660
M <sub>3</sub>	690	680	795	645	702
Mean	622	612	716	671	656

S.E. of any marginal mean = 16.15 lb./ac.  
S.E. of body of table = 32.31 lb./ac.

Crop :-Groundnut (*Kharif*).

Ref :-Mh. 49(63).

Site :-Govt. Seed and Demonstration Farm, Washim.

Type :-'M'.

Object :-To study the residual effect of T.C. and other manures on the subsequent crop.

1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Medium black. (b) N.A. (iii) 29.6.1949. (iv) (a) 3 *bakharings*. (b) By *Argada*. (c) to (e) N.A. (v) Nil. (vi) AK-12-24 (medium). (vii) Unirrigated. (viii) 1 weeding and 3 hoeings. (ix) 63.59". (x) 28.10.1949.

2. TREATMENTS :

1. Control (no manure).
2. 20 lb./ac. of N as T.C.
3. 40 lb./ac. of N as T.C.
4. 20 lb./ac. of N as F.Y.M.
5. 40 lb./ac. of N as F.Y.M.
6. 10 lb./ac. of N as G.N.C.
7. 20 lb./ac. of N as G.N.C.
8. 10 lb./ac. of N as A/S.
9. 20 lb./ac. of N as A/S.

Manures applied to last year's crop.

3. DESIGN :

(i) R.B.D. (ii) (a) 9. (b) N.A. (iii) 6. (iv) (a) N.A. (b) 66'×16.5'. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Attack of aphids. (iii) Pod yield. (iv) (a) 1946—1952 (Direct effect up to 1948 and then residual effect up to 1952). (b) Yes. (c) N.A. (v) (a) and (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

(i) 609 lb./ac.

(ii) 75.56 lb./ac.

(iii) Treatments do not differ significantly.

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

Treatment	Av. yield	Treatment	Av. yield
1.	588	6.	567
2.	628	7.	588
3.	653	8.	595
4.	615	9.	649
5.	597		
	S.E./mean		=30.85 lb./ac.

Crop :-Groundnut (*Kharif*).

Ref :-Mh. 52(129).

Site :-Govt. Seed and Demonstration Farm, Washim.

Type :-'M'.

Object :-To study the residual effect of manures applied in 1948—49 on Groundnut yield.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Jowar*. (c) Nil. (ii) (a) Medium black. (b) N.A. (iii) 7.7.1952. (iv) (a) One ploughing and 3 *bakharings*. (b) By *Argada*. (c) 80 lb./ac. (d) and (e) N.A. (v) Nil. (vi) AK-12-24. (vii) Unirrigated. (viii) 2 hoeings and 1 weeding. (ix) 17.95". (x) 24.10.1952.

2. TREATMENTS :

1. Control (no manure).
2. 20 lb./ac. of N as T.C.
3. 40 lb./ac. of N as T.C.
4. 20 lb./ac. of N as F.Y.M.
5. 40 lb./ac. of N as F.Y.M.
6. 10 lb./ac. of N as G.N.C.
7. 20 lb./ac. of N as G.N.C.
8. 10 lb./ac. of N as A/S.
9. 20 lb./ac. of N as A/S.

Manures applied in 1948—49.

## 3. DESIGN

(i) R.B.D. (ii) (a) 9. (b) N.A. (iii) 6. (iv) (a) N.A. (b) 66' x 16.5'. (v) 2½' between plots. (vi) Yes.

## 4. GENERAL :

(i) Germination was not satisfactory in all plots. About 25 to 30% seed was damaged due to fungus. (ii) Mild attack of aphids which was minimised by lady-bird-beetles. (iii) Germination counts and pod yield. (iv) (a) 1946—1952. (b) Yes. (c) N.A. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 520.3 lb./ac.  
 (ii) 37.28 lb./ac.  
 (iii) Treatments do not differ significantly.  
 (iv) Av. yield of pod in lb./ac.

Treatment	Av. yield	Treatment	Av. yield
1.	550	6.	525
2.	533	7.	500
3.	520	8.	510
4.	528	9.	500
5.	517		
	S.E./mean		= 23.39 lb./ac.

Crop :- Groundnut (*Kharif*).

Ref :- Mh. 50(81).

Site :- Govt. Seed and Demonstration Farm, Washim. Type :- 'M'.

Object :- To find out the residual effect of T.C. and other manures on the subsequent crop,

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Groundnut. (c) As per treatments. (ii) (a) Medium black. (b) N.A. (iii) 7.7.1950. (iv) (a) 1 ploughing and 3 *bakharings* (b) N.A. (c) 80 lb./ac. (d) and (e) N.A. (v) Nil. (vi) AK-12-24 (medium). (vii) Unirrigated. (viii) 1 weeding and 3 hoeings. (ix) 18.42°. (x) 24.10.1950.

## 2. TREATMENTS :

1. No manure (control).  
 2. 10 C.L./ac. of compost.  
 3. 20 C.L./ac. of compost.  
 4. 10 C.L./ac. of F.Y.M.  
 5. 20 C.L./ac. of F.Y.M.  
 6. 330 lb./ac. of G.N.C.  
 Manures applied to last year's crop.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 6. (iv) (a) N.A. (b) 66' x 16.5'. (v) 4' between plots and 4' between replications. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) Attack of aphids controlled by spraying fish oil. (iii) Pod yield. (iv) (a) 1946—1950. (b) Yes. (c) N.A. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 906 lb./ac.  
 (ii) 142.0 lb./ac.  
 (iii) Treatments do not differ significantly.  
 (iv) Av. yield of pod in lb./ac.

Treatment	Av. yield
1.	970
2.	843
3.	942
4.	888
5.	906
6.	888
S.E./mean	= 57.9 lb./ac.

Crop :- Groundnut (*Kharif*).

Ref :- Mh. 48(59).

Site :- Govt. Exptl. Farm, Yeotmal.

Type :- 'M'.

Object :- To study the residual effect of compost on Groundnut.

1. BASAL CONDITIONS :

(i) (a) *Jowar*—Groundnut—Cotton. (b) *Jowar*. (c) As per treatments. (ii) (a) Black medium loam. (b) Refer soil analysis, Yeotmal. (ii) 2.7.1948. (iv) (a) 1 ploughing and 3 *bakharings*. (b) N.A. (c) 70 to 80 lb./ac. (d) and (e) N.A. (v) Nil. (vi) AK-12-24. (vii) Unirrigated. (viii) Interculturing in August. (ix) 48.12". (x) End of Oct. 1948.

2. TREATMENTS :

1. Control.
2. Compost at 10 C.L./ac.
3. Compost at 20 C.L./ac.
4. Cattle dung at 10 C.L./ac. (F.Y.M.).
5. F.Y.M. at 20 C.L./ac.
6. G.N.C. at 4 md./ac.
7. A/S at 120 lb./ac. of N.

These treatments were applied to the previous crop *Jowar* and their residual effect was studied on Groundnut.

3. DESIGN :

(i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 6. (iv) (a) N.A. (b) 1/40 acre. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) Nil. (iii) Pod yield. (iv) (a) 1947-1948. (b) Yes. (c) N.A. (v) (a) and (b) N.A. (vi) Excessive rains resulted in low yield. (vii) Nil.

5. RESULTS :

- (i) 892 lb./ac.
- (ii) 303.5 lb./ac.
- (iii) Treatment differences are not significant.
- (iv) Av. yield of pod in lb./ac.

Treatment	Av. yield
1.	987
2.	764
3.	857
4.	890
5.	1047
6.	847
7.	854
S.E./mean	= 123.9 lb./ac.

Crop :- Groundnut (*Kharif*).

Ref :- Mh. 50(83).

Site :- Govt. Exptl. Farm, Akola.

Type :- 'C'.

Object :- To find out the most economical spacing for Groundnut.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) Groundnut. (c) 2.5 C.L./ac. of F.Y.M. and 80 lb./ac. of G.N.C. powder. (ii) (a) Black cotton soil. (b) Refer soil analysis, Akola. (iii) 19.7.1950. (iv) (a) 2 *bakharings* and one ploughing. (b) Dibbling. (c) 90 lb./ac. (d) As per treatments. (e) Nil. (v) 200 lb./ac. of G.N.C. on 30.6.1950. (vi) AK-12-24 (medium). (vii) Unirrigated. (viii) 3 hoeings and 2 weedings. (ix) 16.89". (x) 17.10.1950.

2. TREATMENTS :

All combinations of (1) and (2)

- (1) 3 spacings between rows :  $S_1=12"$ ,  $S_2=15"$  and  $S_3=18"$ .
- (2) 3 spacings between plants :  $S'_1=6"$ ,  $S'_2=9"$  and  $S'_3=12"$ .

3. DESIGN :

(i)  $3 \times 3$  Fact. in R.B.D. (ii) (a) 9. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 1/40 ac. (v) Nil. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Aphid attack. No control measures taken. (iii) Top and pod yield. (iv) (a) 1950—1953. (b) No. (c) No. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 666 lb./ac.  
 (ii) 35.33 lb./ac.  
 (iii) Main effect of  $S'$  and interaction  $S \times S'$  are significant. Main effect of  $S$  is not significant.  
 (iv) Av. yield of pod in lb./ac.

	$S_1$	$S_2$	$S_3$	Mean
$S'_1$	658	712	682	684
$S'_2$	690	682	640	671
$S'_3$	620	660	645	642
Mean	656	685	656	666

S.E. of any marginal mean = 10.20 lb./ac.  
 S.E. of body of table = 17.67 lb./ac.

Crop :- Groundnut (*Kharif*).

Ref :- Mh. 51(91).

Site :- Govt. Exptl. Farm, Akola.

Type :- 'C'.

Object :—To find out the most economical spacing for Groundnut.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Cotton. (c) 4 C.L./ac. of F.Y.M. and 300 lb./ac. of oil cake+100 lb./ac. of A/S. (ii) (a) Black cotton soil. (b) Refer soil analysis, Akola. (iii) 21.7.1951. (iv) (a) 1 heavy *bakharing* and one light *bakharing*. (b) Dibbling. (c) 90 lb./ac. (d) As per treatments. (e) N.A. (v) 200 lb./ac. of G.N.C. one month before sowing. (vi) AK-12-24 (medium). (vii) Unirrigated. (viii) 3 hoeings and 2 weedings. (ix) 24.32". (x) 10.11.1951.

## 2. TREATMENTS :

All combinations of (1) and (2)

- (1) 3 spacings between rows :  $S_1=12''$ ,  $S_2=15''$  and  $S_3=18''$ .  
 (2) 3 spacings between plants :  $S'_1=6''$ ,  $S'_2=9''$  and  $S'_3=12''$ .

## 3. DESIGN :

(i) 3 × 3 Fact. in R.B.D. (ii) (a) 9. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 66' × 16.5'. (v) Nil. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Aphids attack observed. No control measures taken. (iii) Top and pod yield. (iv) (a) 1950—1953. (b) No. (c) N.A. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 1609 lb./ac.  
 (ii) 141.4 lb./ac.  
 (iii) Main effect of  $S'$  and interaction  $S \times S'$  are significant. Main effect of  $S$  is not significant.  
 (iv) Av. yield of pod in lb./ac.

	$S_1$	$S_2$	$S_3$	Mean
$S'_1$	1720	1695	1770	1728
$S'_2$	1620	1680	1620	1640
$S'_3$	1585	1480	1315	1460
Mean	1642	1618	1568	1069

S.E. of any marginal mean = 40.8 lb./ac.  
 S.E. of body of table = 70.7 lb./ac.

Crop : Groundnut (*Kharif*)

Ref : Mh. 52(123).

Site :- Govt. Exptl. Farm, Akola.

Type :- 'C'.

Object :—To find out the most economical spacing for Groundnut.

**1. BASAL CONDITIONS :**

(i) (a) Nil. (b) *Jowar*. (c) 242 lb./ac. of G.N.C. top dressed. (ii) (a) Black cotton soil. (b) Refer soil analysis, Akola. (iii) 16.7.1952. (iv) (a) and (b) N.A. (c) 90 lb./ac. (d) As per treatments. (e) N.A. (v) Nil. (vi) AK-12-24. (medium). (vii) Unirrigated. (viii) 3 hoeings and 2 weedings. (ix) 22.03. (x) 20.12.1952.

**2. TREATMENTS :**

All combinations of (1) and (2)

- (1) 3 spacings between rows :  $S_1=12'$ ,  $S_2=15'$  and  $S_3=18'$ .  
 (2) 3 spacings between plants :  $S'_1=6'$ ,  $S'_2=9'$  and  $S'_3=12'$ .

**3. DESIGN :**

(i)  $3 \times 3$  Fact. in R.B.D. (ii) (a), 9. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 1/40.ac. (v) N.A. (vi) Yes.

**4. GENERAL :**

(i) Due to unusual drought conditions pod formation was not satisfactory. (ii) Nil. (iii) Top and pod yield. (iv) (a) 1950 to 1953. (b) No. (c) N.A. (v) (a) and (b) N.A. (vi) and (vii) Nil.

**5. RESULTS :**

- (i) 551 lb./ac.  
 (ii) 66.80 lb./ac.  
 (iii) Main effect of  $S'$  and interaction  $S \times S'$  are significant. Main effect of  $S$  is not significant.  
 (iv) Av. yield of pod in lb./ac.

	$S_1$	$S_2$	$S_3$	Mean
$S'_1$	640	605	660	635
$S'_2$	545	575	535	552
$S'_3$	515	480	400	465
Mean	567	553	532	551

S.E. of any marginal mean = 19.23 lb./ac.

S.E. of body of table = 33.40 lb./ac.

Crop :- Groundnut (*Kharif*).

Ref :- Mh. 53(171)

Site :- Govt. Exptl. Farm, Akola.

Type :- 'C'.

Object : To find out the most economical spacing for Groundnut.

**1. BASAL CONDITIONS :**

(i) (a) Nil. (b) Cotton. (c) 30 lb.N./ac. ; half as F.Y.M. and half as A/S top dressed. (ii) (a) Black cotton soil. (b) Refer soil analysis, Akola. (iii) 14.7 1953. (iv) (a) N.A. (b) N.A. (c) 90 lb./ac. (d) As per treatments. (e) N.A. (v) 200 lb./ac. of G.N.C. (vi) AK-12-24. (medium). (vii) Unirrigated. (viii) 3 hoeings and 1 weeding. (ix) 26.38. (x) 30.10.1953.

**2. TREATMENTS :**

All combinations of (1) and (2)

- (1) 3 spacings between rows :  $S_1=12'$ ,  $S_2=15'$  and  $S_3=18'$ .  
 (2) 3 spacings between plants :  $S'_1=6'$ ,  $S'_2=9'$  and  $S'_3=12'$ .

**3. DESIGN :**

(i)  $3 \times 3$  Fact. in R.B.D. (ii) (a) 9. (b) N.A. (iii) 4. (iv) (a) N.A. (b)  $66' \times 16.5'$ . (v) One row on either side of plot. (vi) Yes.

• GENERAL :

(i) Good. (ii) Aphids observed in 1st week of August. The attack disappeared by the presence of lady bird beetles. (iii) Top and pod yield. (iv) (a) 1950 to 1953. (b) No. (c) N.A. (v) (a) and (b) N.A. (vi) Nil. (vii) Nil.

5. RESULTS :

- (i) 1207 lb./ac.  
 (ii) 113.4 lb./ac.  
 (iii) Both the main effects are highly significant while the interaction is not significant.  
 (iv) Av. yield of pod in lb./ac.

	S <sub>1</sub>	S <sub>2</sub>	S <sub>3</sub>	Mean
S' <sub>1</sub>	1550	1350	1370	1423
S' <sub>2</sub>	1200	1200	1070	1157
S' <sub>3</sub>	1160	1040	920	1040
Mean	1303	1197	1120	1207

S.E. of any marginal mean = 32.75 lb./ac.

S.E. of body of table = 56.72 lb./ac.

Crop :- Groundnut. (*Kharif*).

Site :- Agri. Res. Stn., Jalagaon.

Ref :- Mh. 51(43).

Type :- 'C'.

Object :- To find out the suitable spacing and seed rate for Groundnut.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) *Jowar*. (c) Nil. (ii) (a) Deep black. (b) Refer soil analysis, Jalagaon. (iii) 13.7.1951. (iv) (a) N.A. (b) Drilled. (c) and (d) As per treatments. (e) N.A. (v) N.A. (vi) Spanish improved (early). (vii) Unirrigated. (viii) 2 weedings and 3 hoeings. (ix) 20.14". (x) 7.11.1951.

2. TREATMENTS :-

Main-plot treatments :

3 spacings : S<sub>1</sub>=12", S<sub>2</sub>=15" and S<sub>3</sub>=18".

Sub-plot treatments :

3 seedrates : R<sub>1</sub>=60, R<sub>2</sub>=80 and R<sub>3</sub>=100 lb./ac.

3. DESIGN :

(i) Split-plot. (ii) (a) 3 main-plots/block ; 3 sub-plots/main-plot. (b) N.A. (iii) 6. (iv) (a) 44'×30', 45'×30' and 46'×30' for 12", 15" and 18" spacings respectively. (b) 40'×26'. (v) 2'×2', 2.5'×2' and 3'×2' for 12", 15" and 18" spacings respectively. (vi) Yes.

4. GENERAL :

(i) At the time of pod formation, there was not sufficient moisture in the soil and hence there was not proper development of pods and hence less yield. (ii) Attack of aphids observed on 13.8.1951. (iii) Pod and chaff yield. (iv) (a) 1951-1954. (b) No. (c) N.A. (v) (a) Dhulia, Karad and Padegaon. (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

- (i) 990 lb./ac.  
 (ii) (a) 43.9 lb./ac.  
 (b) 138.9 lb./ac.  
 (iii) Spacing effect alone is highly significant.

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

	S <sub>1</sub>	S <sub>2</sub>	S <sub>3</sub>	Mean
R <sub>1</sub>	1110	934	871	972
R <sub>2</sub>	966	982	1110	1019
R <sub>3</sub>	1002	954	979	978
Mean	1026	957	987	990

S.E. of difference of two

1. S marginal means =14.6 lb./ac.
2. R marginal means =46.3 lb./ac.
3. R means at the same level of S =80.2 lb./ac.
4. S means at the same level of R =67.1 lb./ac.

Crop :-Groundnut (*Kharif*).

Ref :-Mh. 52(104).

Site :-Agri. Res. Stn., Jalagaon.

Type :-'C'.

Object :-To find out the suitable spacing and seed rate for Groundnut.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) Cotton. (c) N.A. (ii) (a) Deep black. (b) Refer soil analysis, Jalagaon. (iii) 28.6.1952.  
 (iv) (a) N.A. (b) Drilled. (c) and (d) As per treatments. (e) N.A. (v) Nil. (vi) Spanish improved (early). (vii) Unirrigated. (viii) 3 hoeings and 2 weedings. (ix) 17.61". (x) 27.10.1952.

## 2. TREATMENTS :

Main-plot treatments :

3 spacings : S<sub>1</sub>=12", S<sub>2</sub>=15" and S<sub>3</sub>=18".

Sub-plot treatments :

3 seedrates : R<sub>1</sub>=60, R<sub>2</sub>=80 and R<sub>3</sub>=100 lb./ac.

## 3. DESIGN :

(i) Split-plot. (ii) (a) 3 main-plots/block ; 3 sub-plots/main-plot. (b) N.A. (iii) 6. (iv) (a) Main-plot : 44'×90', 45'×90' and 46'×90' and Sub-plot : 44'×30', 45'×30' and 46'×30' for 12", 15" and 18" spacings respectively. (b) 40'×26'. (v) 2 rows on either side and 2' at either ends. (vi) Yes.

## 4. GENERAL :

(i) The germination was satisfactory. Insufficient rain and the diseases hampered the crop to a considerable extent. hence there was low yield. (ii) Attack of aphid observed. Attacked by *Tikka* and Root-rot disease. (iii) Pod and chaff yield. (iv) (a) 1951-1954. (b) No. (c) N.A. (v) (a) Dhulia, Karad and Padegaon. (b) No. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 553 lb./ac.
- (ii) (a) 111.6 lb./ac.  
(b) 107.5 lb./ac.
- (iii) None of the effects is significant.
- (iv) Av. yield of pod in lb./ac.

	S <sub>1</sub>	S <sub>2</sub>	S <sub>3</sub>	Mean
R <sub>1</sub>	557	551	585	564
R <sub>2</sub>	551	555	520	542
R <sub>3</sub>	568	482	613	454
Mean	559	529	573	553

S.E. of difference of two

1. S marginal means =37.2 lb./ac.
2. R marginal means =35.8 lb./ac.
3. R means at the same level of S =62.1 lb./ac.
4. S means at the same level of R =62.9 lb./ac.



Crop :- Groundnut (*Kharif*).  
Site :- Agri. Res. Stn., Jalagaon.

Ref :- Mh. 53(132).  
Type :- 'C'.

Object :- To find out suitable spacing and seed rate for Groundnut.

1. BASAL CONDITIONS :

(i) (a) N.A. (b) Cotton. (c)  $7\frac{1}{2}$  C.L./ac. of F.Y.M.+100 lb./ac. of A/S. (ii) (a) Deep black. (b) Refer soil analysis, Jalagaon. (iii) 23.6.1953. (iv) (a) 1 ploughing and 4 to 6 harrowings. (b) Drilled. (c) and (d) As per treatments. (e) N.A. (v) Nil. (vi) Spanish improved (early). (vii) Unirrigated. (viii) 2 hoeings and 2 weedings. (ix) 23.77°. (x) 25.10.1953.

2. TREATMENTS :

Main-plot treatments :

3 spacings :  $S_1=12''$ ,  $S_2=15''$  and  $S_3=18''$ .

Sub-plot treatments :

3 seed rates :  $R_1=60$ ,  $R_2=80$  and  $R_3=100$  lb./ac.

3. DESIGN :

(i) Split-plot. (ii) (a) 3 main-plots/block ; 3 sub-plots/main-plot. (b) N.A. (iii) 6. (iv) (a) Sub plot :  $44' \times 30'$ ,  $45' \times 30'$ ,  $46' \times 30'$  for  $S_1$ ,  $S_2$  and  $S_3$  respectively. (b)  $40' \times 26'$ . (b) 2 rows on either side and 2' at either ends. (vi) Yes.

4. GENERAL :

(i) Few gaps were observed due to break of rains. Growth of the crop was very fine. (ii) Attack of aphid and *Tikka* observed. (iii) Pod and chaff yield. (iv) (a) 1951-1954. (b) and (c) No. (v) (a) Dhulia, Karad and Padegaon, (b) N.A. (vi) and (vii) Nil.

5. RESULTS :

- (i) 1736 lb./ac.  
(ii) (a) 209.6 lb./ac.  
(b) 185.0 lb./ac.  
(iii) Only seedrate effect is significant.  
(iv) Av. yield of pod in lb./ac.

	$S_1$	$S_2$	$S_3$	Mean
$R_1$	1763	1593	1676	1677
$R_2$	1856	1579	1630	1688
$R_3$	1880	1748	1898	1842
Mean	1833	1640	1735	1736

S.E. of difference of two

1. S marginal means = 69.8 lb./ac.  
2. R marginal means = 59.4 lb./ac.  
3. R means at the same level of S = 106.7 lb./ac.  
4. S means at the same level of R = 111.8 lb./ac.

Crop :- Groundnut (*Kharif*).  
Site :- Agri. Res., Stn., Karad.

Ref :- Mh. 52(26).  
Type :- 'M'.

Object :- To find out optimum spacing and seed rate for Groundnut.

1. BASAL CONDITIONS :

(i) (a) Groundnut—*Bajra*. (b) *Bajra*. (c) 5 C.L./ac. of F.Y.M. (ii) (a) Clay loam. (b) N.A. (iii) N.A. (iv) (a) 1 ploughing and 3 harrowings. (b) to (e) N.A. (v) 5 C.L./ac. of F.Y.M. applied about 1 month prior to sowing and mixed by harrowing. (vi) Spanish-5 (early and erect type). (vii) Unirrigated. (viii) N.A. (ix) 27.10°. (x) N.A.

**2. TREATMENTS:****Main-plot treatments :**3 spacings :  $S_1=12''$ ,  $S_2=15''$  and  $S_3=18''$ .**Sub-plot treatments :**3 seedrates :  $R_1=80$ ,  $R_2=100$  and  $R_3=120$  lb./ac.**3. DESIGN :**(i) Split-plot. (ii) (a) 3 main-plots/block and 3 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a)  $15' \times 15'$ . (b)  $15' \times 13'$ . (v) 1' on each side. (vi) Yes.**4. GENERAL :**

(i) No lodging. (ii) Nil. (iii) Pod yield. (iv) (a) 1952—1954. (b) No. (c) N.A. (v) (a) Jalagaon and Padegaon. (b) N.A. (vi) and (vii) Nil.

**5. RESULTS :**

- (i) 1516 lb./ac.  
 (ii) (a) 517.2 lb./ac.  
 (b) 472.7 lb./ac.  
 (iii) None of the effects is significant.  
 (iv) Av. yield of pod in lb./ac.

	$S_1$	$S_2$	$S_3$	Mean
$R_1$	914	1801	1365	1360
R	1700	1393	1584	1559
$R_3$	1557	1693	1640	1630
Mean	1390	1629	1530	1516

**S.E. of difference of two**

1. S marginal means =210.9 lb./ac.  
 2. R marginal means =192.9 lb./ac.  
 3. R means at the same level of S =334.2 lb./ac.  
 4. S means at the same level of R =345.1 lb./ac.

**Crop :- Groundnut (*Kharif*).****Site :- Agri. Res. Stn., Karad.****Ref :- Mh. 53(303).****Type :- 'C'.****Object :- To find out the optimum spacing and seedrate for Groundnut.****1. BASAL CONDITIONS :**(i) (a) Groundnut-*Jowar*. (b) *Jowar*. (c) 5 C.L./ac. of F.Y.M. (ii) (a) Medium black. (b) N.A. (iii) 9.7.1953. (iv) (a) 1 ploughing and 2 harrowings. (b) to (e) N.A. (v) 5 C.L./ac. of F.Y.M. one month before sowing. (vi) Spanish (early). (vii) Unirrigated. (viii) N.A. (ix) 38%. (x) N.A.**2. TREATMENTS :**

All combinations of (1) and (2)

- (1) 3 spacings :  $S_1=12''$ ,  $S_2=15''$  and  $S_3=18''$ .  
 (2) 3 seed rates :  $R_1=80$ ,  $R_2=100$  and  $R_3=120$  lb./ac.

**3. DESIGN :**(i)  $3 \times 3$  Fact. in R.B.D. (ii) (a) 9. (b) N.A. (iii) 4. (iv) (a) and (b)  $15' \times 15'$ . (v) Nil. (vi) Yes.**4. GENERAL :**

(i) Normal. (ii) Nil. (iii) Pod yield. (iv) (a) 1952—1954. (b) No. (c) N.A. (v) (a) N.A. (b) N.A. (vi) and (vii) Nil.

**5. RESULTS :**

- (i) 1016 lb./ac.  
 (ii) 207.3 lb./ac.  
 (iii) None of the effects is significant.

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

	S <sub>1</sub>	S <sub>2</sub>	S <sub>3</sub>	Mean
R <sub>1</sub>	974	965	1050	996
R <sub>2</sub>	959	880	1083	974
R <sub>3</sub>	811	1156	1270	1079
Mean	915	1000	1134	1016

S.E. of any marginal mean = 59.8 lb./ac.  
 S.E. of body of table = 103.6 lb./ac.

Crop :- Groundnut (*Kharif*).

Ref :- Mh. 52(25).

Site :- Agri. Res. Stn., Karad.

Type :- 'C'.

Object :- To find out the optimum spacing and seedrate for Groundnut.

## 1. BASAL CONDITIONS:

(i) (a) Groundnut-*Bajra*. (b) *Bajra*. (c) 3 C.L./ac. of F.Y.M. (ii) (a) Clay loam. (b) N.A. (iii) N.A.  
 (iv) (a) 1 ploughing and 3 harrowings and other details N.A. (b) to (e) N.A. (v) 5 C.L./ac. of F.Y.M. applied about 1 month prior to sowing and mixed by harrowing. (vi) K-1 (late ; spreading type).  
 (vii) Unirrigated (viii) N.A. (ix) 27.10". (x) N.A.

## 2. TREATMENTS:

Main-plot treatments:

3 spacings: S<sub>1</sub>=12", S<sub>2</sub>=18" and S<sub>3</sub>=24".

Sub-plot treatments:

3 seed rates: R<sub>1</sub>=80, R<sub>2</sub>=100 and R<sub>3</sub>=120 lb./ac.

## 3. DESIGN:

(i) Split-plot. (ii) (a) 3 main-plots/block; 3 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 15'×12'. (b) 13'×12'. (v) 1' on each side. (vi) Yes.

## 4. GENERAL:

(i) No lodging. (ii) Nil. (iii) Pod yield. (iv) (a) 1952-1954. (b) No. (c) N.A. (v) (a) Jalagaon and Padegaon. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS:

(i) 1330 lb./ac.  
 (ii) (a) 209.3 lb./ac.  
 (b) 272.6 lb./ac.  
 (iii) S effect is highly significant. Others are not significant.  
 (iv) Av. yield of pod in lb./ac.

	S <sub>1</sub>	S <sub>2</sub>	S <sub>3</sub>	Mean
R <sub>1</sub>	1731	1230	911	1291
R <sub>2</sub>	1526	1321	1190	1346
R <sub>3</sub>	1596	1230	1234	1353
Mean	1618	1260	1112	1330

S.E. of difference of two

- |                                   |                 |
|-----------------------------------|-----------------|
| 1. S marginal means               | = 85.4 lb./ac.  |
| 2. R marginal means               | = 111.3 lb./ac. |
| 3. R means at the same level of S | = 192.8 lb./ac. |
| 4. S means at the same level of R | = 179.1 lb./ac. |

Crop :-Groundnut (*Kharif*).  
Site :-Agri, Res. Stn., Karad.

Ref :-Mh. 53(302).

Type :-'C'.

Object :-To find out the optimum spacing and seedrate for Groundnut.

## 1. BASAL CONDITIONS :

(i) (a) Groundnut-*Jowar*. (b) *Jowar*. (c) 5 C.L./ac. of F.Y.M. (ii) (a) Medium black. (b) N.A. (iii) 10.7.1953. (iv) (a) 1 ploughing and 2 harrowings. (b) to (e) N.A. (v) 5 C.L./ac. of F.Y.M. one month before sowing. (vi) Dombi-1. (late) (vii) Unirrigated. (viii) N.A. (ix) 38". (x) N.A.

## 2. TREATMENTS :

All combinations of (1) and (2)

- (1) 3 spacings :  $S_1=12''$ ,  $S_2=18''$  and  $S_3=24''$ .  
(2) 3 seedrates :  $R_1=80$ ,  $R_2=100$  and  $R_3=120$  lb./ac.

## 3. DESIGN :

(i)  $3 \times 3$  Fact. in R.B.D. (ii) (a) 9. (b) N.A. (iii) 4. (iv) (a) and (b)  $15' \times 12'$ . (v) Nil. (vi) Yes.

## 4. GENERAL :

(i) Normal. (ii) Nil. (iii) Pod yield. (iv) (a) 1953-N.A. (b) No. (c) N.A. (v) (a) N.A. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 1033 lb./ac.  
(ii) 321.1 lb./ac.  
(iii) None of the effects is significant.  
(iv) Av. yield of pod in lb./ac.

	$S_1$	$S_2$	$S_3$	Mean
$R_1$	843	832	1070	915
$R_2$	979	1270	998	1082
$R_3$	1247	1051	1005	1101
Mean	1023	1051	1024	1033

S.E. of any marginal mean = 92.7 lb./ac.

S.E. of body of table = 160.6 lb./ac.

Crop :-Groundnut (*Kharif*).  
Site :-Govt. Exptl. Farm, Nagpur.

Ref :-Mh. 51(121).

Type :-'C'.

Object :-To find out the optimum line to line spacing for Groundnut.

## 1. BASAL CONDITIONS :

(i) (a) No. (b) N.A. (c) N.A. (ii) (a) Black cotton soil. (b) Refer soil analysis, Nagpur. (iii) 11.7.1951. (iv) (a) 1 ploughing and 3 *bakharings*. (b) N.A. (c) 80 lb./ac. (d) As per treatments. (e) N.A. (v) Nil. (vi) AK-12-24 (medium). (vii) Unirrigated. (viii) 3 hoeings. (ix) 37.55". (x) 22.10.1951.

## 2. TREATMENTS :

3 line to line spacings :  $S_1=12''$ ,  $S_2=18''$  and  $S_3=24''$ .

## 3. DESIGN :

(i) R.B.D. (ii) (a) 3. (b) N.A. (iii) 4. (iv) (a) N.A. (b)  $66' \times 16.5'$ . (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) Normal. (ii) Nil. (iii) Pod yield. (iv) (a) N.A. (b) No. (c) N.A. (v) (a) N.A. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 1923 lb./ac.
- (ii) 177.6 lb./ac.
- (iii) Treatments do not differ significantly.
- (iv) Av. yield of pod in lb./ac.

Treatment	Av. yield
S <sub>1</sub>	1920
S <sub>2</sub>	1970
S <sub>3</sub>	1880
S.E./mean	=88.8 lb./ac.

Crop :- Groundnut (*Kharif*).

Ref :- Mh. 52(141).

Site :- Govt. Exptl. Farm, Nagpur.

Type :- 'C'.

Object :- To find out the optimum line to line spacing for Groundnut.

## 1. BASAL CONDITIONS :

- (i) (a) Nil. (b) N.A. (c) N.A. (ii) (a) Black cotton soil. (b) Refer soil analysis, Nagpur. (iii) 6.7.1952.
- (iv) (a) 4-5 *bakharings* and 1 ploughing. (b) *Argada* sown. (c) 80 lb./ac. (d) As per treatments. (e) N.A.
- (v) Nil. (vi) AK-12-24 (medium). (vii) Unirrigated. (viii) 3 to 4 hoeings. (ix) 29.32". (x) 16.10.1932.

## 2. TREATMENTS :

3 spacings between rows : S<sub>1</sub>=12", S<sub>2</sub>=15" and S<sub>3</sub>=18".

## 3. DESIGN :

- (i) R.B.D. (ii) (a) 3. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 1/40th ac. (v) N.A. (vi) Yes.

## 4. GENERAL :

- (i) Normal (ii) Nil. (iii) Pod yield. (iv) (a) 1950—N.A. (b) No. (c) N.A. (v) (a) N.A. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 1449 lb./ac.
- (ii) 133.8 lb./ac.
- (iii) Treatments do not differ significantly.
- (iv) Av. yield of pod in lb./ac.

Treatment	Av. yield
S <sub>1</sub>	1468
S <sub>2</sub>	1490
S <sub>3</sub>	1388
S.E./mean	= 66.90 lb./ac.

Crop :- Groundnut (*Kharif*).

Ref :- Mh. 50(118).

Site :- Agri. Res. Stn., Padegaon.

Type :- 'C'.

Object :- To find out the optimum seedrate and spacing for Groundnut.

## 1. BASAL CONDITIONS :

- (i) (a) Nil. (b) N.A. (c) N.A. (ii) (a) B type. (b) Refer soil analysis, Padegaon. (iii) N.A. (iv) (a) N.A. (b) N.A. (c) and (d) As per treatments. (e) N.A. (v) Nil. (vi) Dharwar (improved). (vii) Irrigated. (viii) N.A. (ix) 22.91" (x) N.A.

## 2. TREATMENTS :

Main-plot treatments :

3 spacings : S<sub>1</sub>=12", S<sub>2</sub>=15" and S<sub>3</sub>=18".

Sub-plot treatments :

3 seedrates : R<sub>1</sub>=80, R<sub>2</sub>=100 and R<sub>3</sub>=120 lb./ac.

## 3. DESIGN :

(i) Split-plot. (ii) (a) 3 main-plots/block ; 3 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 21'×46.9', 22.5'×46.9' and 24'×46.9' for S<sub>1</sub>, S<sub>2</sub> and S<sub>3</sub> respectively. (b) 15'×36.3'. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) Nil. (iii) Pod yield. (iv) (a) 1950-1952. (b) and (c) No. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 1887 lb./ac.  
 (ii) (a) 121.6 lb./ac.  
 (b) 138.2 lb./ac.  
 (iii) Only the interaction S×R<sub>1</sub> is significant.  
 (iv) Av. yield of pod in lb./ac.

	S <sub>1</sub>	S <sub>2</sub>	S <sub>3</sub>	Mean
R <sub>1</sub>	2202	1642	1682	1842
R <sub>2</sub>	2122	2003	1642	1922
R <sub>3</sub>	1802	2043	1842	1896
Mean	2042	1896	1722	1887

## S.E. of difference of two

- |                                   |               |
|-----------------------------------|---------------|
| 1. S marginal means               | =49.6 lb./ac. |
| 2. R marginal means               | =56.3 lb./ac. |
| 3. R means at the same level of S | =97.7 lb./ac. |
| 4. S means at the same level of R | =93.9 lb./ac. |

Crop :-Groundnut (*Kharif*).

Ref :-Mh. 51(162),

Site :-Agri. Res., Stn., Padegaon.

Type :-'C'.

Object :-To find out the optimum seed rate and spacing for Groundnut.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) N.A. (c) N.A. (ii) (a) B type. (b) Refer soil analysis, Padegaon. (iii) 3.7.1951. (iv) (a) and (b) N.A. (c) and (d) As per treatments. (e) N.A. (v) Nil. (vi) Dharwar (Improved). (vii) Unirrigated. (viii) 2 weedings. (ix) 14.68". (x) 2.11.1951.

## 2. TREATMENTS :

## Main-plot treatments :

3 spacings : S<sub>1</sub>=12", S<sub>2</sub>=15" and S<sub>3</sub>=18".

## Sub-plot treatments

3 seedrates : R<sub>1</sub>=80, R<sub>2</sub>=100 and R<sub>3</sub>=120 lb./ac.

## 3. DESIGN :

(i) Split-plot. (ii) (a) 3 main-plots/block ; 3 sub-plots/main-plot. (b) N.A. (iii) 4. (iv) (a) 16'×36', 15'×36', 15'×36' for 12", 15" and 18" respectively. (b) 12'×27.6', 12.5'×26.8' and 12.5'×26.1' for 12", 15" and 18" spacings respectively. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) Nil. (iii) Pod yield. (iv) (a) 1950 to 1952. (b) No. (c) N.A. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 1555 lb./ac.  
 (ii) (a) 654.4 lb./ac.  
 (b) 374.8 lb./ac.  
 (iii) None of the effects is significant.

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

	S <sub>1</sub>	S <sub>2</sub>	S <sub>3</sub>	Mean
R <sub>1</sub>	1658	1544	1591	1598
R <sub>2</sub>	1626	1570	1436	1544
R <sub>3</sub>	1664	1698	1206	1523
Mean	1649	1604	1411	1555

S.E. of difference of two

1. S marginal means = 267.1 lb./ac.
2. R marginal means = 153.0 lb./ac.
3. R means at the same level of S = 265.4 lb./ac.
4. S means at the same level of R = 343.8 lb./ac.

Crop :- Groundnut  
Site :- Agri. Res. Stn., Padegaon.

Ref :- Mh. 52(195).  
Type :- 'C'.

Object :- To find out the optimum seed rate and spacing for Groundnut.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) *Jowar*. (c) Nil. (ii) (a) B type. (b) Refer soil analysis, Padegaon. (iii) 29.4.1952. (iv) (a) N.A. (b) Hand sowing. (c) and (d) As per treatments. (e) N.A. (v) Nil. (vi) Dharwar (improved). (vii) Irrigated. (viii) 2 weedings. (ix) 11.01<sup>st</sup>. (x) 1.9.1952.

## 2. TREATMENTS :

Main-plot treatments :

3 spacings : S<sub>1</sub>=12", S<sub>2</sub>=15" and S<sub>3</sub>=18".

Sub-plot treatments :

3 seedrates : R<sub>1</sub>=80, R<sub>2</sub>=100 and R<sub>3</sub>=120 lb./ac.

## 3. DESIGN :

(i) Split-plot. (ii) (a) 3 main-plots/block ; 3 sub-plots/main-plot. (b) N.A. (iii) 6. (iv) (a) 19'×42.0', 20'×42.3' and 21'×42.3' for 12", 15" and 18" respectively. (b) 15'×36.3'. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Nil. (iii) Pod yield. (iv) (a) 1950 to 1952. (b) No. (c) N.A. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 1878 lb./ac.
- (ii) (a) 244.0 lb./ac.  
(b) 313.9 lb./ac.
- (iii) Only S effect is significant.
- (iv) Av. yield of pod in lb./ac.

	S <sub>1</sub>	S <sub>2</sub>	S <sub>3</sub>	Mean
R <sub>1</sub>	2006	1865	1761	1877
R <sub>2</sub>	1960	1874	1775	1870
R <sub>3</sub>	2022	1914	1724	1887
Mean	1996	1884	1753	1878

S.E. of difference of two

1. S marginal means = 81.3 lb./ac.
2. R marginal means = 104.6 lb./ac.
3. S means at the same level of R = 168.9 lb./ac.
4. R means at the same level of S = 181.2 lb./ac.

Crop :- Groundnut (*Kharif*).  
Site :- Cotton Res. Stn., Parbhani.

Ref :- Mh. 52(39).  
Type :- 'C'.

Object :- To find out the optimum seedrate for Groundnut.

1. BASAL CONDITIONS :

(i) (a) Groundnut—Cotton. (b) Cotton. (c) Nil. (ii) (a) Medium black cotton soil. (b) Refer soil analysis, Parbhani. (iii) 10.7.1952. (iv) (a) 1 ploughing and 2 harrowings in April and May. (b) Sown by 4 coulters 12" seed drill with *moghas* (bamboo tubes). (c) As per treatments. (d) 12". (e) N.A. (v) Nil. (vi) Spanish peanut No-5 (early). (vii) Unirrigated. (viii) Weeding on 10.8.1952. (ix) 25.56". (x) 10.11.1952.

2. TREATMENTS :

4 seedrates :  $R_1=60$ ,  $R_2=80$ ,  $R_3=100$  and  $R_4=120$  lb./ac.

3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 5. (iv) (a) 93'×12'. (b) 90'×12'. (v) 2 non-experimental rows. (vi) Yes.

4. GENERAL :

(i) Satisfactory. (ii) Crop affected by *Tikka* disease, no control measures taken. (iii) Pod yield. (iv) (b) 1952—1954. (b) and (c) No. (v) (a) and (b) Nil. (vi) and (vii) Nil.

5. RESULTS :

(i) 1612 lb./ac.  
(ii) 145.2 lb./ac.  
(iii) Treatment differences are significant.  
(iv) Av. yield of pod in lb./ac.

Treatment	Av. yield
$R_1$	1408
$R_2$	1632
$R_3$	1672
$R_4$	1736
S.E./mean	= 66.0 lb./ac.

Crop :- Groundnut (*Kharif*).  
Site :- Cotton Res. Stn., Parbhani.

Ref :- Mh. 53(8).  
Type :- 'C'.

Object :- To find out the optimum seed rate for Groundnut.

1. BASAL CONDITIONS :

(i) (a) Groundnut—Cotton. (b) Cotton. (c) Nil. (ii) (a) Medium black cotton soil. (b) Refer soil analysis, Parbhani. (iii) 1.7.1953. (iv) (a) 1 ploughing and 2 harrowings in April and May. (b) Sown by 4 coulters 12" seed drill with *mogha* (bamboo tubes). (c) As per treatments. (d) 12". (e) N.A. (v) Nil. (vi) Spanish peanut No.5 (early). (vii) Unirrigated. (viii) Weeding on 18.7.1953. (ix) 40.32". (x) 29.10.1953.

2. TREATMENTS :

4 seedrates :  $R_1=60$ ,  $R_2=80$ ,  $R_3=100$  and  $R_4=120$  lb./ac.

3. DESIGN :

(i) R.B.D. (ii) (a) 4. (b) N.A. (iii) 5. (iv) (a) 93'×12'. (b) 90'×12'. (v) 2 non-experimental rows. (vi) Yes.

4. GENERAL :

(i) Excessive vegetative growth due to heavy rains. (ii) Mild attack of aphids in July 1953. crop affected by *Tikkha* disease, no control measures adopted. (iii) Pod yield. (iv) (a) (a) 1952—1954. (b) and (c) No. (v) (a) and (b) Nil. (vi) and (vii) Nil.

5. RESULTS :

(i) 1432 lb./ac.  
(ii) 116.4 lb./ac.  
(ii) Treatment differences are significant.



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

Treatment	Av. yield
R <sub>1</sub>	1224
R <sub>2</sub>	1400
R <sub>3</sub>	1520
R <sub>4</sub>	1584
S.E./mean	= 52.5 lb./ac.

Crop :- Groundnut (*Kharif*).

Ref :- Mh. 50(156).

Site :- Agri. Res. Stn., Sholapur.

Type :- 'C'.

Object :- To find out optimum seed rate for Groundnut crop.

## 1. BASAL CONDITIONS :

(i) (a) No. (b) N.A. (c) N.A. (ii) (a) Medium black. (b) Refer soil analysis, Sholapur. (iii) N.A. (iv) (a) 2 harrowings. (b) Drilled. (c) As per treatments. (d) 12" between rows. (e) —. (v) Nil. (vi) Big-Japan. (vii) Unirrigated. (viii) 1 interculturing and 1 weeding. (ix) 24.04%. (x) N.A.

## 2. TREATMENTS :

2 seedrates : R<sub>1</sub>=60 and R<sub>2</sub>=80 lb./ac.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 2 (b) N.A. (iii) 4. (iv) (a) 150' × 28'. (b) 132' × 22'. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) Normal. (ii) Nil. (iii) Pod yield. (iv) (a) No. (b) No. (c) Nil. (v) (a) N.A. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 753 lb./ac.  
(ii) 157.5 lb./ac.  
(iii) Treatments differ highly significantly.  
(iv) Av. yield of pod in lb./ac.

Treatment	Av. yield
R <sub>1</sub>	622
R <sub>2</sub>	885
S.E./mean	= 78.7 lb./ac.

Crop :- Groundnut (*Kharif*).

Ref :- Mh. 53(131).

Site :- Agri. Res. Stn., Jalagaon.

Type :- 'D'.

Object :- To study the effect of hormone treatment on growth and yield of Groundnut.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) *Jowar*. (c) N.A. (iii) (a) Deep black cotton. (b) Refer soil analysis, Jalagaon. (iii) 27.6.1953. (iv) (a) N.A. (b) Drilled. (c) 60 lb./ac. (d) Between rows 12" ; between plants irregular. (e) N.A. (v) Nil. (vi) Spanish (improved, early). (vii) Unirrigated. (viii) 3 weedings and 3 hoeings. (ix) 23.77%. (x) 24.10.1953.

## 2. TREATMENTS :

Seeds treated as follows :-

1. Untreated (control).
2. Water for 20 hours.
3. 0.00033 p.p.m. of 2-4-D for 20 hours.
4. 0.00100 p.p.m. of 2-4-D for 20 hours.
5. 0.00330 p.p.m. of 2-4-D for 20 hours.
6. 0.01000 p.p.m. of 2-4-D for 20 hours.
7. 0.03300 p.p.m. of 2-4-D for 20 hours.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 4. (iv) (a) 18'×36'. (b) 12'×30'. (v) 3' round the net lot. (vi) Yes.

## 4. GENERAL :

(i) Many gaps were observed as an effect of hormone treatment ; germination took place very early and there was complete break of rains after sowing. Growth of the crop was fairly good. (ii) Attack of Aphis and Tikka observed. Attack of root-rot also observed. (iii) Pod and chaff yield. (iv) (a) 1952—1954. (b) No. (c) No. (v) (a) Dhulia and Kopergaon. (b) N.A. (vi) Nil. (vii) Experiment failed in year 1952.

## 5. RESULTS :

- (i) 1130 lb./ac.  
 (ii) 251.2 lb./ac.  
 (iii) Treatments do not differ significantly.  
 (iv) Av. yield of pod in lb./ac.

Treatment	Av. yield
1.	979
2.	1077
3.	1212
4.	1172
5.	1068
6.	1287
7.	1114
S.E./mean	=125.6 lb./ac.

Crop :-Groundnut (*Kharif*).  
 Site :-Agri. Res. Stn., Karad.

Ref. :-Mh. 52(222).  
 Type :- 'D'.

Object :—To test the effect of 2-4-D hormone on the yield of Groundnut.

## 1. BASAL CONDITIONS :

(i) (a) Groundnut—*Jowar*. (b) *Jowar*. (c) 5 C.L./ac. of F.Y.M. (ii) (a) Medium black. (b) N.A. (iii) 16.7.1952. (iv) (a) 1 ploughing and 2 harrowings. (b) to (e) N.A. (v) 5 C.L./ac. of F.Y.M. one month before sowing. (vi) Dombi—1 (spreading ; late). (vii) Unirrigated. (viii) N.A. (ix) 33°. (x) 15.12.1952.

## 2. TREATMENTS :

Seeds soaked in the solutions of 2-4-D as below :

- Control (untreated).
- Water—for 20 hrs.
- 0.00033 p.p.m. for 20 hrs.
- 0.00100 p.p.m. for 20 hrs.
- 0.00330 p.p.m. for 20 hrs.
- 0.01000 p.p.m. for 20 hrs.
- 0.03300 p.p.m. for 20 hrs.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 4. (iv) (a) 36'×18'. (b) 30'×12'. (v) 3' ring round the net plot. (vi) Yes.

## 4. GENERAL :

(i) No lodging. (ii) Nil. (iii) Pod yield. (iv) (a) 1952—N.A. (b) and (c) N.A. (v) (a) and (b) N.A. (vi) and (vii) Nil:

## 5. RESULTS :

- (i) 1033 lb./ac.  
 (ii) 70.47 lb./ac.  
 (iii) Treatments differ highly significantly.

Treatment	Av. yield
1.	1189
2.	1025
3.	1045
4.	1061
5.	1000
6.	973
7.	940
S.E./mean	=35.24 lb./ac.

Crop :-Groundnut (*Kharif*).  
Site :-Agri. Res, Stn., Karad.

Ref :-Mh. 53(300).  
Type :-'D'.

Object :-To study the effect of 2-4-D hormone on Groundnut.

#### 1. BASAL CONDITIONS :

(i) (a) Groundnut—*Jowar*. (b) *Jowar*. (c) 5 C.L./ac. of F.Y.M. (ii) Medium black. (b) N.A. (iii) 13.7.1953. (iv) (a) 1 ploughing and 2 harrowings. (b) to (e) N.A. (v) 5 C.L./ac. of F.Y.M. one month before sowing. (vi) Dombi—1 (late). (vii) Unirrigated. (viii) N.A. (ix) 38". (x) N.A.

#### 2. TREATMENTS :

Seeds soaked in 2-4-D solutions as below :

1. Control (untreated).
2. Water—for 20 hrs.
3. 0.00033 p.p.m. for 20 hrs.
4. 0.00100 p.p.m. for 20 hrs.
5. 0.00330 p.p.m. for 20 hrs.
6. 0.01000 p.p.m. for 20 hrs.
7. 0.03300 p.p.m. for 20 hrs.

#### 3. DESIGN :

(i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 4. (iv) (a) 18'×36'. (b) 12'×30'. (v) 3' ring round the net plot. (vi) Yes.

#### 4. GENERAL :

(i) Normal. (ii) Nil. (iii) Pod yield. (iv) (a) 1952—N.A. (b) No. (c) N.A. (v) (a) and (b) N.A. (vi) and (vii) Nil.

#### 5. RESULTS :

- (i) 1160 lb./ac.
- (ii) 262.2 lb./ac.
- (iii) Treatments do not differ significantly.
- (iv) Av. yield of pod in lb./ac.

Treatment	Av. yield
1.	1217
2.	1042
3.	1350
4.	1274
5.	1221
6.	930
7.	1083
S.E./mean	=131.1 lb./ac.

Crop :- Groundnut (*Kharif*).  
Site :- Agri. Res. Stn., Kopergaon.

Ref :- Mh. 52(83).  
Type :- 'D'.

Object : - To study the effect of treatment of seed with 2-4-D on growth and yield of Groundnut.

### 1. BASAL CONDITIONS :

(i) (a) Wheat—Groundnut. (b) Wheat. (c) 3 bags/ac. of G.N.C.+75 lb./ac. of A/S. (ii) (a) Medium black. (b) Refer soil analysis, Kopergaon. (iii) 8.7.1952. (iv) (a) N.A. (b) Drilled. (c) 80 lb./ac. (d) 18"×9". (e) N.A. (v) N.A. (vi) Spanish (improved, early). (vii) Irrigated. (viii) One hoeing and 2 weedings. (ix) 11.73". (x) 25 to 28.10.1952.

### 2. TREATMENTS :

Seeds soaked as follows :

1. Control (no soaking).
2. Water only for 20 hours.
3. 0.00033 p.p.m. of 2-4D for 20 hours.
4. 0.00100 p.p.m. of 2-4D for 20 hours.
5. 0.00330 p.p.m. of 2-4D for 20 hours.
6. 0.01000 p.p.m. of 2-4D for 20 hours.
7. 0.03300 p.p.m. of 2-4D for 20 hours.

### 3. DESIGN :

(i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 4. (iv) (a) 36'×18'. (b) 30'×12'. (v) 3' ring round the net plot. (vi) Yes.

### 4. GENERAL :

(i) Good. (ii) Slight attack of tikka disease. (iii) Pod yield. (iv) (a) 1952—1955. (b) No. (c) N.A. (v) (a) Dhulia and Jalagaon. (b) N.A. (vi) and (vii) Nil.

### 5. RESULTS :

- (i) 2115 lb./ac.
- (ii) 302.5 lb./ac.
- (iii) Treatments do not differ significantly.
- (iv) Av. yield of pod in lb./ac.

Treatment	Av. yield
1.	1976
2.	2374
3.	2215
4.	1851
5.	1886
6.	2.59
7.	2348
S.E./mean	= 151.3 lb./ac.

Crop :- Groundnut (*Kharif*).  
Site :- Agri. Res. Stn., Kopergaon.

Ref :- Mh. 53(34)  
Type :- 'D'.

Object : - To study the effect of seed treatment with 2-4-D. on the growth and yield of Groundnut.

### 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Fallow. (c) Nil. (ii) (a) H type. (b) Refer soil analysis, Kopergaon. (iii) 7.7.1953. (iv) (a) Ploughing once, harrowing once and planking once. (b) to (e) N.A. (v) 6 bags/ac. of G.N.C. (vi) Spanish (improved, early). (vii) Irrigated. (viii) We-dings 3 times. (ix) 17.22". (x) 28.10.1953:

### 2. TREATMENTS :

1. Control.
2. Seed soaked in water alone for 20 hours.
3. Seed soaked in 2-4-D of 0.00033 p.p.m. for 20 hours.
4. Seed soaked in 2-4-D of 0.00100 p.p.m. for 20 hours.
5. Seed soaked in 2-4-D of 0.00330 p.p.m. for 20 hours.
6. Seed soaked in 2-4-D of 0.01000 p.p.m. for 20 hours.
7. Seed soaked in 2-4-D of 0.03300 p.p.m. for 20 hours.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 4. (iv) (a) 36'×18'. (b) 30'×12'. (v) 3' all round the net plot. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Slight attack of tikka disease. (iii) Pod yield. (iv) (a) 1952—continued. (b) No. (c) N.A. (v) (a) N.A. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 4016 lb./ac.  
 (ii) 606.2 lb./ac.  
 (iii) Treatments do not differ significantly.  
 (iv) Av. yield of pods in lb./ac.

Treatment	Av. yield
1.	3735
2.	3879
3.	4381
4.	3910
5.	3812
6.	4488
7.	3910
S.E./mean	= 303.1 lb./ac.

Crop :- Chillies (*Kharif*).

Ref :- Mh. 52(216).

Site :- Agri. College Farm, Poona.

Type :- 'M'.

Object :- To study the effect of different methods of application of F.Y.M.

## 1. BASAL CONDITIONS :

(i) (a) to (c) N.A. (ii) (a) Medium black. (b) Refer soil analysis, Poona. (iii) 25.6.1952/16.7.1952. (iv) (a) to (c) N.A. (v) N.A. (vi) *Forno* (local). (vii) Irrigated. (viii) 4 interculturings and 3 weedings. (ix) 22.03. (x) 15.10.1952, 2.11.1952 and 26.1.1953.

## 2. TREATMENTS :

- (1) General spreading of 15 C.L./ac. of F.Y.M. over the entire area.  
 (2) Local application *i.e.*, putting a handful of F.Y.M. at the place where the plant is to be transplanted. (2—3 C.L./ac.)

## 3. DESIGN :

(i) R.B.D. (ii) (a) 2. (b) N.A. (iii) 12. (iv) (a) 65'×20'. (b) 55'×15'. (v) 5'×2½'. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Attack of leaf and versases. Dusting of sulphur controlled it. (iii) Dry chillies. (iv) (a) 1952 to 1953. (b) and (c) No. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 669.9 lb./ac.  
 (ii) 119.0 lb./ac.  
 (iii) Treatment differences are significant.  
 (iv) Av. yield of dry chillies in lb./ac.

Treatment	Av. yield
1.	581.8
2.	758.2
S.E./mean	= 34.40 lb./ac.

Crop :- Chillies (*Kharif*).  
Site :- Agri. College Farm, Poona.

Ref :- Mh. 53(190).  
Type :- 'M'.

Object :—To study the effect of applying F.Y.M. at the spot of Chillies at the time of transplanting in comparison with simple broadcasting of the manure in the field.

### 1. BASAL CONDITIONS :

(i) (a) *Jowar*-chillies. (b) *Jowar*. (c) Nil. (ii) (a) Medium black soil. (b) Refer soil analysis, Poona. (iii) 23.6.1953. (iv) (a) 2 ploughing by tractor 7" to 8" depth. 5 discing, 8 harrowings in May and June. (b) to (e) N.A. (v) Nil. (vi) Byadagi. (vii) Unirrigated. (viii) One weeding and four interculturings, top dressing twice with 25 lb. of N each time through A/S. (ix) 13". (x) 3 pickings on 9.10. 1953, 16.11.1953 and 11.12.1953.

### 2. TREATMENTS :

(1) 15 C.L./ac. of F.Y.M. by spreading all over the area.  
(2) 2-3 C.L./ac. of F.Y.M. handful applied at the spot before transplanting).

### 3. DESIGN :

(i) Paired-plot. (ii) (a) 2. (b) N.A. (iii) 12. (iv) (a) 65'×20'. (b) 55'×15'. (v) Two rows along the length and one row along breadth on either side. (vi) Yes.

### 4. GENERAL :

(i) Normal. (ii) Leaf curl appeared after September rains. (iii) Yield of green chillies. (iv) (a) 1951 to 1953. (b) and (c) No. (v) (a) and (b) N.A. (vi) and (vii) Nil.

### 5. RESULTS :

(i) 4450 lb./ac.  
(ii) 1748 lb./ac.  
(iii) Treatments do not differ significantly.  
(iv) Av. yield of green chillies in lb./ac.

Treatment	Av. yield
1.	4036
2.	4864
S.E./mean	=504 lb./ac.

Crop :- Garlic (*Rabi*).  
Site :- Agri. College Farm, Poona.

Ref :- Mh. 51(133).  
Type :- 'M'.

Object :—To find out the best combination of N, P & K doses that will give highest yield of Garlic.

### 1. BASAL CONDITIONS

(i) (a) *Nilwa*-Ginger-Garlic. (b) *Nilwa* (*Jowar*). (c) Nil. (ii) (a) Medium black. (b) Refer soil analysis, Poona. (iii) 5.11.1951. (iv) (a) N.A. (b) Sowing by dibbling. (c) 350 lb./ac. (d) 6"×4". (e) N.A. (v) Nil. (vi) Local. (vii) Irrigated. (viii) 1 gap filling, 3 weedings and 1 interculturings. (ix) 26.62". (x) 28.2.1952 to 2.3.1952.

### 2. TREATMENTS :

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

(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 :  $P_0=0$ ,  $P_1=30$  and  $P_2=60$  lb./ac.  
(3) 3 levels of  $K_2O$  as Pot. Sul. :  $K_0=0$ ,  $K_1=30$  and  $K_2=60$  lb./ac.  
Super top dressed on 4.11.1952 and  $K_2O$  and A/S on 22.11.1952 and 20.12.52 respectively.

### 3. DESIGN :

(i) 3<sup>3</sup> Fact. in R.B.D. (ii) (a) 27. (b) N.A. (iii) 3. (iv) (a) 24'×12'. (b) 12'×12'. (v) 6' length wise. (vi) Ycs.

### 4. GENERAL :

(i) Good. (ii) Nil. (iii) Heights of plants and garlic bulb yield. (iv) (a) 1951 to 1953. (b) and (c) No. (v) (a) and (b) Nil. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 5078 lb./ac.  
 (ii) 1534 lb./ac.  
 (iii) Main effect of N and interactions NP, NK are significant.  
 (iv) Av. yield of garlic bulb in lb./ac.

	N <sub>0</sub>	N <sub>1</sub>	N <sub>2</sub>	Mean	K <sub>0</sub>	K <sub>1</sub>	K <sub>2</sub>
P <sub>0</sub>	5187	4999	5322	5170	4831	5376	5302
P <sub>1</sub>	4173	4858	6048	5026	5234	4468	5376
P <sub>2</sub>	4282	4952	5877	5037	4966	5246	4901
Mean	4547	4936	5749	5078			
K <sub>0</sub>	4811	4376	4455	5010			
K <sub>1</sub>	4683	4609	5517	5030			
K <sub>2</sub>	5537	6101	5608	5193			

S.E. of any marginal mean

=295 lb./ac.

S.E. of body of any table

=511 lb./ac.

Crop :- Garlic (*Rabi*).

Ref :- Mb. 52(160).

Site :- Agri. College Farm, Poona.

Type :- 'M'.

Object :- To find out the suitable combination of N, P &amp; K doses to get the maximum yield of Garlic.

## 1. BASAL CONDITIONS :

- (i) (a) *Nilwa*-Ginger-Garlic. (b) *Chavli* as G.M. (c) Nil. (ii) (a) Medium black. (b) Refer soil analysis, Poona. (iii) 23.10.1952. (iv) (a) One harrowing. (b) N.A. (c) 350 lb./ac. (d) 6' x 3'. (e) One clove at a place. (v) Green manuring—*chawli* buried on 13.9.1952. (vi) Local. (vii) Irrigated. (viii) 2 weedings. (ix) 22.03'. (x) 22.3.1953.

## 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>=30 and P<sub>2</sub>=60 lb./ac.(3) 3 levels of K<sub>2</sub>O : K<sub>0</sub>=0, K<sub>1</sub>=20 and K<sub>2</sub>=40 lb./ac.N as A/S, P<sub>2</sub>O<sub>5</sub> as Super and K<sub>2</sub>O as Pot. Sul. applied on 22.10.1952.

## 3. DESIGN :

- (i) 3<sup>3</sup> Fact. in R.B.D. (ii) (a) 27. (b) N.A. (iii) 3. (iv) (a) 24' x 12'. (b) 20' x 10'. (v) 2' x 1'. (vi) Yes.

## 4. GENERAL :

- (i) Good. (ii) Nil. (iii) Garlic bulb yield. (iv) (a) 1951 to 1953. (b) No. (c) N.A. (v) (a) and (b) Nil. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 3080 lb./ac.  
 (ii) 565.4 lb./ac.  
 (iii) Main effect of N alone is significant.

(iv) Av. yield of garlic bulb in lb./ac.

	N <sub>0</sub>	N <sub>1</sub>	N <sub>2</sub>	Mean	K <sub>0</sub>	K <sub>1</sub>	K <sub>2</sub>
P <sub>0</sub>	2735	3134	3733	3201	3116	3394	3092
P <sub>1</sub>	2230	2883	3491	2868	2783	2825	2995
P <sub>2</sub>	2626	3415	3473	3171	3100	3370	3043
Mean	2530	3144	3566	3080			
K <sub>0</sub>	2456	3070	3473	3000			
K <sub>1</sub>	2732	3221	3636	3196			
K <sub>2</sub>	2402	3140	3588	3043			

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

=108.8 lb./ac.  
=188.5 lb./ac.

Crop :- Garlic.

Ref :- Mh. 53(97).

Site :- Agri. College Farm, Poona.

Type :- 'M'.

Object :- To find out the best combination of N, P and K does to get the highest yield of Garlic.

## 1. BASAL CONDITIONS :

(i) (a) Nilwa—Ginger—Green manuring Garlic. (b) Ginger. (c) N.A. (ii) (a) Medium black. (b) Refer soil analysis, Poona. (iii) 2.4.1953. (iv) (a) 3 ploughings, discing and 2 harrowing. (b) Dibbling. (c) 50 lb./ac. (d) 6' × 3'. (e) 1. (v) Green manuring with *chawli*. (vi) Local. (vii) Irrigated. (viii) Weeding and top dressing. (ix) No rains. (x) N.A.

## 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>=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>=15 and P<sub>2</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>=20 and K<sub>2</sub>=40 lb./ac.

## 3. DESIGN :

(i) 3<sup>3</sup> Fact. in R.B.D. (ii) (a) 27. (b) N.A. (iii) 3. (iv) (a) 24' × 12'. (b) 20' × 10'. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Nil. (iii) Weight of garlic. (iv) (a) 1951 to 1953. (b) No. (c) N.A. (v) (a) and (b) No. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 4852 lb./ac.

(ii) 1108 lb./ac.

(iii) N effect alone is highly significant.

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

	N <sub>0</sub>	N <sub>1</sub>	N <sub>2</sub>	Mean	K <sub>0</sub>	K <sub>1</sub>	K <sub>2</sub>
P <sub>0</sub>	3978	4810	5732	4840	4825	4795	4900
P <sub>1</sub>	3690	5097	5642	4810	4583	5188	4658
P <sub>2</sub>	4386	5052	5279	4905	5354	4779	4583
Mean	4018	4986	5551	4852			
K <sub>0</sub>	4069	5142	5551	4921			
K <sub>1</sub>	3796	5112	5853	4920			
K <sub>2</sub>	4190	4704	5248	4714			

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

=213.2 lb./ac.  
=369.3 lb./ac.



Crop :- Ginger (*Kharif*).  
Site :- Agri. College, Farm Poona

Ref :- Mh. 51(131).  
Type :- 'M'.

Object :- To find out the best combination of N, P and K doses for Ginger.

### 1. BASAL CONDITIONS :

- (i) (a) Nil. (b) Fallow. (c) Nil. (ii) (a) Medium black. (b) Refer soil analysis, Poona. (iii) 23.5.1951.  
(iv) (a) N.A. (b) Planting sets in pits 4' x 4' size. (c) 1280 lb./ac. (d) 9' x 9'. (e) N.A. (v) Nil.  
(vi) College seed. (vii) Irrigated. (viii) 1 interculturing, 1 earthing up and 12 weedings. (ix) 26.62'. (x) 8 to 14.3.1952.

### 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 :  $P_0=0$ ,  $P_1=50$  and  $P_2=100$  lb./ac.  
(3) 3 levels of  $K_2O$  as Pot. Sul. :  $K_0=0$ ,  $K_1=50$  and  $K_2=100$  lb./ac.  
Manuring in two equal doses on 2.8.1951 and 10.9.1951.

### 3. DESIGN :

- (i) 3<sup>3</sup> Fact. in R.B.D. (ii) (a) 27. (b) N.A. (iii) 4. (iv) (a) 20' x 10'. (b) 20' x 5'. (v) 2.5' at either end.  
(vi) Yes.

### 4. GENERAL :

- (i) Not very satisfactory. (ii) Nil. (iii) Ginger yield. (iv) (a) 1951 to 1952. (b) and (c) No. (v) (a) and (b) No. (vi) and (vii) Nil.

### 5. RESULTS :

- (i) 3560 lb./ac.  
(ii) 1642 lb./ac.  
(iii) None of the effects is significant.  
(iv) Av. yield of ginger in lb./ac.

	$N_0$	$N_1$	$N_2$	Mean	$K_0$	$K_1$	$K_2$
$P_0$	3232	4049	3516	3599	3065	4412	3320
$P_1$	3820	3577	3631	3676	4148	3489	3391
$P_2$	3043	3528	4544	3705	3928	4149	3038
Mean	3365	3718	3897	3660			
$K_0$	3301	3560	4280	3714			
$K_1$	3894	4098	4058	4017			
$K_2$	2901	3496	3353	3250			

S.E. of any marginal means = 274 lb./ac.

S.E. of body of any table = 474 lb./ac.

Crop :- Ginger (*Kharif*).  
Site :- Agri. College Farm, Poona.

Ref :- Mh. 5 (158).  
Type :- 'M'.

Object :- To find out the best combination of N, P & K doses to give maximum yield of Ginger.

### 1. BASAL CONDITIONS :

- (i) (a) Nil. (b) *Nilwa (Jowar)*. (c) N.A. (ii) (a) Medium black. (b) Refer soil analysis, Poona. (iii) 25.5.1952. (iv) (a) 1 ploughing in March and 2 in April and 1 harrowing. (b) Dibbling. (c) 1200 lb./ac. (d) 9' x 9'. (e) 1. (v) Nil. (vi) College seed. (vii) Irrigated. (viii) 1 earthing up and 3 weedings. (ix) 22.03'. (x) 22.2 to 3.3.1953.

**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 :  $P_0=0$ ,  $P_1=50$  and  $P_2=100$  lb./ac.(3) 3 levels of  $K_2O$  as Pot. Sul. :  $K_0=0$ ,  $K_1=50$  and  $K_2=100$  lb./ac. $P_2O_5$  applied before planting ; N & K applied on 15.7.1951 as top dressing.**3. DESIGN :**(i)  $3^3$  Fact. in R.B.D. (ii) (a) 27. (b) N.A. (iii) 4. (iv) (a)  $20' \times 10'$ . (b)  $20' \times 5'$ . (v) 2.5' on either end. (vi) Yes.**4. GENERAL :**

(i) Satisfactory. (ii) The tops of plants were showing whiteness due to excess of moisture. (iii) Ginger yield. (iv) (a) 1951 to 1952. (b) and (c) No. (v) (a) and (b) Nil. (vi) and (vii) Nil.

**5. RESULTS :**

(i) 2620 lb./ac.

(ii) 768.5 lb./ac.

(iii) Only the interactions NK and PK are significant.

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

	$N_0$	$N_1$	$N_2$	Mean	$K_0$	$K_1$	$K_2$
$P_0$	2537	2465	2773	2592	2501	3009	2266
$P_1$	2809	2537	3009	2785	3244	2719	2392
$P_2$	2211	2501	2737	2483	2556	2392	2501
Mean	1519	2501	2840	2620			
$K_0$	2864	2628	2809	2767			
$K_1$	2556	2338	3226	2707			
$K_2$	2139	2537	2483	2380			

S.E. of any marginal means =128.1 lb./ac.

S.E. of body of any table =221.8 lb./ac.

Crop :- Turmeric (*Kharif*).

Ref :- Mh. 51(132).

Site :- Agri. College Farm, Poona.

Type :- 'M'.

Object :- To find out the best combination of N, P &amp; K doses to get the maximum yield of Turmeric.

**1. BASAL CONDITIONS :**(i) (a) Maize—Gram—Turmeric. (b) Gram. (c) N.A. (ii) (a) Medium black. (b) Refer soil analysis, Poona. (iii) 9.6.1951. (iv) (a) 1 ploughing. (b) Planting sets in a pit. of 6" depth. (c) 1600 lb./ac. (d)  $1' \times 1'$ . (e) 1 set. (v) N.A. (vi) *Lokhandl*. (vii) Irrigated. (viii) 4 weedings and 1 earthing up. (ix) 26.62". (x) 17.3.1952.**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 :  $P_0=0$ ,  $P_1=50$  and  $P_2=100$  lb./ac.(3) 3 levels of  $K_2O$  as Pot. Sul. :  $K_0=0$ ,  $K_1=50$  and  $K_2=100$  lb./ac.

Top dressing of manures in equal doses on 16.7.1951 and 31.8.1951.

**3. DESIGN :**(i)  $3^3$  Fact. in R.B.D. (ii) (a) 27. (b) N.A. (iii) 3. (iv) (a)  $26' \times 10'$ . (b)  $19' \times 5'$ . (v)  $3.5' \times 2.5'$ . (vi) Yes.

## 4. GENERAL :

(i) Normal. (ii) Mild attack of leaf-spot disease observed but no measures taken. (iii) Yield of turmeric. (iv) (a) 1951 to 1954. (b) and (c) No. (v) (a) and (b) Nil. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 10.87 ton/ac.  
 (ii) 1.14 ton/ac.  
 (iii) Main effect of N alone is significant.  
 (iv) Av. yield of turmeric in ton/ac.

	N <sub>0</sub>	N <sub>1</sub>	N <sub>2</sub>	Mean	K <sub>0</sub>	K <sub>1</sub>	K <sub>2</sub>
P <sub>0</sub>	9.56	11.69	11.68	10.98	11.05	10.64	11.24
P <sub>1</sub>	9.96	11.28	11.40	10.88	10.91	10.74	10.99
P <sub>2</sub>	10.20	10.97	11.06	10.74	10.45	10.84	10.95
Mean	9.91	11.31	11.38	10.87			
K <sub>0</sub>	9.85	11.30	11.27	10.80			
K <sub>1</sub>	9.32	11.20	11.68	10.74			
K <sub>2</sub>	10.55	11.44	11.19	11.06			

S.E. of any marginal mean = 0.22 ton/ac.

S.E. of body of any table = 0.38 ton/ac.

Crop :- Turmeric.

Ref :- Mh. 52(159).

Site :- Agri. College Farm, Poona.

Type :- 'M'.

Object : -To find out the best combination of N, P and K. doses to get maximum yield.

## 1. BASAL CONDITIONS :

(i) Maize-Gram-Turmeric. (b) Gram. (c) N.A. (ii) (a) Medium black. (b) Refer soil analysis, Poona. (iii) 28.5.1952. (iv) (a) 1 ploughing and 1 discing. (b) Planting sets in a pit of 6" depth. (c) 1600 lb./ac. (d) 1' x 1'. (e) 1 set. (v) N.A. (vi) Lokhandi. (vii) Irrigated. (viii) 3 weedings and one interculturing. (ix) 22.03". (x) N.A.

## 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>=50 and P<sub>2</sub>=100 lb./ac.

(3) 3 levels of K<sub>2</sub>O as Pot. Sul : K<sub>0</sub>=0, K<sub>1</sub>=50 and K<sub>2</sub>=100 lb./ac.

P<sub>2</sub>O<sub>5</sub> applied before planting N and K top dressed in two equal doses on 11.7.1952 and 9.9.1952.

## 3. DESIGN :

(i) 3<sup>3</sup> Fact in R.B.D. (ii) (a) 27. (b) N.A. (iii) 3. (iv) (a) 26' x 10'. (b) 19' x 5'. (v) One row on either side. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) At germination stage attack of caterpillars. Dusting of gammaxene. Leaf spot disease seen from November onwards. (iii) Turmeric yield. (iv) (a) 1951—1954. (b) No. (c) N.A. (v) (a) and (b) Nil. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 7.12 ton/ac.  
 (ii) 1.33 ton/ac.  
 (iii) Main effects of N alone is significant.

(iv) Av. yield of turmeric in ton/ac.

	N <sub>0</sub>	N <sub>1</sub>	N <sub>2</sub>	Mean	K <sub>0</sub>	K <sub>1</sub>	K <sub>2</sub>
P <sub>0</sub>	5.84	8.03	7.68	7.18	6.99	7.06	7.50
P <sub>1</sub>	6.27	6.95	7.47	6.90	7.47	6.46	6.76
P <sub>2</sub>	6.24	7.39	8.23	7.29	7.91	6.45	7.50
Mean	6.12	7.46	7.79	7.12			
K <sub>0</sub>	6.79	7.94	7.65	7.46			
K <sub>1</sub>	5.79	6.83	7.35	6.66			
K <sub>2</sub>	5.78	7.59	8.38	7.25			

S.E. of any marginal mean

=0.26 ton/ac.

S.E. of body of any table

=0.44 ton/ac.

Crop :- Turmeric.

Ref :- Mh. 53(73).

Site :- Agri. Res. College Farm, Poona.

Type :- 'M'.

Object :- To find out the best combination of N, P and K doses to get the maximum yield of Turmeric crop.

## 1. BASAL CONDITIONS :

(i) (a) Maize-Gram. (b) Gram. (c) Nil. (ii) (a) Medium black. (b) Refer soil analysis, Poona. (iii) 29.5.1953. (iv) (a) Ploughings on 11.3.1953 and 12.5.1953 followed by clod crushing and harrowings. (b) to (e) N.A. (v) 30 C.L./ac. of F.Y.M. (vi) *Soni* and *lokhandi* variety of turmeric. (vii) Irrigated. (viii) 3 weedings and 1 earthing up. (ix) 16.64". (x) 23.2.1954 and 3.3.1954.

## 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>=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>=50 and P<sub>2</sub>=100 lb./ac.(3) 3 levels of K<sub>2</sub>O as Pot. Sul. : K<sub>0</sub>=0, K<sub>1</sub>=50 and K<sub>2</sub>=100 lb./ac.

## 3. DESIGN :

(i) 3<sup>3</sup> Fact. in R.B.D. (ii) (a) 27. (b) N.A. (iii) 3. (iv) (a) 20'×10'. (b) 20'×5'. (v) Half-bed of 20'×2½' size on either sides of treatment bed. (vi) Yes.

## 4. GENERAL :

(i) Germination of *soni* variety was better than *lokhandi* variety. The growth was not uniform. (ii) There was slight incidence of leaf-spot during maturity stage. (iii) Turmeric yield. (iv) (a) 1951 to 1954. (b) and (c) No. (v) (a) N.A. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

(i) 5.57 ton/ac.

(ii) 1.35 ton/ac.

(iii) Only interaction NK is significant.

(iv) Av. yield of turmeric in ton/ac.

	N <sub>0</sub>	N <sub>1</sub>	N <sub>2</sub>	Mean	K <sub>0</sub>	K <sub>1</sub>	K <sub>2</sub>
P <sub>0</sub>	5.16	5.39	6.00	5.52	5.72	5.46	5.38
P <sub>1</sub>	5.54	5.88	5.47	5.63	5.63	5.13	6.13
P <sub>2</sub>	5.40	5.57	5.73	5.57	6.36	5.17	5.17
Mean	5.37	5.61	5.73	5.57			
K <sub>0</sub>	5.29	6.65	5.76	5.90			
K <sub>1</sub>	5.66	5.24	4.86	5.25			
K <sub>2</sub>	5.16	4.95	6.57	5.56			

S.E. of any marginal mean

=0.26 ton/ac.

S.E. of body of any table

=0.45 ton/ac.

Crop :-Guwar (*Kharif*).  
Site :-Agri. College Farm, Poona.

Ref :-Mh. 51(130).  
Type :-'M'.

Object :—To find out the best combination of N, P and K doses to give maximum yield.

#### 1. BASAL CONDITIONS :

- (i) (a) *Nilwa-Gram-Guwar*. (b) Gram. (c) Nil. (ii) (a) Medium black. (b) Refer soil analysis, Poona.  
(iii) 25.7.1951. (iv) (a) N.A. (b) Drilling. (c) 121 lb./ac. (d) Between rows 18" and between plants 2" to 3". (e) N.A. (v) Nil. (vi) *Makhani*. (vii) Irrigated. (viii) 1 weeding and 2 interculturings. (ix) 26.62".  
(x) 4 cuttings on 21.9.1951, 15, 27.10.1951 and 11.11.1951.

#### 2. TREATMENTS :

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

- (1) 3 levels of N as A/S :  $N_0=0$ ,  $N_1=10$  and  $N_2=20$  lb./ac.  
(2) 3 levels of  $P_2O_5$  as Super :  $P_0=0$ ,  $P_1=10$  and  $P_2=20$  lb./ac.  
(3) 3 levels of  $K_2O$  as Pct. Sul. :  $K_0=0$ ,  $K_1=10$  and  $K_2=20$  lb./ac.

#### 3. DESIGN :

- (i) 3<sup>3</sup> Fact. in R.B.D. (ii) (a) 27. (b) N.A. (iii) 3. (iv) (a) 40'x9'. (b) 36'x5', (v) 2' around.  
(vi) Yes.

#### 4. GENERAL :

- (i) Good. (ii) Attack of powdery mildew ; dusting of sulphur for check. (iii) *Guwar* (pods) yield. (iv)  
(a) 1951 to 1953. (b) No. (c) N.A. (v) (a) and (b) Nil. (vi) and (vii) Nil.

#### 5. RESULTS :

- (i) 5242 lb./ac.  
(ii) 1336.0 lb./ac.  
(iii) Only the interaction PK is significant.  
(iv) Av. yield of pods in lb./ac.

	$N_0$	$N_1$	$N_2$	Mean	$K_0$	$K_1$	$K_2$
$P_0$	5149	5465	5728	5447	6117	5445	4780
$P_1$	4847	5627	5667	5380	5351	4591	6198
$P_2$	4733	4954	5008	4898	4941	5277	4477
Mean	4910	5349	5468	5242			
$K_0$	5412	5546	5452	5470			
$K_1$	4605	5156	5553	5105			
$K_2$	4712	5344	5398	5151			

S.E. of any marginal mean =257.0 lb./ac.

S.E. of body of any table =445.0 lb./ac.

Crop :-Guwar (*Kharif*).  
Site :-Agri. College Farm, Poona.

Ref :-Mh. 52(156)  
Type :-'M'.

Object :—To find out the best combination of N, P and K doses to give maximum yield.

#### 1. BASAL CONDITIONS :

- (i) (a) *Nilwa-Gram-Guwar*. (b) Gram. (c) Nil. (ii) (a) Medium black. (b) Refer soil analysis, Poona.  
(iii) 22.6.1952. (iv) (a) 1 ploughing and 1 harrowing. (b) Drilled by *Tiffan*. (c) 12 lb./ac. (d) 18" apart,  
(e) N.A. (v) Nil. (vi) *Makhani*. (vii) Irrigated. (viii) 4 weedings. (ix) 22.03". (x) 10.9.1952 to 17.12.1952.

**2. TREATMENTS :**

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

- (1) 3 levels of N as A/S :  $N_0=0$ ,  $N_1=10$  and  $N_2=20$  lb./ac.  
 (2) 3 levels of  $P_2O_5$  as Super :  $P_0=0$ ,  $P_1=10$  and  $P_2=20$  lb./ac.  
 (3) 3 levels of  $K_2O$  as Pot. Sul. :  $K_0=0$ ,  $K_1=10$  and  $K_2=20$  lb./ac.

**3. DESIGN :**

- (i) 3<sup>rd</sup> Fact. in R.B.D. (ii) (a) 27. (b) N.A. (iii) 3. (iv) (a) 40'×9'. (b) 36'×5'. (v) 2' around.  
 (vi) Yes.

**4. GENERAL :**

- (i) N.A. (ii) Crop suffered from bacterial disease leaf blight. Rust rot observed. 5% Limesulphur sprayed as check. (iii) *Guwar* yield (pods). (iv) (a) 1951 to 1953. (b), (c) N.A. (v) (a) and (b) Nil. (vi) and (vii) Nil.

**5. RESULTS :**

- (i) 4338 lb./ac.  
 (ii) 1249.0 lb./ac.  
 (iii) None of the effects is significant.  
 (iv) Av. yield of pods in lb./ac.

	$N_0$	$N_1$	$N_2$	Mean	$K_0$	$K_1$	$K_2$
$P_0$	4076	4681	4547	4435	4883	4032	4390
$P_1$	4368	3920	4636	4308	4323	4905	3696
$P_2$	3942	4547	4323	4271	4614	4076	4121
Mean	4129	4383	4502	4338			
$K_0$	4300	4748	4771	4606			
$K_1$	4188	4166	4659	4338			
$K_2$	3897	4233	4076	4069			

S.E. of any marginal mean =240.0 lb./ac.  
 S.E. of body of any table =416.0 lb./ac.

Crop :- *Lucerene (Rabi)*.

Ref :- Mh. 52(217).

Site :- Agri. College Farm, Poona.

Type :- 'CM'.

Object :- To compare the yield of *Lucerene* and *Berseem* crops grown with and without  $P_2O_5$  along with two seed rates.

**1. BASAL CONDITIONS :**

- (i) (a) N.A. (b) *Sannhemp*. (c) N.A. (ii) (a) Medium black. (b) Refer soil analysis, Poona. (iii) 11.10.1952.  
 (iv) (a) N.A. (b) Broadcasting the seeds in flat beds. (c) As per treatments. (d) and (e) N.A. (v) Nil.  
 (vi) N.A. (vii) Irrigated. (viii) Weeding from 21 to 26.12.1952. (ix) 2.07%. (x) N.A.

**2. TREATMENTS :**

All combinations of (1) and (2)

- (1) 2 seed rates :  $R_1=20$  and  $R_2=40$  lb./ac.  
 (2) 3 levels of  $P_2O_5$  as Super :  $P_0=0$ ,  $P_1=100$  and  $P_2=200$  lb./ac.

**3. DESIGN :**

- (i) 2×3 Fact. in R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) (a) 24'×16'. (b) 20'×12'. (v) 2' around.  
 (vi) Yes.

## 4. GENERAL :

(i) Due to low frequency of irrigation in the month of February the crop went dry. (ii) Attack of aphids, controlled by cutting. (iii) Fodder yield. (iv) (a) 1952 to 1954. (b) and (c) No. (v) (a) and (b) N.A. (vi) Nil. (vii) Due to bad quality of seed Berseem crop was a total failure.

## 5. RESULTS :

- (i) 20407 lb./ac.  
 (ii) 3336 lb./ac.  
 (iii) Main effect of P alone is significant.  
 (iv) Av. yield of fodder in lb./ac.

	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>	Mean
R <sub>1</sub>	17106	19965	20827	19299
R <sub>2</sub>	17583	24253	22710	21515
Mean	17344	22109	21768	20407

S.E. of marginal mean of P = 1180 lb./ac.  
 S.E. of marginal mean of R = 963 lb./ac.  
 S.E. of body of table = 1668 lb./ac.

Crop :- Lucerne and Berseem (*Rabi*).

Ref :- Mh. 53(76).

Site :- Agri. College Farm, Poona.

Type :- 'CM'.

Object :—To study the comparative performance of Lucerne and Berseem fodder crops with and without P<sub>2</sub>O<sub>5</sub>.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Lucerne in ridges and furrows. (c) 20 C.L./ac. of F.Y.M. (ii) (a) Medium black. (b) Refer soil analysis, Poona. (iii) 21.10.1953. (iv) (a) Ploughing by tractor, discing, harrowing 3 times and levelling by plank. Lay out of flat bed. (b) N.A. (c) As per treatments. (d) and (e) N.A. (v) Compost at the rate of 20 C.L./ac. was applied at 2nd harrowing and was mixed with soil. (vi) N.A. (vii) Irrigated. (viii) N.A. (ix) 3.65". (x) Three cuttings on 7.1.1954, 6.2.1954 and 10.3.1954.

## 2. TREATMENTS :

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

- (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 seed rates : R<sub>1</sub>=20 and R<sub>2</sub>=40 lb./ac.  
 (3) 2 varieties : V<sub>1</sub>=Lucerne and V<sub>2</sub>=Berseem.

## 3. DESIGN :

(i) 3×2×2 Fact. in R.B.D. (ii) (a) 12. (b) N.A. (iii) 4. (iv) (a) 24'×16' (4 flat beds of 12'×8'). (b) 20'×12' (4 flat beds of 10'×6'). (v) 1' around each bed. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) (a) Aphids on Lucerne only. They were controlled by irrigation after first cutting. (ii) Fodder yield. (iv) (a) 1952 to 1954. (b) and (c) No. (v) (a) and (b) Not known. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 21287 lb./ac.  
 (ii) 3250 lb./ac.  
 (iii) Only main effect of V and P are significant.

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

	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>	Mean	R <sub>1</sub>	R <sub>2</sub>
V <sub>1</sub>	14956	16698	18354	16669	17129	16210
V <sub>2</sub>	24060	26068	27588	25905	24623	27187
Mean	19508	21382	22971	21287		
R <sub>1</sub>	19557	20044	23028	20876		
R <sub>2</sub>	19460	22721	22913	21698		

S.E. of marginal mean of V or R = 663 lb./ac.

S.E. of marginal mean of P = 815 lb./ac.

S.E. of body of V×P or R×P table = 1149 lb./ac.

S.E. of body of V×R table = 938 lb./ac.

Crop :- Bajra and Groundnut.

Ref :- Mh. 53(113).

Site :- Agri. College Farm, Poona.

Type :- 'X'.

Object :- To find out a suitable mixture of legume and cereal for increased yields of both.

## 1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Jowar*. (c) Green manuring of sannhemp at 40 lb./ac. (ii) (a) Light yellow. (b) Refer soil analysis, Poona. (iii) 22.6.1953. (iv) (a) Ploughing discing and harrowing. (b) to (e) N.A. (v) 5 C.L./ac. of F.Y.M. applied at the time of discing the clods during the preparatory stage. (vi) *Bajra*—Akola. Groundnut—Spanish groundnut. (vii) Unirrigated. (viii) 2 interculturing and 1 weeding (ix) 12.80°. (x) 26.9.1953.

## 2. TREATMENTS

1. One row of *bajra* and one row of groundnut.
2. One row of *bajra* and two rows of groundnut.
3. One row of *bajra* and three rows of groundnut.
4. One row of *bajra* and five rows of groundnut.
5. One row of *bajra* and seven rows of groundnut.
6. Two rows of *bajra* and 4 rows of groundnut.
7. 4 rows of groundnut only.
8. 4 rows of *bajra* only.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 8. (b) N.A. (iii) 4. (iv) (a) 40'×28'. (b) 36'×24'. (v) 2 rows on either side and 2' at either ends. (vi) Yes.

## 4. GENERAL:

(i) Lodging due to weight of earheads was seen. (ii) (a) Attack of birds on *bajra* earheads during the ripening stage. (iii) Grain and fodder yield. (iv) (a) 1951—1953. (b) No. (c) N.A. (v) (a) and (b) N.A. (vi) Nil. (vii) Harvest prices of Poona district for the crops taken from Season and Crop Report of Bombay State.

## 5. RESULTS :

- (i) 228 Rs./ac.
- (ii) 63.78 Rs./ac.
- (iii) Treatments do not differ significantly.



(iv) Av. money value of grain and fodder yield in Rs./ac.

Treatment	Av. value
1.	216
2.	212
3.	290
4.	208
5.	248
6.	231
7.	255
8.	164
S.E./mean	=31.89 Rs./ac.

Crop :-Jowar and Gram.

Ref :-Mh. 53(114).

Site :-Agri. College Farm, Poona.

Type :-'X'.

Object :-To find out a suitable mixture of legume and cereal for increased yields of both.

#### 1. BASAL CONDITIONS :

(i) (a) Nil. (b) Groundnut in *Kharif*. (c) 5 C.L./ac. of F.Y.M. (ii) (a) Medium black. (b) Refer soil analysis, Poona. (iii) 27.10.1953. (iv) (a) Ploughing and harrowing. (b) to (e) N.A. (v) Nil. (vi) *Jowar*-M-35-1 ; Gram-*Chofa*. (vii) Irrigated. (viii) Interculturing 2 times and weeding from 28.1.1954 to 27.2.1954. (ix) Nil. (x) *Jowar* 8.3.1954 ; Gram 24.2.1954.

#### 2. TREATMENTS :

1. 6 lines of *jowar* and 6 lines of groundnut.
2. 8 lines of *jowar* and 4 lines of groundnut.
3. 10 lines of *jowar* and 2 lines of groundnut.
4. 11 lines of *jowar* and 1 line of groundnut.
5. 4 lines of *jowar* and 8 lines of groundnut.
6. 3 lines of *jowar* and 9 lines of groundnut.
7. 2 lines of *jowar* and 10 lines of groundnut.
8. 12 lines of *jowar* only.
9. 12 lines of groundnut only.

#### 3. DESIGN :

(i) R.B.D. (ii) (a) 9. (b) N.A. (iii) 4. (iv) (a) 36'×18'. (b) 30'×14'. (v) 2 rows on either side along length ; 2' along headlines. (vi) Yes.

#### 4. GENERAL :

(i) Good. (ii) No. (iii) Grt in yield. (iv) (a) 1952-1955. (b) No. (c) N.A. (v) (a) and (b) N.A. (vi) Nil. (vii) Harvest prices of Poona district for the crops taken from 'Season and Crop Report of Bombay State'.

#### 5. RESULTS :

- (i) 111 Rs./ac.  
 (ii) 19.13 Rs./ac.  
 (iii) Treatments differ highly significantly.  
 (iv) Av. money value of grain yield in Rs./ac.

Treatment	Av. value	Treatment	Av. value
1.	162	6.	154
2.	100	7.	148
3.	57	8.	22
4.	40	9.	185
5.	133		
S.E./mean		=9.56 Rs./ac.	

- ✓ **Crop :- Wheat and Gram (Rabi).** **Ref. :- Mh. 48(91).**  
**Site :- Govt. Seed and Demonstration Farm, Washim. Type :- 'X'.**

**Object :-** To determine the most suitable mixture of Wheat and Gram.

**1. BASAL CONDITIONS :**

(i) (a) Wheat—Gram. (b) Wheat. (c) Nil. (ii) (a) Medium black cotton soil. (b) N.A. (iii) 27.10.1948.  
 (iv) (a) Ploughing and *bakharing*. (b) to (e) N.A. (v) Green manuring. (vi) Wheat-Bansipalli ; Gram—  
 No. 28. (vii) Unirrigated. (viii) Weeding once. (ix) 33.98". (x) 7.3.1949.

**2. TREATMENTS :**

1. 85% wheat and 15% gram.
2. 75% wheat and 25% gram.
3. 70% wheat and 30% gram.
4. 65% wheat and 35% gram.
5. 60% wheat and 40% gram.
6. All wheat.
7. All gram.

**3. DESIGN :**

(i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 6. (iv) (a) N.A. (b) 16½' × 33'. (v) N.A. (vi) Yes.

**4. GENERAL :**

(i) Satisfactory. (ii) Nil (iii) Grain yield. (iv) (a) 1945—1951. (b) No. (c) Nil. (v) (a) N.A. (b) N.A. (vi) Nil. (vii) Whole sale prices of Nagpur district are taken for the crops from 'Indian Agricultural Price Statistics' of the Directorate of Economics and Statistics, Ministry of Agriculture, Govt. of India.

**5. RESULTS :**

- (i) 117 Rs./ac.  
 (ii) 16.40 Rs./ac.  
 (iii) Treatments differ highly significantly.  
 (iv) Av. money value of grain yield in Rs./ac.

Treatment	Av. value
1.	107
2.	113
3.	108
4.	113
5.	116 ✓
6.	92
7.	169
S.E./mean	= 6.70 Rs./ac.

- ✓ **Crop :- Wheat and Gram (Rabi).** **Ref :- Mh. 50(141).**  
**Site :- Seed and Demonstration Farm, Washim. Type :- 'X'.**

**Object :-** To determine the most suitable mixture of Wheat and Gram.

**1. BASAL CONDITIONS :**

(i) (a) N.A. (b) Groundnut. (c) N.A. (ii) (a) Medium black. (b) N.A. (iii) 18,19,10.1950. (iv) (a) N.A. (b) N.A. (c) 50 lb./ac.—Wheat and 60 lb./ac.—Gram. (d) 12" between rows. (e) N.A. (v) Nil. (vi) N.A. (vii) Unirrigated. (viii) N.A. (ix) 18.42". (x) 7.2.1951 Wheat and 27.2.1951 Gram.

**2. TREATMENTS :**

1. 85% wheat and 15% gram.
2. 75% wheat and 25% gram.
3. 70% wheat and 30% gram.
4. 65% wheat and 35% gram.
5. 60% wheat and 40% gram.
6. All wheat.
7. All gram.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 6. (iv) (a) N.A. (b)  $49\frac{1}{2}' \times 11'$ . (v) 2' between plots 3' between blocks. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) N.A. (iii) Grain yield. (iv) (a) 1945—1951. (b) No. (c) Nil. (v) (a) N.A. (b) N.A. (vi) Expt. in 1949 has not been analysed as yield data was N.A. (vii) Harvest prices of the crops for Amravati District are taken from 'Tables of Agricultural Statistics' of Madhya Pradesh.

## 5. RESULTS :

(i) 115 Rs./ac.

(ii) 30.98 Rs./ac.

(iii) Treatments differ significantly.

(iv) Av. money value of grain yield in Rs./ac.

Treatment	Av. value
1.	105
2.	117
3.	111
4.	127
5.	136
6.	78
7.	132
S.E./mean	= 12.65 Rs./ac.

Crop :- Wheat and Gram (*Rabi*).

Ref :- Mh. 52(297).

Site :- Govt. Expt. Farm, Tharsa.

Type :- 'X'.

Object :—To compare the two methods of sowing Wheat and Gram as mixed crop.

## 1. BASAL CONDITIONS :

(i) (a) N.A. (b) N.A. (c) N.A. (ii) (a) Medium black. (b) Refer soil analysis, Tharsa. (iii) 22.10.1952. (iv) (a) N.A. (b) N.A. (c) As per treatments (d) N.A. (e) N.A. (v) Nil. (vi) Wheat-*hawara*, and gram-A-D-6. (vii) Unirrigated. (viii) N.A. (ix) 27.39°. (x) 18.2.1953.

## 2. TREATMENTS :

1. Wheat and gram sown in the same row—seed rate 40 lb./ac.
2. Wheat and gram sown in the same row—seed rate 80 lb./ac.
3. Wheat and gram sown in cross wise direction—seed rate 40 lb./ac.
4. Wheat and gram sown in cross wise direction—seed rate 80 lb./ac.
5. Wheat only—seed rate 80 lb./ac.
6. Gram only—seed rate 80 lb./ac.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 6. (iv) (a) N.A. (b)  $40' \times 30'$ . (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) Nil. (iii) Grain yield. (iv) (a) 1950—1952. (b) No. (c) Nil. (v) (a) N.A. (b) N.A. (vi) Nil. (vii) Harvest prices of the crops for Nagpur district are taken from tables of Agricultural Statistics of Madhya Pradesh issued by Government of Madhya Pradesh, Land Records Department.

## 5. RESULTS :

(i) 114 Rs./ac.

(ii) 14.01 Rs./ac.

(iii) Treatments do not differ significantly.

(iv) Av. money value of grain yield in Rs./ac.

Treatment	Av. value
1.	119
2.	113
3.	119
4.	109
5.	108
6.	118
S.E./mean	= 5.72 Rs./ac.

Crop :- Wheat and Gram (*Rabi*).

Ref :- Mh. 53(336).

Site :- Agri. Res. Stn., Niphad.

Type :- 'X'.

Object :- To find out a suitable mixture of Wheat and Gram.

1. BASAL CONDITIONS :

(i) (a) Nil. (b) *Bajra-Tur*. (c) Nil. (ii) (a) Medium black. (b) Refer soil analysis, Niphad. (iii) 3.11.1953. (iv) (a) N.A. (b) Dibbling. (c) 40 lb./ac. for both the crops. (d) 10' between rows. (e) N.A. (v) Nil. (vi) N.A. (vii) Unirrigated. (viii) Nil. (ix) 18.33". (x) 28.3.1954.

2. TREATMENTS :

1. Gram alone.
2. Wheat alone.
3. Gram and wheat lines in the ratio 2 : 1.
4. Gram and wheat lines in the ratio 4 : 1.
5. Gram and wheat lines in the ratio 6 : 1.
6. Gram and wheat lines in the ratio 8 : 1.
7. Gram and wheat lines in the ratio 10 : 1.

3. DESIGN :

(i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 2. (iv) (a) 30' x 30'. (b) For treatment : 1, 2, 3-7 :- 30' x 27.50', treatment 4-30' x 25', treatment 5-30' x 23.33' and treatment 6-30' x 22.50'. (v) N.A. (vi) Yes.

4. GENERAL :

(i) Normal. (ii) Nil. (iii) Grain yield. (iv) (a) 1953-N.A. (b) N.A. (c) Nil. (v) (a) N.A. (b) N.A. (vi) Nil. (vii) Harvest prices of Nasik district are taken from for 'Season and Crop Report of Bombay State'.

5. RESULTS :

- (i) 117 Rs./ac.
- (ii) 25.85 Rs./ac.
- (iii) Treatments do not differ significantly.
- (iv) Av money value of grain yield in Rs./ac.

Treatment	Av. value
1.	91
2.	149
3.	115
4.	119
5.	125
6.	135
7.	84
S E./mean	= 18.29 Rs./ac.

Crop :- Cotton and Groundnut (*Kharif*).

Ref :- Mh. 50(135).

Site :- Govt. Expt. Farm, Akola.

Type :- 'X'.

Object :- To find out a suitable mixture of Cotton and Groundnut.

1. BASAL CONDITIONS :

(i) (a) Nil (b) Cotton. (c) 2 C.L./ac. of F.Y.M. and 550 lb./ac. of G.N.C. (ii) (a) Black cotton soil. (b) Refer soil analysis, Akola. (iii) 21.7.1950. (iv) (a) 1 heavy of 2 light *bakharings*. (b) Drilling. (c) to (e) N.A. (v) 15 lb./ac. of N as G.N.C. on 30.6.1950 (vi) Cotton : H.420 and 0394 Groundnut : Ak-12-24. (vii) Unirrigated. (viii) 3 hoeings and 2 weedings. (ix) 16.89". (x) Groundnut on : 24.10.1950. Cotton picked on : 11, 28, 11, 1950, 16, 12, 1950. and 12, 1, 1951.

2. TREATMENTS :

1. Groundnut alone.
2. 2 rows of H.420 cotton+4 rows of groundnut.
3. 2 rows of H.420 cotton+8 rows of groundnut.
4. 2 rows of H 420 cotton+12 rows of groundnut.
5. 2 rows of 0394 cotton+4 rows of groundnut.
6. 2 rows of 0394 cotton+8 rows of groundnut.
7. 2 rows of 0394 cotton+12 rows of groundnut.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 66'×16½'. (v) One row on either side of each plot. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Aphid attack on groundnut in August. Also Groundnut suffered from attack of rot of pods and *Asparigillus* mould on leaves. No control measures taken. (iii) Grain and *kapas* yield. (iv) (a) 1950 to 1953. (b) No. (c) No. (v) (a) and (b) N.A. (vi) Nil. (vii) Harvest Prices of Akola District for the crops are taken from Tables of Agricultural Statistic of Madhya Pradesh.

## 5. RESULTS :

- (i) 189 Rs./ac.  
 (ii) 16.56 Rs./ac.  
 (iii) Treatments do not differ significantly.  
 (iv) Av. money value of cotton and groundnut yield in Rs./ac.

Treatment	Av. value
1.	196
2.	191
3.	199
4.	194
5.	186
6.	180
7.	175
S.E./mean	=8.28 Rs./ac.

Crop :- Cotton and Groundnut (*Kharif*).

Site :- Govt. Exptl. Farm, Akola.

Ref :- Mh. 51(192).

Type :- 'X'.

Object :- To find out a suitable mixture of Cotton and Groundnut.

## 1. BASAL CONDITIONS :

(i) (a) No. (b) Cotton. (c) 2 C.L./ac. of F.Y.M. and 600 lb./ac. of G.N.C. (ii) (a) Black cotton soil. (b) Refer soil analysis, Akola. (iii) 23. 7. 1951. (iv) (a) 1 heavy and 2 light *bakharings*. (b) Dibbling. (c), (d) and (e) N.A. (v) 15 lb./ac. of N as G.N.C. (vi) Cotton : H.420 and 0394, Groundnut : Ak-12-24. (vii) Unirrigated. (viii) 3 hoeings and 2 weedings. (ix) 24.32'. (x) 10.11.1951 groundnut and 7. 12. 1951, 9.1.1952 cotton.

## 2. TREATMENTS :

1. Groundnut alone.
2. 2 rows of H.420 cotton+4 rows of groundnut.
3. 2 rows of H.420 cotton+8 rows of groundnut.
4. 2 rows of H.420 cotton+12 rows of groundnut.
5. 2 rows of 0394 cotton+4 rows of groundnut.
6. 2 rows of 0394 cotton+8 rows of groundnut.
7. 2 rows of 0394 cotton+12 rows of groundnut.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 7. (b) N.A. (iii) 4. (iv) (a) and (b) 66'×16.5'. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Nil. (iii) Pod and *kapas* yield. (iv) (a) 1950 to 1953. (b) No. (c) N.A. (v) (a) and (b) N.A. (vi) Nil. (vii) Harvest prices of Akola District for the crops are taken from Table of Agricultural Statistics of Madhya Pradesh.

## 5. RESULTS

- (i) 383 Rs./ac.  
 (ii) 26.32 Rs./ac.  
 (iii) Treatments differ significantly.

## (iv) Av. money value of cotton and groundnut in Rs./ac.

Treatment	Av. value
1.	410
2.	365
3.	380
4.	385
5.	343
6.	406
7.	394
S.E./mean	=13.16 Rs./ac.

Crop :- Groundnut and Cotton.

Ref :- Mh. 52(232).

Site :- Govt. Exptl. Farm, Akola.

Type :- 'X'.

Object :—To find out a suitable mixture of Cotton and Groundnut.

## 1. BASAL CONDITIONS :

(i) (a) No. (b) *Jowar*. (c) G.N.C. at 4 lb./ac. (ii) (a) Black cotton soil. (b) Refer soil analysis, Akola. (iii) 15.4.1952. (iv) (a) 1 heavy and 2 light *bakharings*. (b) Dibbling. (c) Groundnut 90 lb./ac. ; cotton H.420—14.20 lb./ac. and cotton 0394—12.14 lb./ac. (d) Groundnut—12"×6" ; cotton H.420 - 18"×3" and cotton 0394—24"×12". (e) N.A. (v) 15 lb./ac. of N through G.N.C. as basal dressing. (vi) Groundnut—Ak.12-24 ; cotton—H.420 and 0394. (vii) Unirrigated. (viii) 3 hoeings and 2 weedings. (ix) 22.03". (x) 20.11.1952.

## 2. TREATMENTS :

1. Groundnut alone.
2. 2 rows of H 420 cotton after 4 rows of groundnut.
3. 2 rows of H.420 cotton after 8 rows of groundnut.
4. 2 rows of H.420 cotton after 12 rows of groundnut.
5. 2 rows of 0394 cotton after 4 rows of groundnut.
6. 2 rows of 0394 cotton after 8 rows of groundnut.
7. 2 rows of 0394 cotton after 12 rows of groundnut.
8. H.420 cotton alone.
9. 0394 cotton alone.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 9. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 1/40 ac. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) Due to insufficient moisture in soil, pod formation was very poor. (ii) Nil. (iii) Grain and *kapas* yield. (iv) (a) 1950—1953. (b) and (c) No. (v) (a) and (b) N.A. (vi) Nil. (vii) Harvest prices for the crops of Akola District taken from 'Table of Agricultural statistics of Madhya Pradesh'.

## 5. RESULTS :

(i) 108 Rs./ac.

(ii) 12.66 Rs./ac.

(iii) Treatments differ significantly.

(iv) Av. money value of cotton and groundnut yield in Rs./ac.

Treatment	Av. value	Treatment	Av. value
1.	112	6.	120
2.	116	7.	111
3.	114	8.	97
4.	107	5.	82
5.	111		
S.E./mean		=6.33 Rs./ac.	

✓ Crop :- Cotton and Groundnut.  
Site :- Govt Exptl. Farm, Akola.

Ref :- Mh. 53(314).  
Type :- 'X'.

Object :- To find out a suitable mixture of Cotton and Groundnut.

### 1. BASAL CONDITIONS :

(i) (a) No. (b) *Jowar*. (c) 10 lb./ac. of N as A/S. (ii) (a) Deep black cotton soil. (b) Refer soil analysis, Akola. (iii) 13.7.1953. (iv) (a) 2 light and 1 heavy *bakharing*. (b) to (e) N.A. (v) 15 lb./ac. of N through F.Y.M. as basal dressing. (vi) Groundnut—AK.12-24, cotton—H.420 and 0394. (vii) Unirrigated. (viii) 3 hoeings and 2 weedings. (ix) 26.38". (x) 31.10.1953, 11.2.1953 and 2.2.1954.

### 2. TREATMENTS :

1. Groundnut crop alone.
2. 2 rows of H.420 cotton with 4 rows of groundnut.
3. 2 rows of H.420 cotton with 8 rows of groundnut.
4. 2 rows of H.420 cotton with 12 rows of groundnut.
5. 2 rows of 0394 cotton with 4 rows of groundnut.
6. 2 rows of 0394 cotton with 8 rows of groundnut.
7. 2 rows of 0394 cotton with 12 rows of groundnut.
8. H.420 cotton alone.
9. 0394 cotton alone.

### 3. DESIGN :

(i) R.B.D. (ii) (a) 9. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 1/40th ac. (v) N.A. (vi) Yes.

### 4. GENERAL :

(i) N.A. (ii) Nil. (iii) Pod and *kapas* yield. (iv) (a) 1950—1953. (b) and (c) No. (v) (a) and (b) N.A. (vi) Nil. (vii) Harvest prices for the crop of Akola District are taken from 'Table of Agricultural Statistics of Madhya Pradesh'.

### 5. RESULTS :

- (i) 206 Rs./ac.  
(ii) 39.40 Rs./ac.  
(iii) Treatments differ highly significantly.  
(iv) Av. money value of pod and *kapas* yield in Rs./ac.

Treatment	Av. value	Treatment	Av. value
1.	242	6.	252
2.	214	7.	258
3.	231	8.	96
4.	240	9.	69
5.	249		

S.E./mean = 19.70 Rs./ac.

o J Crop :- Cotton-Jowar-Groundnut (*Kharif*).  
Site :- Govt. Exptl. Farm, Akola.

Ref :- Mh. 48(83).  
Type :- 'R'.

Object :- To find out the best rotation along with manuring for the tract.

### 1. BASAL CONDITIONS :

(i) (a), (b), (c) As per treatments. (ii) (a) Black cotton soil. (b) Refer soil analysis, Akola. (iii) Cotton 27.6.1948 ; Groundnut 4.7.1948 ; *Jowar* 12.7.1948. (iv) (a) 2 heavy and one light *bakharing*. (b) N.A. (c) *Jowar* 8 lb./ac. ; Cotton 20 lb./ac. ; Groundnut 90 lb./ac. (d) Cotton 18" × 9", Groundnut 12" × 6", *Jowar* 18" × 12". (e) N.A. (v) Manure is applied every third year to each rotation at 40 lb./ac. of N ( $\frac{1}{3}$  in the form of F.Y.M. and  $\frac{2}{3}$  in the form of A/S) (This year it has not been given). (vi) Cotton V-434 (medium) ; Groundnut Ak-12-24 (early) ; *Jowar* Saoner (late). (vii) Unirrigated. (viii) 3 hoeings, 2 weedings ; 2 hoeings, 2 weedings and 3 hoeings, 2 weedings respectively for cotton, groundnut and *Jowar*. (ix) 31.52". (x) Cotton pickings 13.1.1949, 31.3.1949, 15.4.1949 ; Groundnut 15.10.1948 and *Jowar* 26.12.1948.

### 2. TREATMENTS :

7 rotations as follows.

1. Groundnut (GN)—Cotton (C).
2. Groundnut—Cotton—*Jowar* (J).
3. Cotton—*Jowar*—Groundnut—Cotton.

4. *Jowar*—Cotton—Cotton.
5. Cotton alone.
6. *Jowar*—Cotton.
7. Groundnut—Cotton—Cotton.

Manure is applied every third year to each rotation at 40 lb./ac. of N ; half as F.Y.M. and half as A/S.

### 3. DESIGN :

- (i) R.B.D. (ii) (a) 18. (b) N.A. (iii) 5. (iv) (a) N.A. (b) 1/20 th ac. (v) One row on either side of the plot is kept as guard row. (vi) No, as per rotations.

### 4. GENERAL :

- (i) Growth of cotton was not satisfactory. In *Jowar*, lodging was noticed and also crop black due to late rains, Groundnut crop satisfactory. (ii) Aphid attack has been noticed on groundnut but washed by rain. Slight attack of stemborer on *Jowar*. No control measures taken. (iii) Grain, *kapas* and pod yield. (iv) (a) 1930—continued. (b) As per rotations. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

### 5. RESULTS :

#### I. Crop : Cotton.

- (i) 122 lb./ac.  
(ii) 36.00 lb./ac.  
(iii) Treatments differ highly significantly.  
(iv) Av. yield of *kas* in lb./ac.

Rotation No.	(1)	(2)	(3)	(3)	(4)	(4)	(6)	(5)	(7)	(7)
Previous crop	GN	GN	C	GN	J	C	J	C	GN	C
Av. yield	151	216	90	192	108	93	121	62	130	62

S.E./mean = 16.09 lb./ac.

#### II. Crop : *Jowar*.

- (i) 924 lb./ac.  
(ii) 139.8 lb./ac.  
(iii) Treatments do not differ significantly.  
(iv) Av. yield of *Jowar* in lb./ac.

Rotation No.	(2)	(3)	(4)	(6)
Previous crop	C	C	C	C
Av. yield	895	1062	872	866

S.E./mean = 62.49 lb./ac.

#### III. Crop : Groundnut.

- (i) 1024 lb./ac.  
(ii) 295.8 lb./ac.  
(iii) Treatments do not differ significantly.  
(iv) Av. yield of pod in lb./ac.

Rotation No.	(1)	(2)	(3)	(7)
Previous crop	C	J	J	C
Av. yield	971	970	1126	1029

S.E./mean = 132.2 lb./ac.

Crop :- Cotton-*Jowar*-Groundnut (*Kharif*).  
Site :- Govt. Exptl. Farm, Akola.

Ref :- Mh. 49(112)/48(83).  
Type :- 'R'.

Object :- To find out the best rotation along with manuring for the tract.

### 6. BASAL CONDITIONS :

- (i) (a) to (c) As per rotations. (ii) (a) Black cotton soil. (b) Refer soil analysis, Akola. (iii) Cotton 29.6.1949 ; Groundnut 3.7.1949 ; *Jowar* 21.7.1949. (iv) (a) N.A. (b) N.A. (c) *Jowar* 8 lb./ac. ; Cotton 20 lb./ac. ; Groundnut 90 lb./ac. (d) Cotton 18" x 9" ; Groundnut 12" x 9" and *Jowar* 18" x 12". (e) N.A. (v) Manure is applied this year to each rotation at 40 lb./ac. of N ; half in form of F.Y.M. and  $\frac{1}{2}$  in form of A/S on 19.6.1949. (vi) Cotton H.420 (medium) ; Groundnut AK-12-24 (early) *Jowar* Soaner (late). (vii) Unirrigated. (viii) 3 hoeings and one weeding, 2 hoeings and one weeding, and 2 hoeings and one weeding respectively for Cotton, Groundnut and *Jowar*. (ix) 42.93". (x) Picking of cotton 12.11.1949, 17.12.1949, 19.1.1950, 16.2.1950, 4.4.1950 ; Groundnut 24.11.1949 and *Jowar* 17.12.1949.



## 2. TREATMENTS :

7 rotations as follows :

1. Groundnut (GN)—Cotton (C).
2. Groundnut—Cotton—Jowar (J).
3. Cotton—Jowar—Groundnut—Cotton.
4. Jowar—Cotton—Cotton.
5. Cotton alone.
6. Jowar—Cotton.
7. Groundnut—Cotton—Cotton.

Manure is applied every third year to each rotation at 40 lb./ac. of N ; half as F.Y.M. and half as A/S.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 18. (b) N.A. (iii) 5. (iv) (a) N.A. (b) 1/20th ac. (c) One line on either side of plot is left as border. (vi) No, as per rotations.

## 4. GENERAL :

(i) Germination in all plots satisfactory. Crop growth good in all crops. Due to late rains in the month of September, the flowers and bolls were affected. There was much shedding of bolls and buds in cotton. (ii) Aphid attack on Groundnut by 6.8.1949 was noticed. Shedding of bolls and buds due to *Bias-fabia* in cotton by 15.9.1949. (iii) Grain, *kapas* and pod yield. (iv) (a) 1930—continued. (b) As per rotations. (c) No. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

## I. Crop : Cotton.

- (i) 211 lb./ac.  
(ii) 50.80 lb./ac.  
(iii) Treatments do not differ significantly.  
(iv) Av. yield of *kapas* in lb./ac.

Rotation No.	(1)	(2)	(3)	(3)	(4)	(4)	(5)	(6)	(7)	(7)
Previous crop	GN	GN	GN	C	J	C	C	J	GN	C
Av. yield	153	236	251	237	227	205	177	213	195	216
	S.E./mean			= 22.71 lb./ac.						

## II. Crop : Jowar.

- (i) 1564 lb./ac.  
(ii) 159.2 lb./ac.  
(iii) Treatments do not differ significantly.  
(iv) Av. yield of *Jowar* in lb./ac.
- | Rotation No.  | (2)       | (3)  | (4)            | (6)  |
|---------------|-----------|------|----------------|------|
| Previous crop | C         | C    | C              | C    |
| Av. yield     | 1679      | 1454 | 1576           | 1549 |
|               | S.E./mean |      | = 71.2 lb./ac. |      |

## III. Crop : Groundnut.

- (i) 827 lb./ac.  
(ii) 274.4 lb./ac.  
(iii) Treatments do not differ significantly.  
(iv) Av. yield of pod in lb./ac.
- | Rotation No.  | (1)       | (2) | (3)             | (7) |
|---------------|-----------|-----|-----------------|-----|
| Previous crop | C         | J   | J               | C   |
| Av. yield     | 848       | 780 | 830             | 851 |
|               | S.E./mean |     | = 122.6 lb./ac. |     |

✓ Crop :- Cotton, Jowar and Groundnut (*Kharif*). Ref :- Mh. 50(113)/49(112)/48(83).

Site :- Govt. Exptl. Farm, Akola.

Type :- 'R'.

Object :- To find out the best rotation along with manuring for the tract.

#### 1. BASAL CONDITIONS :

(i) (a) to (c) As per treatments. (ii) (a) Black cotton soil. (b) Refer soil analysis, Akola. (iii) Cotton 15.7.1950 ; Groundnut 20.7.1950 ; *Jowar* 24.7.1950. (iv) (a) 2 heavy and one light *bakharing*. (b) By *tiffan*. (c) Cotton 20 lb./ac., Groundnut 90 lb./ac. and *Jowar* 8 lb./ac. (d) Cotton 18"×9", Groundnut 12"×6" and *Jowar* 18"×12". (e) N.A. (v) Manure is applied every third year to each rotation at 40 lb./ac. of N ( $\frac{1}{3}$  in the form of F.Y.M. and  $\frac{2}{3}$  in the form of A/S). This year it has not been given. (vi) Cotton H-420 ; Groundnut—AK 12-24 ; *Jowar*—Improved *Saoner*. (vii) Unirrigated. (viii) 3 hoeings and 2 weedings for all crops. (ix) 16.89". (x) Cotton 8, 22.11.1950, 2.12.1950, 11.1.1951 and 17.2.1951 ; Groundnut 25.10.1950 ; *Jowar* 3.1.1951.

#### 2. TREATMENTS :

7 rotations as follows :

1. Groundnut (GN)—Cotton (C).
2. Groundnut—Cotton—*Jowar* (J).
3. Cotton—*Jowar*—Groundnut—Cotton.
4. *Jowar*—Cotton—Cotton.
5. Cotton alone.
6. *Jowar*—Cotton.
7. Groundnut—Cotton—Cotton.

Manure is applied every third year to each rotation at 40 lb./ac. of N. (Half as F.Y.M. and half as A/S).

#### 3. DESIGN :

(i) R.B.D. (ii) (a) 18. (b) N.A. (iii) 5. (iv) (a) N.A. (b) 1/20 th ac. (v) 1 row on either side of the plot is left as border. (vi) No, as per rotation.

#### 4. GENERAL :

(i) Stunted growth of crop especially in groundnut and *jowar* due to long spell of draught in August and early cessation of rain in September and secondly late sowing of crops due to late showers in the season. (ii) Aphid attack noticed on groundnut by 2nd week of August., no control measures taken. (iii) Grain, *kapas* and pod yield. (iv) (a) 1930—1959. (b) As per rotation. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

#### 5. RESULTS :

##### I Crop : Cotton.

- (i) 397 lb./ac.  
 (ii) 106.1 lb./ac.  
 (iii) Treatments differ highly significantly.  
 (iv) Av. yield of *kapas* in lb./ac.

Rotation No.	(1)	(2)	(3)	(3)	(4)	(4)	(5)	(6)	(7)	(7)
Previous crop	GN	GN	GN	C	C	J	C	J	C	GN
Av. yield	663	656	731	234	190	195	241	177	250	633
S.E./mean	=47.43 lb./ac.									

##### II Crop : *Jowar*

- (i) 176 lb./ac.  
 (ii) 69.08 lb./ac.  
 (iii) Treatments do not differ significantly.  
 (iv) Av. yield of grain in lb./ac.

Rotation No.	(2)	(3)	(4)	(6)
Previous crop	C	C	C	C
Av. yield	178	145	198	182
S.E./mean	=30.88 lb./ac.			

##### III Crop : Groundnut.

- (i) 496 lb./ac.  
 (ii) 63.06 lb./ac.  
 (iii) Treatments do not differ significantly.  
 (iv) Av. yield of pod in lb./ac.
- | Rotation No.  | (1)            | (2) | (3) | (7) |
|---------------|----------------|-----|-----|-----|
| Previous crop | C              | J   | J   | C   |
| Av. yield     | 531            | 491 | 506 | 458 |
| S.E./mean     | =28.19 lb./ac. |     |     |     |

5 Crop :- Cotton, Groundnut and Jowar (*Kharif*). Ref :- Mh. 51(191)/50(113)/49(112)/48(83).

Site :- Govt. Exptl. Farm, Akola.

Type :- 'R'.

Object :- To find out the best rotation along with manuring for the tract.

### 1. BASAL CONDITIONS :

(i) (a) to (c) As per treatments, (ii) (a) Black cotton soil. (b) Refer soil analysis, Akola. (iii) Cotton 25.6.1951, Groundnut 19.7.1951 and Jowar 24.7.1951. (iv) (a) 2 heavy and one light *bakharig*. (b) N.A. (c) Cotton 18-20 lb./ac., Groundnut 90 lb./ac. and Jowar 8-10 lb./ac. (d) Cotton 18" x 9", Groundnut 12" x 6" and Jowar 18" x 12". (e) N.A. (v) 40 lb./ac. of N, half as F.Y.M. and half as A/S. (vi) Cotton H-420, Groundnut AK 12-24 and Jowar Saoner. (vii) Unirrigated. (viii) 4 hoeings and 2 weedings for all crops. (ix) 24.32". (x) Cotton 8.11.1951, 8.12.1951 and 19.3.1952, Groundnut 28.11.1951 and Jowar 5.1.1952.

### 2. TREATMENTS :

7 rotations as follows :

1. Groundnut (GN)—Cotton (C).
2. Groundnut—Cotton—Jowar (J).
3. Cotton—Jowar—Groundnut—Cotton.
4. Jowar—Cotton—Cotton.
5. Cotton alone.
6. Jowar—Cotton.
7. Groundnut—Cotton—Cotton.

Manure is applied every third year to each rotation at 40 lb./ac. of N. (half as F.Y.M. and half as A/S.)

### 3. DESIGN :

(i) R.B.D. (ii) (a) 18. (b) N.A. (iii) 5. (iv) (a) N.A. (b) 1/20th ac. (v) One row on either side of the plot. (vi) No, as per rotations.

### 4. GENERAL :

(i) N.A. (ii) Jowar suffered from top shoot borer in August. (iii) Grain, *kapas* and pod yield. (iv) (a) 1930—continued. (b) As per rotations. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

### 5. RESULTS :

#### I Crop : Cotton

(i) 792 lb./ac.

(ii) 122.1 lb./ac.

(iii) Treatments differ highly significantly.

(iv) Av. yield of *kapas* in lb./ac.

Rotation No.	(1)	(2)	(3)	(3)	(4)	(4)	(6)	(5)	(7)	(7)
Previous crop	GN	GN	GN	C	J	C	J	C	GN	C
Av. yield	1127	906	981	682	569	593	537	679	1048	796
	S.E./mean = 54.6 lb./ac.									

#### ✓ II Crop : Jowar.

(i) 1301 lb./ac.

(ii) 151.0 lb./ac.

(iii) Treatments differ highly significantly.

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

Rotation No.	(2)	(3)	(4)	(6)
Previous crop	C	C	C	C
Av. yield	1168	1504	1400	1134
	S.E./mean = 67.5 lb./ac.			

#### III Crop : Groundnut.

(i) 1322 lb./ac.

(ii) 191.2 lb./ac.

(iii) Treatments do not differ significantly.

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

Rotation No.	(1)	(2)	(3)	(7)
Previous crop	C	J	J	C
Av. yield	1304	1260	1320	1404
	S.E./mean = 85.5 lb./ac.			

Crop :- Cotton, Jowar, Groundnut (*Kharif*). Ref :- Mh. 52(229)/51(191)/  
50(113)/49(112)/48(83).  
Site :- Govt. Exptl. Farm, Akola. Type :- 'R'.

Object :- To find out the best rotation along with manuring for the tract.

### 1. BASAL CONDITIONS :

(i) (a), (b) and (c) As per treatments. (ii) (a) Black cotton soil. (b) Refer soil analysis, Akola. (iii) Cotton 25.6.1952; Groundnut 14.2.1952; *Jowar* 18.7.1952. (iv) (a) 2 heavy and one light *bakharing*. (b) N.A. (c) Cotton 19-20 lb./ac., Groundnut 90 lb./ac. and *Jowar* 8-10 lb./ac. (d) Cotton 18"×9", Groundnut 12"×6" and *Jowar* 18"×12". (e) N.A. (v) Manure is applied every third year to each rotation at the rate of 40 lb./ac.; half as F.Y.M. and the other half as A/S on 22.6.1952; F.Y.M. added as basal dose at 20 lb./ac. of N on 26.8.1952; A/S added as basal dose at 20 lb./ac. of N. (vi) Cotton-H420; Groundnut Ak 12-24; *Jowar*-*saoner*. (vii) Unirrigated. (viii) 5 hoeings and 1 thinning. (ix) 22.03". (x) Cotton-14.11.1952, 15.12.1952 and 21.1.1953; Groundnut-23.11.52; *Jowar*-29.12.52.

### 2. TREATMENTS :

7 rotations as follows :

1. Groundnut (GN)—Cotton (C).
2. Groundnut-Cotton-*Jowar* (J).
3. Cotton-*Jowar*-Groundnut-Cotton.
4. *Jowar*-Cotton-Cotton.
5. Cotton alone.
6. *Jowar*-Cotton.
7. Groundnut-Cotton-Cotton.

Manure is applied every third year to each rotation at 40 lb./ac. of N (half as F.Y.M. and half as A/S.)

### 3. DESIGN :

(i) R.B.D. (ii) (a) 18. (b) N.A. (iii) 5. (iv) (a) N.A. (b) 1/20th ac. (v) One row on either side of the plot. (vi) Yes.

### 4. GENERAL :

(i) Normal. (ii) Nil. (iii) Grain, *kapas* and pod yield. (iv) (a) 1930-continued. (b) As per rotations. (c) Nil. (v) (a), (b) N.A. (vi) & (vii) Nil.

### 5. RESULTS :

#### I. Crop : Cotton

- (i) 424 lb./ac.  
(ii) 72.80 lb./ac.  
(iii) Treatments differ highly significantly.  
(iv) Av. yield of *kapas* in lb./ac.

Rotation No.	(1)	(2)	(3)	(3)	(4)	(4)	(5)	(6)	(7)	(7)
Previous crop	GN	GN	C	GN	J	C	C	J	GN	C
Av. yield	539	586	262	630	313	387	346	278	580	324

S.E./mean = 32.54 lb./ac.

#### II. Crop : *Jowar*

- (i) 1004 lb./ac.  
(ii) 193.0 lb./ac.  
(iii) Treatments do not differ significantly.  
(iv) Av. yield of grain in lb./ac.

Rotation No.	(2)	(3)	(4)	(6)
Previous crop	C	C	C	C
Av. yield	1136	1054	976	850

S.E./mean = 86.3 lb./ac.

#### III Crop : Groundnut

- (i) 505 lb./ac.  
(ii) 90.00 lb./ac.  
(iii) Treatments do not differ significantly.  
(iv) Av. yield of *pod* in lb./ac.

Rotation No.	(1)	(2)	(3)	(7)
Previous crop	C	J	J	C
Av. yield	512	480	492	536

S.E./mean = 40.23 lb./ac.

Crop :- Cotton, Jowar, Groundnut (*Kharif*). Ref :- Mh. 53(313)/52(229)/51(191)  
/50(113)/49(112)/48(83).

Site :- Govt. Exptl. Farm, Akola.

Type :- 'R'.

Object :- To find out the best rotation along with manuring for the tract.

### 1. BASAL CONDITIONS :

(i) (a), (b), (c) As per treatments. (ii) (a) Black cotton soil. (b) Refer soil analysis, Akola. (iii) Cotton 25.6.1953; Groundnut 10.2.1953; *Jowar*—13.7.1953. (iv) (a) Ploughing on 24.4.1953. (b) *Tiffan* method for *Jowar* and cotton. (c) *Jowar* 8 lb./ac.; Cotton 20 lb./ac.; Groundnut 90 lb./ac. (d) *Jowar* 18" x 12"; Groundnut 12" x 6"; Cotton-18" x 9". (e) N.A. (v) N.A. (vi) Cotton-H 420 (medium); *Jowar*-improved *saoner*; Groundnut AK 12-24. (vii) Unirrigated. (viii) 4 hoeings and 3 weedings. (ix) 25°. (x) Cotton 26.11.1953, 31.12.1953, 13.2.1954; Groundnut 30.10.1953; *Jowar* 25.12.1953.

### 2. TREATMENTS :

7 rotations as follows :

1. Groundnut (GN)—Cotton (C).
2. Groundnut-Cotton-*Jowar* (J)
3. Cotton-*Jowar*-Groundnut-Cotton.
4. *Jowar*-Cotton-Cotton.
5. Cotton alone.
6. *Jowar*-Cotton.
7. Groundnut-Cotton-Cotton.

Manure is applied every third year to each rotation at 40 lb./ac. of N (half as F.Y.M. and half as A/S.)

### 3. DESIGN :

(i) R.B.D. (ii) (a) 18. (b) N.A. (iii) 5. (iv) (a) N.A. (b) 66' x 33'. (v) One line on either side of the plot. (vi) No, as per rotations.

### 4. GENERAL :

(i) Normal. (ii) Nil. (iii) Grain, *kapas* and pod yield. (iv) (a) 1930-continued. (b) As per rotations. (c) Nil. (v) (a), (b) N.A. (vi) & (vii) Nil

### 5. RESULTS :

#### I Crop : Cotton

- (i) 396 lb./ac.  
(ii) 60.40 lb./ac.  
(iii) Treatments differ highly significantly.  
(iv) Av. yield of *kapas* in lb./ac.

Rotation No.	(1)	(2)	(3)	(4)	(4)	(5)	(6)	(7)	(7)
Previous crop	GN	GN	GN	C	C	J	C	J	C
Av. yield	595	522	565	373	307	198	245	248	295

S.E./mean = 27.00 lb./ac.

#### II Crop : *Jowar*.

- (i) 1348 lb./ac.  
(ii) 212.0 lb./ac.  
(iii) Treatments do not differ significantly.  
(iv) Av. yield of grain in lb./ac.

Rotation No.	(2)	(3)	(4)	(6)
Previous crop	C	C	C	C
Av. yield	1500	1386	1296	1212

S.E./mean = 94.8 lb./ac.

#### III Crop : Groundnut

- (i) 1062 lb./ac.  
(ii) 155.7 lb./ac.  
(iii) Treatments do not differ significantly.  
(iv) Av. yield of *pod* in lb./ac.

Rotation No.	(1)	(2)	(3)	(7)
Previous crop	C	J	J	C
Av. yield	1040	956	1012	1240

S.E./mean = 69.60 lb./ac.

Crop :- Jowar-Chinamug-Groundnut-Gram-Wheat. Ref :- Mh. 51(206).

Site :- Agri. Res. Stn., Chas.

Type :- 'R'.

Object :- To find out the best *Rabi* cereal and legume rotation for the tract.

## 1. BASAL CONDITIONS :

(i) (a), (b) and (c) As per treatments. (ii) (a) Medium black. (b) N.A. (iii) Groundnut 30.6.1951 ; *Chinamug* 25.6.1951 ; Jowar 23.9.1951 ; Gram 30.9.1951 and Wheat 6.10.1951. (iv) (a) and (b) N.A. (c) Jowar—4 lb./ac., Wheat and Gram 60 lb./ac., *Chinamug* 10 lb./ac. (d) 18° for Jowar and 12° for others. (e) N.A. (v) Nil. (vi) Medium. (vii) Unirrigated. (viii) N.A. (ix) From May to August 10° from September to December 13°. (x) 29.11.1951, 30.8.1951, 13, 30.1.1952, 8.2.1952. for Groundnut, *Chinamug*, Jowar, Gram and Wheat respectively.

## 2. TREATMENTS :

11 rotations as follows :—

1. J—Jm—J—J.
2. Cmp/J every year.
3. Cm/J every year.
4. GNp—J.
5. GN—J.
6. Gp—J.
7. G—J.
8. Wp—J.
9. W—J.
10. F—Jp.
11. F—J.

Details of rotations :—

- J = Jowar unmanured.  
 Jm = Jowar manured with 5 C.L./ac. of F.Y.M.  
 Cmp = *Chinamug* manured with 40 lb./ac. of  $P_2O_5$ .  
 Cm = *Chinamug* unmanured.  
 GNp = Groundnut manured with 40 lb./ac. of  $P_2O_5$ .  
 GN = Groundnut unmanured.  
 Gp = Gram manured with 40 lb./ac. of  $P_2O_5$ .  
 G = Gram unmanured.  
 Wp = Wheat manured with 40 lb./ac. of  $P_2O_5$ .  
 W = Wheat unmanured. F = Fallow.

Cmp/J, Cm/J indicates that crops are grown in *Kharif* and *Rabi* respectively.  $P_2O_5$  applied as Super.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 22. (b) N.A. (iii) 6. (iv) (a) N.A. (b) 45' x 30'. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) No. (iii) Grain and pod yield. (iv) (a) 1949—continued. (b) As per rotations. (c) N.A. (v) (a) Jeur. (b) —. (vi) and (vii) Nil.

## 5. RESULTS:

## I. Crop : Jowar.

(i) 342 lb./ac.

(ii) 150.6 lb./ac.

(iii) Treatments differ significantly.

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

Rotation No.	(1)	(1)	(1)	(1)	(2)	(3)	(4)
Crop	J	J	J	Jm	Cmp/J	Cm/J	J
Previous crop	J	J	Jm	J	Cmp/J	Cm/J	GNp
Av. yield	225	302	351	405	333	301	336

Rotation No.	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Crop	J	J	J	J	J	Jp	J
Previous crop	GN	Gp	G	Wp	W	F	F
Av. yield	462	457	294	455	383	209	283

S.E./mean = 61.5 lb./ac.

II. Crop : *Chinamug*

(i) 352 lb./ac.

(ii) 98.16 lb./ac.

(iii) Treatments do not differ significantly.

(iv) Av. yield of *Chinamug* in lb./ac.

Rotation No.	(2)	(3)
Crop	Cmp/J	Cm/J
Previous crop	Cmp/J	Cm/J
Av. yield	416	289

S.E./mean = 40.08 lb./ac.

## III. Crop : Groundnut.

(i) 944 lb./ac.

(ii) 170.1 lb./ac.

(iii) Treatments differ significantly.

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

Rotation No.	(4)	(5)
Crop	GNp	GN
Previous crop	J	J
Av. yield	1126	762

S.E./mean = 69.4 lb./ac.

## IV. Crop : Gram

- (i) 249 lb./ac.  
 (ii) 44.69 lb./ac.  
 (iii) Treatments do not differ significantly.  
 (iv) Av. yield of gram in lb./ac.

Rotation No.	(6)	(7)
Crop	Gp	G
Previous crop	J	J
Av. yield	237	261
S.E./mean	=18.25 lb./ac.	

## V. Crop : Wheat

- (i) 116 lb./ac.  
 (ii) 73.87 lb./ac.  
 (iii) Treatments do not differ significantly.  
 (iv) Av. yield of wheat in lb./ac.

Rotation No.	(8)	(9)
Crop	Wp	W
Previous crop	J	J
Av. yield	131	102
S.E./mean	=30.16 lb./ac.	

Crop :- Jowar, Chinamug, Groundnut,  
 Gram and Wheat.

Ref :- Mh. 53(333)/51(206).

Site :- Agri. Res. Stn., Chas.

Type :- 'R'.

Object :- To find out the best *Rabi* cereals and legume rotation for the tract.

## 1. BASAL CONDITIONS :

- (i) (a), (b) and (c) As per treatments. (ii) (a) Medium black. (b) N.A. (iii) N.A. (iv) (a) One ploughing. (b) Drilled. (c) *Jowar*—4 lb./ac. ; *Wheat and Gram*—60 lb./ac. and *Chinamug*—10 lb./ac. (d) 12" for *Jowar* and 18" for other crops. (e) —. (v) Nil. (vi) N.A. (vii) Unirrigated. (viii) N.A. (ix) 16". (x) N.A.

## 2. TREATMENTS :

11 rotations as follows :-

- J—Jm—J—J.
- Cmp/J every year.
- Cm/J every year.
- GNp—J.
- GN—J.
- Gp—J.
- G—J.
- Wp—J.
- W—J.
- F—Jp.
- F—J.

Details of rotations :-

- J = *Jowar* unmanured.  
 Jm = *Jowar* manured with 5 C.L./ac. of F.Y.M.  
 Cmp = *Chinamug* manured with 40 lb./ac. of  $P_2O_5$ .  
 Cm = *Chinamug* unmanured.  
 GNp = *Groundnut* manured with 40 lb./ac. of  $P_2O_5$ .  
 GN = *Groundnut* unmanured.  
 Gp = *Gram* manured with 40 lb./ac. of  $P_2O_5$ .  
 G = *Gram* unmanured.  
 Wp = *Wheat* manured with 40 lb./ac. of  $P_2O_5$ .  
 W = *Wheat* unmanured. F = Fallow.

Cmp/J, Cm/J indicates that crops are grown in *Kharif* and *Rabi* respectively.  $P_2O_5$  applied as Super.

## 3. DESIGN :

- (i) R.B.D. (ii) (a) 22. (b) N.A. (iii) 4. (iv) (a) N.A. (b) 45' × 30' (v) N.A. (vi) As per rotation.

## 4. GENERAL :

- (i) N.A. (ii) Nil. (iii) Grain yield. (iv) (a) 1949—continued. (b) As per rotations. (c) Nil. (v) (a) Jour. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

## I. Crop : Jowar

- (i) 297 lb./ac.  
 (ii) 135.2 lb./ac.  
 (iii) Treatments do not differ significantly.  
 (iv) Av. yield of *Jowar* in lb./ac.

Rotation No.	(1)	(1)	(1)	(1)	(2)	(3)	(4)	(5)
Crop	J	J	J	J	Cmp/J	Cm/J	J	J
Previous crop	J	Jm	J	Jm	Cmp/J	Cm/J	GNp	GN
Av. yield	160	259	170	327	373	263	453	369
Rotation No.	(6)	(7)	(8)	(9)	(10)	(11)		
Crop	J	J	J	J	JP	J		
Previous crop	GP	G	Wp	W	F	F		
Av. yield	429	302	272	278	215	291		
S.E./mean	=67.6 lb./ac.							

## II. Crop : Gram

- (i) 160 lb./ac.  
 (ii) 36.97 lb./ac.  
 (iii) Treatments do not differ significantly.

(iv) Av. yield of gram in lb./ac.		
Rotation No.	(6)	(7)
Crop	Gp	G
Previous crop	J	J
Av. yield	162	158
	S.E./mean	=18.49 lb./ac.

### III. Crop : Wheat

(i) 47 lb./ac.

(ii) 18.36 lb./ac.

(iii) Treatments do not differ significantly.

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

Rotation No.	(8)	(9)
Crop	Wp	W
Previous crop	J	J
Av. yield	60	33
	S.E./mean	=9.18 lb./ac.

Note :—Yields of *Chinamug* and Groundnut—N.A.

Crop :- Bajra-Tur—Chinamug—Chavali etc.

Ref :- Mh. 51(205).

Site :- Agri. Res. Stn. Chas.

Type :- 'R'.

Object :—To find out the best rotation of *Kharif* legumes and cereals for the tract.

### 1. BASAL CONDITIONS :

(i) (a) to (c) As per treatments. (ii) (a) Medium black. (b) N.A. (iii) *Chinamug* 25.6.1951 ; *Chavali* 5.7.1951. ; *Hulga* 5.7.1951 ; *Bajri-Tur* 5.7.1951 and Groundnut 30.6.1951. (iv) (a) 1 ploughing and 2 harrowing. (b) to (e) N.A. (v) Nil. (vi) Medium. (vii) Unirrigated. (viii) 2 interculturings. (ix) 10.99%. (x) *Chinamug* 30.8.1951 ; *Chavali* 4.11.1951 ; *Hulga* 15.11.1951 ; *Bajri-Tur* 21.10.1951 and 5.2.1952 ; Groundnut 26.12.1951.

### 2. TREATMENTS :

11 rotations as follows :

Details of rotations :

1. BT every year.	BT = Bajra and Tur in ratio 3 : 1.
2. BT every year.	BTp = Bajra and Tur manured with 20 lb./ac. of $P_2O_5$ .
3. BTp—BT.	GNp = Groundnut manured with 20 lb./ac. of $P_2O_5$ .
4. GNp—BT.	GN = Groundnut unmanured.
5. GN—BT.	Hp = Hulga manured with 20 lb./ac. of $P_2O_5$ .
6. Hp—BT.	H = Hulga unmanured.
7. H—BT.	Mgp = <i>Chinamug</i> manured with 20 lb./ac. of $P_2O_5$ .
8. Mgp—BT.	Mg = <i>Chinamug</i> unmanured.
9. Mg—BT.	Cp = <i>Chavali</i> manured with 20 lb./ac. of $P_2O_5$ .
10. Cp—BT.	C = <i>Chavali</i> unmanured.
11. C—BT.	

### 3. DESIGN :

(i) R.B.D. (ii) (a) 20. (b) N.A. (iii) 6. (iv) Repl. 1, 2, 3 and 4. Gross plot : 35.5'×35.5' Net Plot 33.5'×33.5' ; Repl. : 6—Gross plot : 49'×26' Net Plot : 47'×24' ; Repl. 5—Gross plot 28.75'×42.50' ; Net plot 26.75'×40.50'. (v) 2' at each side. (vi) No, as per rotation.

### 4. GENERAL :

(i) N.A. (ii) Nil. (iii) Plant counts, height, grain and pod yields. (iv) (a) 1948—contd. (b) As per rotation: (c) Nil. (v) (a) Jeur. (b) N.A. (vi) Nil. (vii) Data for 1949, 1950 and 1954 are N.A.

### 5. RESULTS :

#### I. Crop : Bajra

(i) 145 lb./ac.

(ii) 52.98 lb./ac.

(iii) Treatments do not differ significantly.



(iv) Av. yield of *bajra* in lb./ac.

Rotation No.	(1)	(2)	(3)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Crop	BT	BT	BT	BTp	BT	BT	BT	BT	BT	BT	BT	BT
Previous crop	BT	BT	BTp	BT	GNp	GN	Hp	H	Mgp	Mg	Cp	C
Av. yield	119	143	123	143	134	177	164	169	118	115	175	163

S.E./mean = 21.63 lb./ac.

## II Crop : Tur

(i) 52 lb./ac.

(ii) 19.98 lb./ac.

(iii) Treatments differ significantly.

(iv) Av. yield of *tur* in lb./ac.

Rotation No.	(1)	(2)	(3)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Crop	BT	BT	BT	BTp	BT	BT	BT	BT	BT	BT	BT	BT
Previous crop	BT	BT	BTp	BT	GNp	GN	Hp	H	Mgp	Mg	Cp	C
Av. yield	64	65	38	53	53	56	39	48	68	70	37	34

S.E./mean = 12.15 lb./ac.

## III Crop : Groundnut

(i) 773 lb./ac.

(ii) 156.6 lb./ac.

(iii) Treatments do not differ significantly.

## (iv) Av. yield in lb./ac.

Rotation No.	(4)	(5)
Crop	GNp	GN
Previous crop	BT	BT
Av. yield	767	778

S.E./mean = 63.9 lb./ac.

## IV Crop. Hulga

(i) 96 lb./ac.

(ii) 17.56 lb./ac.

(iii) Treatments do not differ significantly.

(iv) Av. yield of *Hulga* in lb./ac.

Rotation No.	(6)	(7)
Crop	Hp	H
Previous crop	BT	BT
Av. yield	102	91

S.E./mean = 7.17 lb./ac.

## V Crop : Chinamug

(i) 70.0 lb./ac.

(ii) 25.46 lb./ac.

(iii) Treatments do not differ significantly.

## (iv) Av. yield in lb./ac.

Rotation No.	(8)	(9)
Crop	Mgp	Mg
Previous crop	BT	BT
Av. yield.	75	65

S.E./mean = 10.39 lb./ac.

## VI Crop : Chavali

(i) 72 lb./ac.

(ii) 28.89 lb./ac.

(iii) Treatments do not differ significantly.

## (iv) Av. yield in lb./ac.

Rotation No.	(10)	(11)
Crop	Cp	C
Previous crop	BT	BT
Av. yield	92	53

S.E./mean = 11.79 lb./ac.

Crop :- Bajra, Tur, Chinamug, Chavali,  
Groundnut and Hulga.

Ref :- Mh. 52(303)/51(205)

Site :- Agri. Res. Stn., Chas,

Type :- 'R'.

Object :- To find out the best rotation of *Kharif* legumes and cereals for the tract.

## 1. BASAL CONDITIONS :

(i) (a) to (c) As per treatments. (ii) (a) Medium black. (b) N.A. (iii) *Bajra-Tur* 29.6.1952 ; *Chinamug* 16.6.1952 ; *Chavali* and *Hulga* 29.6.1952 ; *Groundnut* 21.6.1952. (iv) (a) to (e) N.A. (v) Nil. (vi) Medium. (vii) Unirrigated. (viii) Interculturing twice. (ix) 9". (x) N.A.

## 2. TREATMENTS :

11 rotations as follow :-

- BT every year.
- BT every year.
- BTp-BT.
- GNp-BT.
- GN BT.
- Hp-BT.
- H-BT.
- Mgp-BT.

Details of rotations :

- BT = *Bajra* and *Tur* in ratio 3 : 1.  
 BTp = *Bajra* and *Tur* manured with 20 lb./ac. of  $P_2O_5$ .  
 GNp = *Groundnut* manured with 20 lb./ac. of  $P_2O_5$ .  
 GN = *Groundnut* unmanured.  
 Hp = *Hulga* manured with 20 lb./ac. of  $P_2O_5$ .  
 H = *Hulga* unmanured.  
 Mgp = *Chinamug* manured with 20 lb./ac. of  $P_2O_5$ .  
 Mg = *Chinamug* unmanured.

9. Mg—BT. Cp = Chavali manured with 20 lb./ac. of  $P_2O_5$ .  
 10. Cp—BT. C = Chavali unmanured.  
 11. C—BT.

## 3. DESIGN :

R.B.D. (ii) (a) 20. (b) N.A. (iii) 6. (iv) (a) 37'×37'. (b) 33'×33'. (v) 2' ring. (vi) No, as per rotation.

## 4. GENERAL :

(i) Not satisfactory due to less rain. (ii) Nil. (iii) Plant count, plant height, grain and pod yield. (iv) (a) 1948—continued. (b) As per rotations. (c) N.A. (v) (a) Jeur. (b) —. (vi) and (vii) Nil.

## 5. RESULTS :

## I. Crop : Bajra

- (i) 37 lb./ac.  
 (ii) 18.32 lb./ac.  
 (iii) Treatments do not differ significantly.  
 (iv) Av. yield of *bajra* in lb./ac.

Rotation No.	(1)	(2)	(3)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Crop	BT	BT	BTp	BT	BT	BT	BT	BT	BT	BT	BT	BT
Previous crop	BT	BT	BT	BTp	GNp	GN	Hp	H	Mgp	Mg	Cp	C
Av. yield	29	29	27	29	26	42	34	38	47	43	49	53
	S.E./meam = 7.48 lb./ac.											

## II. Crop : Groundnut

- (i) 190.0 lb./ac.  
 (ii) 33.00 lb./ac.  
 (iii) Treatments do not differ significantly.  
 (iv) Av. yield of *pod* in lb./ac.

Rotation No.	(4)	(5)
Crop	GNp	GN
Previous crop	BT	BT
Av. yield	213	167
	S.E./mean = 13.47 lb./ac.	

## III. Crop : Hulga

- (i) 59.0 lb./ac.  
 (ii) 10.72 lb./ac.  
 (iii) Treatments differ significantly.  
 (iv) Av. yield of *hulga* in lb./ac.

Rotation No.	(6)	(7)
Crop	Hp	H
Previous crop	BT	BT
Av. yield	67	51
	S.E./mean = 4.38 lb./ac.	

## IV. Crop : Chainamug

- (i) 21.0 lb./ac.  
 (ii) 4.72 lb./ac.  
 (iii) Treatments do not differ significantly.  
 (iv) Av. yield of *chinamug* in lb./ac.

Rotation No.	(8)	(9)
Crop	Mgp	Mg
Previous crop	BT	BT
Av. yield	23	19
	S.E./mean = 1.93 lb./ac.	

## V. Crop : Chavali

- (i) 17.0 lb./ac.  
 (ii) 6.90 lb./ac.  
 (iii) Treatments do not differ significantly.  
 (iv) Av. yield of *chavali* in lb./ac.

Rotation No.	(10)	(11)
Crop	Cp	C
Previous crop	BT	BT
Av. yield	22	13
	S.E./mean = 2.82 lb./ac.	

Crop :- Bajra, Tur, Chinamug, Chavali,  
 Groundnut and Hulga.

Ref :- Mh. 53(332)/52(303)/51(205).

Site :- Agri. Res. Stn., Chas.

Type :- 'R'.

Object :- To find out the best rotation of *kharif* legumes and cereals for the tract.

## 1. BASAL CONDITIONS :

- (i) (a) to (c) As per treatments. (ii) (a) Medium black. (b) N.A. (iii) N.A. (iv) (a) 1 ploughing and 2 harrowings. (b) Drilling. (c) *Bajra* 3 lb./ac.; *Tur* 2 lb./ac.; *Chavali*, *Hulga* and *Moong* 10 lb./ac. and *Groundnut* 80 lb./ac. (d) 12". (e) N.A. (v) Nil. (vi) Medium. (vii) Unirrigated. (viii) 2 interculturations. (ix) 8.30". (x) N.A.

## 2. TREATMENTS :

## II rotations :

1. BT every year.
2. BT every year.
3. BTp—BT.
4. GNp—BT.
5. GN—BT.
6. Hp—BT.
7. H—BT.
8. Mgp—BT.
9. Mg—BT.
10. Cp—BT.
11. C—BT.

## Details of rotation :

- BT = *Bajra* and *Tur* in ratio 3 : 1.  
 BTp = *Bajra* and *Tur* manured with 20 lb./ac. of  $P_2O_5$ .  
 GN = Groundnut manured with 20 lb./ac. of  $P_2O_5$ .  
 GNp = Groundnut unmanured.  
 HP = *Hulga* manured with 20 lb./ac. of  $P_2O_5$ .  
 H = *Hulga* unmanured.  
 Mgp = *Chinamug* manured with 20 lb./ac. of  $P_2O_5$ .  
 Mg = *Chinamug* unmanured.  
 Cp = *Chavali* manured with 20 lb./ac. of  $P_2O_5$ .  
 C = *Chavali* unmanured.

## 3. DESIGN :

- (i) R.B.D. (ii) (a) 20. (b) N.A. (iii) 6. (iv) (a) 37'×37'. (b) 33'×33'. (v) N.A. (vi) No, as per rotations.

## 4. GENERAL :

- (i) N.A. (ii) N.A. (iii) Grain and pod yield. (iv) (a) 1948—continued. (b) As per rotations. (c) Nil.  
 (v) (a) Jeur. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

## I. Crop : Bajra

- (i) 58 lb./ac.  
 (ii) 17.40 lb./ac.  
 (iii) Treatments differ significantly.  
 (iv) Av. yield of *bajra* in lb./ac.

Rotation No.	(1)	(2)	(3)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Crop	BT	BT	BT	BTp	BT	BT	BT	BT	BT	BT	BT	BT
Previous crop	BT	BT	BTp	BT	GNp	GN	Hp	H	Hgp	Mg	Cp	C
Av. yield	47	42	59	57	53	58	63	49	65	50	88	66
					S.E./mean = 7.10 lb./ac.							

## II. Crop : Tur

- (i) 41 lb./ac.  
 (ii) 16.50 lb./ac.  
 (iii) Treatments differ significantly.  
 (iv) Av. yield of *tur* in lb./ac.

Rotation No.	(1)	(2)	(3)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Crop	BT	BT	BT	BIP	BT	BT	BT	BT	BT	BT	BT	BT
Previous crop	BT	BT	BTp	BT	GNp	GN	Hp	H	Mgp	Mg	Cp	C
Av. yield	53	40	51	50	39	54	42	39	41	35	25	25
					S.E./mean = 6.74 lb./ac.							

## III. Crop : Groundnut

- (i) 673.0 lb./ac.  
 (ii) 100.64 lb./ac.  
 (iii) Treatments do not differ significantly.  
 (iv) Av. yield of pod in lb./ac.

Rotation No.	(4)	(5)
Crop	GNp	GN
Previous crop	BT	BT
Av. yield	720	627
	S.E./mean = 41.09 lb./ac.	

## IV. Crop : Hulga

- (i) 81.0 lb./ac.  
 (ii) 28.80 lb./ac.  
 (iii) Treatments do not differ significantly.  
 (iv) Av. yield of *hulga* in lb./ac.

Rotation No.	(6)	(7)
Crop	Hp	H
Previous crop	BT	BT
Av. yield	90	72
	S.E./mean = 11.76 lb./ac.	

## V. Crop : Chinamug

- (i) 39.0 lb./ac.  
 (ii) 12.80 lb./ac.  
 (iii) Treatments do not differ significantly.  
 (iv) Av. yield of *chinamug* in lb./ac.

Rotation No.	(8)	(9)
Crop	Mgp	Mg
Previous crop	BT	BT
Av. yield	38	40
	S.E./mean = 5.01 lb./ac.	

## VI. Crop : Chavali

- (i) 78.0 lb./ac.  
 (ii) 21.92 lb./ac.  
 (iii) Treatments do not differ significantly.  
 (iv) Av. yield of *chavali* in lb./ac.

Rotation No.	(10)	(11)
Crop	Cp	C
Previous crop	BT	BT
Av. yield	70	87
	S.E./mean = 8.95 lb./ac.	

Crop :- Jowar-Cotton-Groundnut (*Kharif*).

Ref :- Mh. 49(118).

Site :- Agri. Res. Stn., Jalagaon.

Type :- 'R'.

Object :- To study the best rotation for Cotton and *Jowar* with and without legume.

## 1. BASAL CONDITIONS :

(i) (a) to (c) As per treatments. (ii) (a) Deep black. (b) Refer soil analysis, Jalagaon. (iii) 30.6.1949. (iv) (a) N.A. (b) Drilling. (c) 3 lb./ac. of *Jowar*, 6 lb./ac. of *Udid*, 10 lb./ac. of Cotton and 50 lb./ac. of Groundnut. (d) 13" to Cotton and *owar* and 12" for Groundnut. (e) N.A. (v) Nil. (vi) N.A. (vii) Unirrigated. (viii) 4 weedings and 3 hoeings. (ix) 44.17". (x) Groundnut 26.10.1949 : *Jowar* 8.12.1949 and Cotton 17 to 21.11.1959.

## 2. TREATMENTS :

11 rotations :	Details of rotations :
1. Cm every year	Cm = Cotton manured with 5 C.L./ac. of F.Y.M.
2. Cm-G	C = Cotton unmanured.
3. Jm every year	Jm = <i>Jowar</i> manured with 5 C.L./ac. of F.Y.M.
4. Jm-J	J = <i>Jowar</i> unmanured.
5. Cm-J	G = Groundnut unmanured.
6. C-G	
7. Cm-G	<i>Jowar</i> is sown mixed with <i>Udid</i> in 1 : 2 ratio.
8. J-G	[Original plots (22) of size 62' x 30' (Gross) were further divided from 1951-1952 into two equal parts making in all 44 (sub) plots in each replication. Further, the plots in which Groundnut is sown were suffixed with 1 and 2. The plots suffixed with 1 were given a dose of 100 lb./ac. of Super.]
9. Jm-G	
10. Cm-J-G	
11. Cm-J-G	

## 3. DESIGN :

(i) R.B.D. (ii) (a) 22. (b) N.A. (iii) 6. (iv) (a) 30' x 62'. (b) 18' x 50'. (v) 6' on all sides. (vi) Yes.

## 4. GENERAL :

(i) Normal. (ii) Attack of Aphids on Groundnut. (iii) Fodder, grain, pods and *kapas* yield. (iv) (a) 1949-continued. (b) As per rotation. (c) Nil. (v) (a) No. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

I. Crop : *Jowar*

- (i) 1789 lb./ac.  
(ii) 246.4 lb./ac.  
(iii) Treatments do not differ significantly.  
(iv) Av. yield of grain in lb./ac.

Rotation No.	(3)	(4)	(4)	(5)	(8)	(9)	(10)	(11)
Crop	Jm	Jm	J	J	J	Jm	J	J
Av. yield	2026	1717	1655	1670	1789	1908	1853	1694
		S.E./mean		= 100.6 lb./ac.				

## II. Crop : Cotton

- (i) 453 lb./ac.  
(ii) 91.23 lb./ac.  
(iii) Treatments differ significantly.  
(iv) Av. yield of *kapas* in lb./ac.

Rotation No.	(1)	(2)	(2)	(5)	(6)	(7)	(10)	(11)
Crop	Cm	Cm	C	Cm	C	Cm	Cm	Cm
Av. yield	528	491	397	493	338	440	463	472
		S.E./mean		= 37.25 lb./ac.				

## III. Crop : Groundnut

- (i) 820 lb./ac.  
(ii) 143.80 lb./ac.  
(iii) Treatments do not differ significantly.  
(iv) Av. yield of pod in lb./ac.

Rotation No.	(6)	(7)	(8)	(9)	(10)	(11)
Crop	G	G	G	G	G	G
Av. yield	819	837	846	772	779	870
		S.E./mean		= 58.7 lb./ac.		

Crop :-Jowar, Cotton and Groundnut (*Kharif*).

Ref :-Mh. 50(142)/49(118).

Site :-Agri. Res. Stn., Jalagaon.

Type :-'R'.

Object :-To study the best rotation for Cotton and *Jowar* with and without legume.

## 1. BASAL CONDITIONS :

(i) (a) to (c) As per treatments. (ii) (a) Deep black. (b) Refer soil analysis, Jalagaon. (iii) 9.7.1950. (iv) (a) N.A. (b) Drilling. (c) 2 lb./ac. of *Jowar* mixed with 6 lb./ac. of *Udid*; 10 lb./ac. of Cotton; 50 lb./ac. of Groundnut. (d) 18" for Cotton and *Jowar* and 12" for Groundnut. (e) —. (v) Nil. (vi) N.A. (vii) Unirrigated. (viii) 3 weedings and 2 hoeings. (ix) 21.73". (x) Cotton 15.11.1950; *Jowar* 17.12.1950; Groundnut 28.10.1950.

## 2. TREATMENTS :

11 rotations as follows :

1. Cm every year
2. Cm-C
3. Jm every year
4. Jm-J
5. Cm-J
6. C-G
7. Cm-G
8. J-G
9. Jm-G
10. Cm-J-G
11. Cm-J-G

Details of rotations :

Cm=Cotton manured with 5 C.L./ac. of F.Y.M.

C = Cotton unmanured.

Jm = *Jowar* manured with 5 C.L./ac. of F.Y.M.J = *Jowar* unmanured.

G = Groundnut unmanured.

*Jowar* is sown mixed with *Udid* in 1 : 2 ratio [Original plots (22) of size 62' x 30' (Gross) were further divided from 1951—1952 into two equal parts making in all 44 (sub) plots in each replication. Further, the plots in which Groundnut is sown were suffixed with 1 and 2. The plots suffixed with 1, were given a dose of 100 lb./ac. of Super].

## 3. DESIGN :

(i) R.B.D. (ii) (a) 22. (b) N.A. (iii) 6. (iv) (a) 30' x 62'. (b) 18' x 50'. (v) 6' ring round. (vi) No. as per rotation.

## 4. GENERAL :

(i) Normal. (ii) Aphids and *Tikka* disease on Groundnut. Attack of stem-borer on *Jowar*. Anthracose disease on Cotton in young stage. (iii) Grain, *kapas* and pods yield. (iv) (a) 1949—contd. (b) As per rotations. (c) Nil. (v) (a) No. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

I Crop : *Jowar*

- (i) 1593 lb./ac.  
(ii) 200.9 lb./ac.  
(iii) Treatments differ highly significantly.  
(iv) Av. yield of grain in lb./ac.

Rotation No.	(3)	(4)	(4)	(5)	(8)	(9)	(10)	(11)
Crop	Jm	J	Jm	J	J	Jm	J	J
Av. yield	1450	1282	1365	1252	2211	2211	1262	1715
	S.E./mean					=82.0 lb./ac.		

## II Crop : Cotton

- (i) 583 lb./ac.  
(ii) 80.59 lb./ac.  
(iii) Treatments differ highly significantly.  
(iv) Av. yield of *kapas* in lb./ac.

Rotation No.	(1)	2	(2)	(5)	(6)	(7)	(10)	(11)
Crop	Cm	C	Cm	Cm	C	Cm	Cm	Cm
Av. yield	523	466	430	575	705	718	532	772
	S.E./mean					=32.91 lb./ac		

## III Crop : Groundnut

- (i) 861 lb./ac.  
(ii) 111.1 lb./ac.  
(iii) Treatments do not differ significantly.  
(iv) Av. yield of pod in lb./ac.

Rotation No.	(6)	(7)	(8)	(9)	(10)	(11)
Crop	G	G	G	G	G	G
Av. yield	916	933	784	845	820	869
	S.E./mean					=45.35 lb./ac.

Crop :- Jowar, Cotton and Groundnut (Kharif). Ref :- Mh. 51(202)/50(142)/49(118).

Site :- Agri. Res. Stn., Jalagaon.

Type :- 'R'.

Object :- To study the best rotation for Cotton and Jowar with and without legume.

### 1. BASAL CONDITIONS :

- (i) (a) to (c) As per treatments. (ii) (a) Deep black. (b) Refer soil analysis, Jalagaon. (iii) 11.7.1951.  
 (iv) (a) N.A. (b) Drilling. (c) 3 lb./ac. of Jowar mixed with 6 lb. ac. of Udid; 10 lb./ac. of Cotton;  
 60 lb./ac. of Groundnut. (d) 18" for Cotton and Jowar; 12" for Groundnut. (e) —. (v) Nil. (vi)  
 N.A. (vii) Unirrigated. (viii) 2 weedings and 4 hoeings. (ix) 20.14". (x) Groundnut 11.1.1951; Jowar  
 4.12.1951; Cotton 21.11.1951 to 1.1.1952.

### 2. TREATMENTS :

11 rotations :	Details of rotations :
1. Cm every year	Cm = Cotton manured with 5 C.L./ac. of F.Y.M.
2. Cm—C	C = Cotton unmanured.
3. Jm—every year	Jm = Jowar manured with 5 C.L./ac. of F.Y.M.
4. Jm—J	J = Jowar unmanured.
5. Cm—J	G = Groundnut unmanured.
6. C—G	GP = Groundnut manured with 100 lb./ac. of Super.
7. Cm—G	Jowar is sown mixed with Udid in 1 : 2 ratio
8. J—G	[Original plots (22) of size 62' x 30' (Gross) were further divided from
9. Jm—G	1951—52 into two equal parts making in all 44 (sub) plots in each
10. Cm—J—G	replication. Further, the plots in which Groundnut is sown were
11. Cm—J—G	suffixed with 1 and 2. The plots suffixed with 1 were given a dose of 100
	lb./ac. of Super.

### 3. DESIGN :

- (i) R.B.D. (ii) (a) 22. (b) N.A. (iii) 6. (iv) (a) 30' x 31' (sub-plot); 62' x 30' (main-plot). (b) 22' x 18'  
 (sub-plot); 50' x 18' (main-plot) (v) 3' on the side of common strip (i.e. in the middle of main-plot)  
 and 6' on either ends of main-plot and 6' on both sides of main-plot. (vi) No, as per rotations.

### 4. GENERAL :

- (i) Normal. (ii) Attack of Aphids on Groundnut. Attack of stem-borer on Jowar. (iii) Grain, kapas  
 and pod yield. (iv) (a) 1949 (modified in 1951—52)—contd. (b) As per rotations. (c) Nil. (v) (a) and  
 (b) N.A. (vi) and (vii) Nil.

### 5. RESULTS :

#### I Crop : Jowar

- (i) 1303 lb./ac.  
 (ii) 273.0 lb./ac.  
 (iii) Treatments differ highly significantly.  
 (iv) Av. yield of grain in lb./ac.

Rotation No.	(3)	(4)	(4)	(5)	(8)	(8)	(9)	(9)	(10)	(10)	(11)
Crop	Jm	J	Jm	Cm	J	J	Jm	Jm	J	J	Cm
Previous crop	Jm	Jm	J	J	G	Gp	G	Gp	G	Gp	J
Av. yield	1114	1068	1143	1129	1534	1527	1573	1466	1353	1345	1082
	S.E./mean = 136.5 lb./ac.										

#### II Crop : Cotton

- (i) 623 lb./ac.  
 (ii) 117.2 lb./ac.  
 (iii) Treatments differ highly significantly.  
 (iv) Av. yield of kapas in lb./ac.

Rotation No.	(1)	(2)	(2)	(5)	(6)	(6)	(7)	(7)	(10)	(11)
Crop	Cm	Cm	C	Cm	C	C	Cm	Cm	Cm	Cm
Previous crop	Cm	C	Cm	J	G	Gp	G	Gp	G	Gp
Av. yield	617	548	616	382	706	688	745	791	626	733
	S.E./mean = 58.6 lb./ac.									

#### III Crop : Groundnut

- (i) 850 lb./ac.  
 (ii) 163.9 lb./ac.  
 (iii) Treatments do not differ significantly.

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

Rotation No.	(6)	(6)	(7)	(7)	(8)	(8)
Crop	G	Gp	G	Gp	G	Gp
Av. yield	813	780	809	902	845	806
Rotation No.	(9)	(9)	(10)	(10)	(11)	(11)
Crop	G	Gp	G	Gp	G	Gp
Av. yield	948	914	804	782	953	786
		S.E./mean		=66.9 lb./ac.		

Crop :- Jowar, Cotton, Groundnut (*Kharif*). Ref :- Mh. 52(302)/51(202)  
/50(142)/49(118).

Site :- Agri. Res. Stn. Jalagaon.

Type :- 'R'.

Object :- To study the best rotation for Cotton and *Jowar* with and without legume.

### 1. BASAL CONDITIONS :

(i) (a) to (c) As per treatments. (ii) (a) Deep black. (b) Refer soil analysis, Jalagaon. (iii) 26.6.1952. (iv) (a) N.A. (b) Drilling. (c) 3 lb./ac. of *Jowar* mixed with 6 lb./ac. of *Udid*; 10 lb./ac. of Cotton; 60 lb./ac. of Groundnut. (d) 18° for Cotton and *Jowar*; 12° for Groundnut. (e) —. (v) Nil. (vi) Cotton-*Jarila Jowar*-Aispuri; Groundnut-Spanish Groundnut. (vii) Unirrigated. (viii) 3 weedings and 3 hoeings. (ix) 17.61°. (x) Groundnut 7.11.1952; *Jowar* 27.11.1952; Cotton 31.10.1952 to 21.1.1953.

### 2. TREATMENTS :

- 11 Rotations :
1. Cm every year.
2. Cm—C
3. Jm every year.
4. Jm—J
5. Cm—J
6. C—G
7. Cm—G
8. J—G
9. Jm—G
10. Cm—J—G
11. Cm—J—G

Details of rotations :

Cm=Cotton manured with 5 C.L., F.Y.M./ac.

C = Cotton unmanured.

Jm = *Jowar* manured with 5 C.L., F.Y.M./ac.

J = *Jowar* unmanured.

G = Groundnut unmanured.

Gp = Groundnut manured with 100 lb./ac. of Super.

*Jowar* is sown mixed with *Udid* in 1 : 2 ratio.

[Original plots (22) of size 62' x 30' (Gross) were further divided from 1951-52 into two equal parts making in all 44 (sub.) plots in each replication. Further, the plots in which, groundnut is sown were suffixed with 1 and 2. The plots suffixed with 1 were given a dose of 100 lb./ac. of Super].

### 3. DESIGN :

(i) R.B.D. (ii) (a) 22 (44 sub-plot). (b) N.A. (iii) 6. (iv) (a) 31' x 30'. (b) 22' x 18'. (v) N.A. (vi) No, as per rotation.

### 4. GENERAL :

(i) Normal. (ii) *Tikka* and roct—rot disease on Groundnut. Attack of stem borer on *Jowar*. (iii) Grain, pods and *Kapas* yield. (iv) (a) 1949—1950 (modified in 1951—1952) continued. (b) Yes, As per rotation. (c) Nil. (v) (a) No. (b) N.A. (vi) and (vii) Nil.

### 5. RESULTS :

#### I. Crop : *Jowar*.

(i) 543 lb./ac.

(ii) 223.3 lb./ac.

(iii) Treatments differ highly significantly.

(iv) Av. yield of *Jowar* in lb./ac.

Rotation No.	(3)	(4)	(4)	(5)	(8)	(8)	(9)	(9)	(10)	(10)	(11)
Previous crop	Jm	Jm	J	Cm	G	GP	G	GP	G	GP	Cm
Crop	Jm	J	Jm	J	J	J	Jm	Jm	J	J	J
Av. yield	575	442	549	346	661	848	720	562	462	378	434

S.E./mean = 111.6 lb./ac.

## II. Crop : Cotton.

(i) 376.0 lb./ac.

(ii) 118.6 lb./ac.

(iii) Treatments differ highly significantly.

(iv) Av. yield of *kapas* in lb./ac.

Rotation No.	(1)	(2)	(2)	(5)	(6)	(6)	(7)	(7)	(10)	(10)	(11)
Previous crop	Cm	Cm	C	J	G	Gp	G	Gp	G	Gp	J
Crop	Cm	C	Cm	Cm	C	C	Cm	Cm	Cm	Cm	Cm
Av. yield	276	312	278	247	470	405	428	455	523	466	285
		S.E./mean = 59.3 lb./ac.									

## III. Crop : Groundnut.

(i) 396.0 lb./ac.

(ii) 96.25 lb./ac.

(iii) Treatments do not differ significantly.

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

Rotation No.	(6)	(6)	(7)	(7)	(8)	(8)	(9)	(9)	(10)	(10)	(11)	(11)
Previous crop	C	C	Cm	Cm	J	J	Jm	Jm	J	J	Cm	Cm
Crop	G	Gp	G	Gp	G	Gp	G	Gp	G	Gp	G	Gp
Av. yield	361	403	374	351	350	433	460	411	395	441	378	386
		S.E./mean = 39.30 lb./ac.										

Crop :- Jowar-Cotton-Groundnut (*Kharif*). Ref :- Mh. 53(329)/52(302)/  
51(202)/50(142)/49(118).

Site :- Agri. Res. Stn., Jalgaon.

Type :- 'R'.

Object :- To study the best rotation for Cotton and *Jowar* with and without legume.

## 1. BASAL CONDITIONS :

(i) (a) to (c) As per treatments. (ii) (a) Deep black. (b) Refer soil analysis, Jalgaon. (iii) 22.6.1953. (iv) (a) N.A. (b) Drilling. (-) 3 lb./ac. of *Jowar* mixed with 6 lb./ac. of *Udid*; 10 lb./ac. of cotton; 6 lb./ac. of Groundnut. (d) 18" for cotton and *Jowar*; 12" for Groundnut. (e) —. (v) Nil. (vi) Cotton-Jarila; Groundnut (Spanish Groundnut); *Jowar*-Aispuri. (vii) Unirrigated. (viii) 3 weedings and 3 hoeings. (ix) 23.77". (x) *Jowar* 4.11.1953; Groundnut 21.11.1953; Cotton 2.11.1953 to 27.12.1953.

## 2. TREATMENTS :

11 rotations :-

1. Cm every year
2. Cm—C
3. Jm every year
4. Jm—J
5. Cm—J
6. C—G
7. Cm—G
8. J—G
9. Jm—G
10. Cm—J—G
11. Cm—J—G

Details of rotations :-

Cm = Cotton manured with 5 C.L./ac. of F.Y.M.

C = Cotton unmanured.

Jm = *Jowar* manured with 5 C.L./ac. of F.Y.M.J = *Jowar* unmanured.

G = Groundnut unmanured.

Gp = Groundnut manured with 100 lb./ac. of Super.

*Jowar* is sown mixed with *Udid* in 1:2 ratio.

[Original plots (22) of size 62' x 30' (Gross) were further divided from 1951-52 into two equal parts making in all 44 (sub) plots in each replication. Further, the plots in which groundnut is sown were suffixed with "1" and "2". The plots suffixed with "1" were given a dose of 100 lb./ac. of Super].

## 3. DESIGN :

(i) R.B.D. (ii) (a) 22 (44 sub-plots). (b) N.A. (iii) 6. (iv) (a) 31' x 30'. (b) 22' x 18'. (v) N.A. (vi) No, as per rotations.

## 4. GENERAL :

(i) Normal. (ii) Aphids and *Tikka* disease on groundnut. (iii) Grain, pods and *kapas* yield. (iv) (a) 1949-50 (modified in 1951-52)—continued. (b) As per rotations. (c) Nil. (v) (a) No. (b) N.A. (vi) and (vii) Nil.



## 5. RESULTS :

## I. Crop : Jowar

(i) 1167 lb./ac.

(ii) 130.9 lb./ac.

(iii) Treatments differ highly significantly.

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

Rotation No.	(3)	(4)	(4)	(5)	(8)	(8)	(9)	(9)	(10)	(10)	(11)
Previous crop	Jm	J	Jm	Cm	G	Gp	G	Gp	G	Gp	Cm
Crop	Jm	Jm	J	J	J	J	Jm	Jm	J	J	J
Av. yield	1064	985	996	1157	1156	1195	1326	1236	1283	1112	1329
S.E./mean	= 90.47 lb./ac.										

## II. Crop : Cotton

(i) 588 lb./ac.

(ii) 90.86 lb./ac.

(iii) Treatments differ highly significantly.

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

Rotation No.	(1)	(2)	(2)	(5)	(6)	(6)	(7)	(7)	(10)	(10)	(11)
Previous crop	Cm	C	Cm	J	G	Gp	G	Gp	G	Gp	J
Crop	Cm	Cm	C	Cm	C	C	Cm	Cm	Cm	Cm	Cm
Av. yield	553	603	515	436	726	619	785	592	600	489	465
S.E./mean	= 45.43 lb./ac.										

## III. Crop : Groundnut

(i) 886 lb./ac.

(ii) 247.7 lb./ac.

(iii) Treatments do not differ significantly.

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

Rotation No.	(6)	(6)	(7)	(7)	(8)	(8)	(9)	(9)	(10)	(10)	(11)	(11)
Previous crop	C	C	Cm	Cm	J	J	Jm	Jm	Cm	Cm	J	J
Crop	G	Gp	G	Gp	G	Gp	G	Gp	G	Gp	G	Gp
Av. yield	891	916	785	889	703	736	1019	952	960	794	1071	913
S.E./mean	= 101.2 lb./ac.											

Crop :- Jowar with legumes and Wheat (*Rabi*).

Ref :- Mb. 51(204).

Site :- Agri. Res. Stn., Jeur.

Type :- 'R'.

Object :- To study the best rotation along with manures for the tract.

## 1. BASAL CONDITIONS :

(i) (a), (b) and (c) As per treatments. (ii) (a) Medium black. (b) N.A. (iii) Jowar, Wheat, Gram 26, 27.10.1951 and Groundnut and *Chinamug* 22.7.1951. (iv) (a) N.A. (b) Drilling. (c) Jowar 4 lb./ac. ; Groundnut 80 lb./ac. ; Wheat 40 lb./ac. *Chinamug* 10 lb./ac. ; Gram 40 lb./ac. (d) 18" for Jowar, Wheat and Gram ; 12" for Groundnut and *Chinamug*. (e) —. (v) Nil. (vi) Jowar-M-35-1 ; Groundnut—Big Japan Gram *Chafa* ; Wheat—*Vijay*. (vii) Unirrigated. (viii) 3 intercroppings. (ix) 19.51". (x) Jowar 28.11.1952, Wheat 2.1.1952 ; Gram 2.1.1952.

## 2. TREATMENTS :

12 rotations :

1. J every year.
2. Jm-J.
3. Cmp/J every year.
4. Cm/J every year.
5. Gnp-J.
6. GN-J.

Details of rotations :

- J = Jowar unmanured.  
 Jm = Jowar manured with 5 C.L./ac. of F.Y.M.  
 Jp = Jowar manured with 40 lb./ac. of P<sub>2</sub>O<sub>5</sub>.  
 Cmp = *Chinamug* manured with 40 lb./ac. of P<sub>2</sub>O<sub>5</sub>.  
 Cm = *Chinamug* unmanured.  
 Gnp = Groundnut manured with 40 lb./ac. of P<sub>2</sub>O<sub>5</sub>.



## 2. TREATMENTS :

12 rotations :

1. J every year
2. Jm-J-J
3. Cmp/J every year
4. Cm/J every year
5. GNp-J
6. GN-J
7. Gp-J
8. G-J
9. Wp-J
10. W-J
11. F-Jp
12. F-J

Details of rotations :

- J = *Jowar* unmanured.  
 Jm = *Jowar* manured with 5 C.L./ac. of F.Y.M.  
 Jp = *Jowar* manured with 40 lb./ac. of  $P_2O_5$ .  
 Cmp = *Chinamug* manured with 40 lb./ac. of  $P_2O_5$ .  
 Cm = *Chinamug* unmanured.  
 GNp = *Groundnut* unmanured with 40 lb./ac. of  $P_2O_5$ .  
 GN = *Groundnut* unmanured.  
 Gp = *Gram* manured with 40 lb./ac. of  $P_2O_5$ .  
 G = *Gram* unmanured.  
 Wp = *Wheat* manured with 40 lb./ac. of  $P_2O_5$ .  
 W = *Wheat* unmanured.  
 F = *Fallow*.

Cmp/J, Cm/J with the crops are grown in the same year.

## 3. DESIGN :

- (i) R.B.D. (ii) (a) 22. (b) N.A. (iii) 6. (iv) (a)  $37' \times 26'$ . (b)  $35' \times 24'$ . (v) 1' alround. (vi) No, as per rotations.

## 4. GENERAL :

- (i) N.A. (ii) Nil. (iii) Grain and pod yield. (iv) (a) 1949—continued. (b) As per rotations. (c) Nil. (v) (a) Chas. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

I. Crop : *Jowar*

- (i) 515 lb./ac.  
 (ii) 194.9 lb./ac.  
 (iii) Treatment do not differ significantly.  
 (iv) Av. yield of *jowar* in lb./ac.

Rotation No.	(1)	(2)	(2)	(2)	(3)	(4)	(5)
Crop	J	J	Jm	J	Cmp/J	Cm/J	J
Previous crop	J	Jm	J	J	Cmp/J	Cm/J	GNp
Av. yield	562	580	541	536	432	381	598
Rotation No.	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Crop	J	J	J	J	J	Jp	J
Previous crop	GN	Gp	G	Wp	W	F	F
Av. yield	533	592	485	575	613	402	381
	S.E./mean		=79.6 lb./ac.				

II. Crop : *Groundnut*

- (i) 313 lb./ac.  
 (ii) 92.57 lb./ac.  
 (iii) Treatments do not differ significantly.  
 (iv) Av. yield of pods in lb./ac.

Rotation No.	(5)	(6)
Crop	GNp	GN
Previous crop	J	J
Av. yield	311	316
	S.E./mean =37.80 lb./ac.	

III. Crop : *Gram*

- (i) 113 lb./ac.  
 (ii) 80.88 lb./ac.  
 (iii) Treatments do not differ significantly.  
 (iv) Av. yield of gram in lb./ac.

Rotation No.	(7)	(8)
Crop	Gp	G
Previous crop	J	J
Av. yield	132	94
	S.E./mean =33.02 lb./ac.	

Note :—*Chinamug* yield was N.A. and wheat yield being too low, the data has not been analysed.

Crop :- Bajra-Tur-Groundnut etc.

Ref :- 51(203)

Site :- Agri. Res. Stn., Jeur.

Type :- 'R'.

Object :- To find out suitable *Kharif* rotational crops for *Bajra-Tur*.

## 1. BASAL CONDITIONS :

(i) (a), (b) and (c) As per treatments. (ii) (a) Medium black. (b) N.A. (iii) 13.7.1951 to 15.7.1951. (iv) (a) 3 harrowings. (b) Drilled by 2 coultured country seed drill 12" apart. (c), (d) and (e) N.A. (v) Nil. (vi) Akola—*Bajra*; Big Japan-Groundnut. (vii) Unirrigated. (viii) 3 interculturings. (ix) 19.51". (x) *Bajra* 18.10.1951 to 21.10.1951; *Tur* on 26.12.1951; Groundnut on 30.11.1951; *Hulga* on 30.10.1951. *Chavali* on 23.10.1951; *Chinamug* 9.9.1951 to 16.9.1951.

## 2. TREATMENTS :

- 11 rotations :  
 1. BT every year  
 2. BT every year  
 3. BTp — BT  
 4. GNp — BT  
 5. GN — BT  
 6. Hp — BT  
 7. H — BT  
 8. Mgp — BT  
 9. Mg — BT  
 10. Cp — BT  
 11. C — BT

## Details of rotations :

BT = *Bajra* & *Tur* in 3 : 1 ratio.  
 BTp = *Bajra* & *Tur* manured with 20 lb./ac. of  $P_2O_5$ .  
 GNp = Groundnut manured with 20 lb./ac. of  $P_2O_5$ .  
 GN = Groundnut unmanured.  
 Hp = *Hulga* manured with 20 lb./ac. of  $P_2O_5$ .  
 H = *Hulga* unmanured.  
 Mgp = *Chinamug* manured with 20 lb./ac. of  $P_2O_5$ .  
 Mg = *Chinamug* unmanured.  
 Cp = *Chavali* manured with 20 lb./ac. of  $P_2O_5$ .  
 C = *Chavali* unmanured.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 20. (b) N.A. (iii) 6. (iv) (a) 37' × 26'. (b) 35' × 24'. (v) 1' all round the net plot. (vi) No, as per rotations.

## 4. GENERAL :

(i) The crop stand was normal. (ii) Slight attack of Blister beetles on *bajra* flowers. (iii) Dates of flowering, grain & pod yield. (iv) (a) 1949—continued. (b) Yes, as per rotations. (c) N.A. (v) (a) Chas. (b) N.A. (vi) & (vii) Nil.

## 5. RESULTS :

## I. Crop : Bajra

- (i) 232 lb./ac.  
 (ii) 71.57 lb./ac.  
 (iii) Treatments do not differ significantly.  
 (iv) Av. yield of *bajra* in lb./ac.

Rotation No.	(1)	(2)	(3)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Crop	BT	BT	BT	BTp	BT	BT	BT	BT	BT	BT	BT	BT
Previous crop	BT	BT	BTp	BT	GNp	GN	Hp	H	Mgp	Mg	Cp	C
Av. yield	244	246	221	203	259	266	203	240	218	232	199	258

S.E./mean = 29.22 lb./ac.

## II. Crop : Tur

- (i) 36 lb./ac.  
 (ii) 25.93 lb./ac.  
 (iii) Treatments do not differ significantly.  
 (iv) Av. yield of *tur* in lb./ac.

Rotation No.	(1)	(2)	(3)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Crop	BT	BT	BT	BTp	BT	BT	BT	BT	BT	BT	BT	BT
Previous crop	BT	BT	BTp	BT	GNp	GN	Hp	H	Mgp	Mg	Cp	C
Av. yield	38	39	47	33	26	40	38	45	30	33	32	31

S.E./mean = 10.59 lb./ac.

## III. Crop : Groundnut

- (i) 409 lb./ac.  
 (ii) 46.99 lb./ac.  
 (iii) Treatments do not differ significantly.  
 (iv) Av. yield of *Pods* in lb./ac.

Rotation No.	(4)	(5)
Crop	GNp	GN
Previous crop	BT	BT
Av. yield	421	397

S.E./mean = 19.19 lb./ac.

## IV. Crop : Hulga

- (i) 137 lb./ac.  
 (ii) 32.00 lb./ac.  
 (iii) Treatments do not differ significantly.  
 (iv) Av. yield of *hulga* in lb./ac.

Rotation No.	(6)	(7)
Crop	Hp	H
Previous Crop	BT	BT
Av. yield	148	126

S.E./mean = 13.06 lb./ac.

## V. Crop : Chinamug

- (i) 29 lb./ac.  
 (ii) 21.39 lb./ac.  
 (iii) Treatments do not differ significantly.  
 (iv) Av. yield of *chinamug* in lb./ac.
- |               |     |     |
|---------------|-----|-----|
| Rotation No.  | (8) | (9) |
| Crop          | Mgp | Mg  |
| Previous crop | BT  | BT  |
| Av. yield     | 33  | 25  |

S.E./mean=8.73 lb./ac.

## VI. Crop : Chavali

- (i) 58.50 lb./ac.  
 (ii) 7.33 lb./ac.  
 (iii) Treatments do not differ significantly.  
 (iv) Av. yield of *chavali* in lb./ac.
- |               |      |      |
|---------------|------|------|
| Rotation No.  | (10) | (11) |
| Crop          | Cp   | C    |
| Previous crop | BT   | BT   |
| Av. yield     | 59   | 58   |

S.E.mean/=2.99 lb./ac.

Crop :- Bajra—Tur—Groundnut etc. (*Kharif*).

Ref :- Mh. 53(330)/51(203).

Site :- Agri. Res. Stn., Jeur.

Type :- 'R'.

Object :- To find out suitable *Kharif* rotational crops for *Bajra-Tur*.

## 1. BASAL CONDITIONS :

- (i) (a) to (c) As per treatments. (ii) (a) Medium black. (b) N.A. (iii) 1.8.1953. (iv) (a) N.A. (b) Seeds drilled. (c) *Bajra*-3 lb./ac., *Tur* and *Groundnut* 80 lb./ac., *Hulga* 10 lb./ac., *Chavali* 10 lb./ac. and *Chinamug* 10 lb./ac. (d) and (e) N.A. (v) Nil. (vi) Akola : *Bajra*, Big Japan : *Groundnut*. (vii) Un-irrigated. (viii) 2 harrowings and interculturing. (ix) 20.43°. (x) 15.11.1953.

## 2. TREATMENTS :

- 11 rotations :  
 1. BT every year  
 2. BT every year  
 3. BTp—BT  
 4. GNp—BT  
 5. GN—BT  
 6. Hp—BT  
 7. H—BT  
 8. Mgp—BT  
 9. Mg—BT  
 10. Cp—BT  
 11. C—BT

## Details of rotations :

- BT = *Bajra* and *Tur* in 3 : 1 ratio.  
 BTp = *Bajra* and *Tur* manured with 20 lb./ac. of  $P_2O_5$ .  
 GNp = *Groundnut* manured with 20 lb./ac. of  $P_2O_5$ .  
 GN = *Groundnut* unmanured.  
 Hp = *Hulga* manured with 20 lb./ac. of  $P_2O_5$ .  
 H = *Hulga* unmanured.  
 Mgp = *Chinamug* manured with 20 lb./ac. of  $P_2O_5$ .  
 Mg = *Chinamug* unmanured.  
 Cp = *Chavali* manured with 20 lb./ac. of  $P_2O_5$ .  
 C = *Chavali* unmanured.

## 3. DESIGN :

- (i) R.B.D. (ii) (a) 20. (b) N.A. (iii) 6. (iv) (a) 37' × 26'. (b) 35' × 24'. (v) 1' all round the net plot. (vi) No. as per rotations.

## 4. GENERAL :

- (i) The crop stand was normal. (ii) Nil. (iii) Grain and pod yield. (iv) (a) 1949—continued. (b) As per rotations. (c) N.A. (v) (a) Chas. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

## I Crop : Bajra

- (i) 210 lb./ac.  
 (ii) 81.68 lb./ac.  
 (iii) Treatments do not differ significantly.  
 (iv) Av. yield of *bajra* in lb./ac.

Rotation No.	(1)	(2)	(3)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Crop	BT	BT	BT	BTp	BT	BT	BT	BT	BT	BT	BT	BT
Previous crop	BT	BT	BTp	BT	GNp	GN	Hp	H	Mgp	Mg	Cp	C
Av. yield	186	190	242	222	257	227	236	171	224	156	170	243

S.E./mean = 33.34 lb./ac.

## II. Crop : Tur

- (i) 59 lb./ac.  
 (ii) 25.93 lb./ac.  
 (iii) Treatments do not differ significantly.

(iv) Av. yield of *tur* in lb./ac.

Rotation No.	(1)	(2)	(3)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Crop	BT	BT	BT	BTp	BT	BT	BT	BT	BT	BT	BT	BT
Previous crop	BT	BT	BTp	BT	GNp	GN	Hp	H	Mgp	Mg	Cp	C
Av. yield	64	47	56	69	91	65	55	60	58	58	42	45

S.E./mean = 10.58 lb./ac.

III. Crop : Groundnut

(i) 290 lb./ac.

(ii) 37.39 lb./ac.

(iii) Treatments do not differ significantly.

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

Rotation No.	(4)	(5)
Crop	GNP	GN
Previous crop	BT	BT
Av. yield	313	267

S.E./mean = 15.26 lb./ac.

IV. Crop : Hulga

(i) 156 lb./ac.

(ii) 46.99 lb./ac.

(iii) Treatments do not differ significantly.

(iv) Av. yield of *hulga* in lb./ac.

Rotation No.	(6)	(7)
Crop	Hp	H
Previous crop	BT	BT
Av. yield	173	139

S.E./mean = 19.18 lb./ac.

Note : *Chinamag* and *Chavali* yields—N.A.Crop :- Jowar-Wheat-Gram (*Rabi*).

Site :- Agri. Res. Stn., Mohol.

Ref :- Mh. 48(82)

Type :- 'R'.

Object :—To study the rotational effect of *Jowar*, *Wheat* and *Gram*.

## 1. BASAL CONDITIONS :

- (i) (a) to (c) As per treatments. (ii) (a) Light black. (b) Refer soil analysis, Mohol. (iii) 13.10.1948.  
 (iv) (a) Ploughing once in three years and 4 harrowings. (b) Sowing with 12" × 18" drill. (c) to (e) N.A.  
 (v) 6 C.L./ac. of F.Y.M. applied at the time of second harrowing ; manure applied by spreading with hand.  
 (vi) *Jowar-M-35-1* ; *Gram-Chafa* ; *Wheat-Vijay*. (vii) Unirrigated. (viii) 2 interculturings on 9.12.1948.  
 (ix) 31". (x) *Jowar* 23.2.1949 ; *Wheat* 12.2.1949 ; *Gram* 26.1.1949.

## 2. TREATMENTS :

5 rotations :

1. *Jowar* every year.
2. *Jowar*—*Gram*.
3. *Jowar* - *Wheat*.
4. *Wheat*—*Gram*.
5. *Wheat* every year.

## 3. DESIGN :

- (i) R.B.D. (ii) (a) 8. (b) N.A. (iii) 6. (iv) (a) 96' × 12'. (b) 91' × 12'. (v) 2½' on either sides along the length. (vi) No, as per rotations.

## 4. GENERAL :

- (i) N.A. (ii) Nil. (iii) Grain yield. (iv) (a) 1946—1955. (b) As per rotations. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

I. Crop : *Jowar*

(i) 392 lb./ac.

(ii) 131.0 lb./ac.

(iii) Treatments do not differ significantly.

(iv) Av. yield of *jowar* in lb./ac.

Rotation No.	(1)	(2)	(3)
Previous crop	<i>Jowar</i>	<i>Gram</i>	<i>Wheat</i>
Av. yield	337	454	386

S.E./mean = 53.5 lb./ac,

II. Crop : *Wheat*

(i) 317 lb./ac.

(ii) 58.04 lb./ac.

(iii) Treatments do not differ significantly.

## (iv) Av. yield of wheat in lb./ac.

Rotation No.	(5)	(4)	(3)
Previous crop	Wheat	Gram	Jowar
Av. yield	328	344	280
S.E./mean	=23.70 lb./ac.		

## III. Crop : Gram.

- (i) 370 lb./ac.  
(ii) 119.7 lb./ac.  
(iii) Treatments do not differ significantly.

## (iv) Av. yield of gram in lb./ac.

Rotation No.	(4)	(2)
Previous crop	Wheat	Wheat
Av. yield	381	359
S.E./mean	=48.7 lb./ac.	

Crop :- Jowar-Wheat-Gram.

Ref :- Mh. 49(106)/48(82).

Site :- Agri. Res. Stn., Mohol.

Type :- 'R'.

Object :- To study the rotational effect of *Jowar*, *Wheat* and *Gram*.

## 1. BASAL CONDITIONS :

(i) (a) and (b) As per treatments. (c) 5 C.L./ac. of F.Y.M. (ii) (a) Light black. (b) Refer soil analysis, Mohol. (iii) 9.10.1949. (iv) (a) Ploughing once in three years. (b) Sowing with 12" x 15" drill. (c) N.A. (d) 12" x 15". (e) N.A. (v) Nil. (vi) *Jowar-M-35-1*; *Gram-Chafa*; *Wheat-Vijay*. (vii) Unirrigated. (viii) 2 inter-culture on 11.12.1949 and 4 harrowings. (ix) 34". (x) *Jowar* 22.2.1950; *Wheat* 21.2.1950; and *Gram* 13.1.1950.

## 2. TREATMENTS :

5 rotations :

1. *Jowar* every year.
2. *Jowar*-*Gram*.
3. *Jowar*-*Wheat*.
4. *Wheat*-*Gram*.
5. *Wheat* every year.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 8. (b) N.A. (iii) 6. (iv) (a) 96' x 12'. (b) 91' x 12'. (v) 2.5' on either side along length. (vi) No, as per rotation.

## 4. GENERAL :

(i) N.A. (ii) Nil. (iii) Grain yield. (iv) (a) 1946-1955. (b) As per rotations. (c) Nil. (v) (a) N.A. (b)-. (vi) and (vii) Nil.

## 5. RESULTS :

I. Crop : *Jowar*.

- (i) 651 lb./ac.  
(ii) 103.3 lb./ac.  
(iii) Treatments do not differ significantly.

(iv) Av. yield of *jowar* in lb./ac.

Rotation No.	(1)	(3)	(2)
Previous crop	<i>Jowar</i>	<i>Wheat</i>	<i>Gram</i>
Av. yield	608	694	651
S.E./mean	=42.2 lb./ac.		

II. Crop : *Wheat*

- (i) 272 lb./ac.  
(ii) 98.93 lb./ac.  
(iii) Treatments do not differ significantly.

## (iv) Av. yield of wheat in lb./ac.

Rotation No.	(5)	(4)	(3)
Previous crop	<i>Wheat</i>	<i>Gram</i>	<i>Jowar</i>
Av. yield	294	287	234
S.E./mean	=40.39 lb./ac.		

**III. Crop : Gram**

- (i) 447 lb./ac.  
(ii) 69.01 lb./ac.  
(iii) Treatments do not differ significantly.  
(iv) Av. yield of gram in lb./ac.

Rotation No.	(4)	(2)
Previous crop.	Wheat	Jowar
Av. yield	478	416

S.E./mean = 28.17 lb./ac.

Crop :- Jowar-Wheat-Gram (*Rabi*)

Ref :- Mh. 50(109)/49(106)/48(82).

Site :- Agri. Res. Strn., Mohol.

Type :- 'R'.

Object :- To study the rotational effect of *Jowar*, *Wheat* and *Gram*.

**1. BASAL CONDITIONS :**

- (i) (a) As per rotations. (b) According to treatments. (c) Nil. (ii) (a) Light black. (b) Refer soil analysis, Mohol. (iii) N.A. (iv) (a) Ploughing once in three years, 4 harrowings. (b) Sowing with 12" x 18" drill. 2. (c) N.A. (d) 12" x 18". (e) N.A. (v) Nil. (vi) *Jowar* M-35-1 ; *Gram*-*Chafa* ; *Wheat*-*Vijay*. (vii) Unirrigated. (viii) 2 interculturings. (ix) 29°. (x) N.A.

**2. TREATMENTS :**

5 rotations :—

1. *Jowar* every year.
2. *Jowar*-*Gram*.
3. *Jowar*-*Wheat*.
4. *Wheat*-*Gram*.
5. *Wheat* every year.

**3. DESIGN :**

- (i) R.B.D. (ii) (a) 8. (b) N.A. (iii) 6. (iv) (a) 96' x 12'. (b) 91' x 12'. (v) 2.5' on either sides along length. (vi) No. as per rotations.

**4. GENERAL :**

- (i) N.A. (ii) Nil. (iii) Grain yield. (iv) (a) 1946-1955. (b) As per rotations. (c) Nil. (v) (a) N.A. (b)—. (vi) and (vii) Nil.

**5. RESULTS :****I. Crop : Jowar**

- (i) 359 lb./ac.  
(ii) 131.0 lb./ac.  
(iii) Treatments differ significantly.  
(iv) Av. yield of *jowar* in lb./ac.

Rotation No.	(1)	(2)	(3)
Previous crop	<i>Jowar</i>	<i>Gram</i>	<i>Wheat</i>
Av. yield	241	467	371

S.E./mean = 53.50 lb./ac.

**II. Crop : Wheat**

- (i) 182 lb./ac.  
(ii) 43.08 lb./ac.  
(iii) Treatments differ highly significantly.  
(iv) Av. yield of wheat in lb./ac.

Rotation No.	(5)	(4)	(3)
Previous crop	<i>Wheat</i>	<i>Gram</i>	<i>Jowar</i>
Av. yield	156	283	108

S.E./mean = 17.59 lb./ac.



## III. Crop : Gram

- (i) 361 lb./ac.  
 (ii) 124.1 lb./ac.  
 (iii) Treatments differ highly significantly.  
 (iv) Av. yield of Gram in lb./ac.
- | Rotation No.  | (4)   | (2)   |
|---------------|-------|-------|
| Previous crop | Wheat | Jowar |
| Av. yield     | 323   | 399   |
- S.E./mean = 50.7 lb./ac.

Crop :- Jowar—Wheat—Gram (*Rabi*). Ref :- Mh. 51(35)/50(109)/49(106)/48(82).

Site :- Agri. Res. Stn., Mohol. Type :- 'R'.

Object :—To study the rotational effect of *Jowar*, *Wheat* and *Gram*.

## 1. BASAL CONDITIONS :

- (i) (a) and (b) As per treatments. (c) Nil. (ii) (a) Light black. (b) Refer soil analysis, Mohol. (iii) N.A.  
 (iv) (a) Ploughing once in three years. (b) Sowing with 12"×18" drill. (c) N.A. (d) 12"×18". (e) N.A.  
 (v) 5 C.L./ac. of F.Y.M. applied at the time of second harrowing ; manure applied by spreading with hand. (vi) *Jowar*-M-35-1 ; *Gram*-*Chafa* ; *Wheat*-*Vijay*. (vii) Unirrigated. (viii) 2 interculturings and 4 harrowings. (ix) 28". (x) N.A.

## 2. TREATMENTS :

5 rotations :

1. *Jowar* every year.
2. *Jowar*—*Gram*.
3. *Jowar*—*Wheat*.
4. *Wheat*—*Gram*.
5. *Wheat* every year.

## 3. DESIGN :

- (i) R.B.D. (ii) (a) 8. (b) N.A. (iii) 6. (iv) (a) 96'×12'. (b) 91'×12'. (v) 2½' on either side along the length. (vi) No. as per rotations.

## 4. GENERAL :

- (i) N.A. (ii) Nil. (iii) Grain yield. (iv) (a) 1946—1955, (b) As per rotations. (c) Nil. (v) (a) N.A. (b)—. (vi) and (vii), Nil.

## 5. RESULTS :

## I. Crop : Jowar

- (i) 569 lb./ac.  
 (ii) 113.5 lb./ac.  
 (iii) Treatments do not differ significantly.  
 (iv) Av. yield of *jowar* in lb./ac.
- | Rotation No.  | (1)          | (2)         | (3)          |
|---------------|--------------|-------------|--------------|
| Previous crop | <i>Jowar</i> | <i>Gram</i> | <i>Wheat</i> |
| Av. yield     | 614          | 611         | 483          |
- S.E./mean = 46.3 lb./ac.

## II. Crop : Wheat

- (i) 270 lb./ac.  
 (ii) 76.79 lb./ac.  
 (iii) Treatments do not differ significantly.  
 (iv) Av. yield of wheat in lb./ac.
- | Rotation No.  | (5)          | (4)         | (3)          |
|---------------|--------------|-------------|--------------|
| Previous crop | <i>Wheat</i> | <i>Gram</i> | <i>Jowar</i> |
| Av. yield     | 313          | 275         | 223          |
- S.E./mean = 31.36 lb./ac.

**III. Crop : Gram**

- (i) 448 lb./ac.  
(ii) 87.56 lb./ac.  
(iii) Treatments do not differ significantly.  
(iv) Av. yield of gram in lb./ac.

Rotation No.	(4)	(2)
Previous crop	Wheat	Jowar
Av. yield	473	424

S.E./mean = 35.75 lb./ac.

**Crop :- Jowar—Wheat—Gram (Rabi). Ref :- Mh. 52(110)/51(35)/50(109)/49(106)/48(82).**

**Site :- Agri. Res. Stn., Mohol. Type :- 'R'.**

**Object :- To study the rotational effect of Jowar, Wheat and Gram.**

**1. BASAL CONDITIONS :**

- (i) (a) As per rotations. (b) As per treatments. (c) 5 C.L./ac. of F.Y.M. applied at the time of second harrowing. Manure applied by spreading with hand. (ii) (a) Light black. (b) Refer soil analysis, Mohol. (iii) N.A. (iv) (a) Ploughing once in three years. (b) Sowing with 12"×18" drill. (c) N.A. (d) 12"×18". (e) N.A. (v) Nil. (vi) Jowar—M-35-1; Gram—Chafa; Wheat—Vijay. (vii) Unirrigated. (viii) 2 interculturings (ix) 17". (x) N.A.

**2. TREATMENTS :**

5 rotations :

1. Jowar every year.
2. Jowar—Gram.
3. Jowar—Wheat.
4. Wheat—Gram.
5. Wheat every year.

**3. DESIGN :**

- (i) R.B.D. (ii) (a) 8. (b) N.A. (iii) 6. (iv) (a) 96'×12'. (b) 91'×12'. (v) 2.5' on either side along length. (vi) No. as per rotations.

**4. GENERAL :**

- (i) N.A. (ii) N.A. (iii) Grain yield. (iv) (a) 1946—1955. (b) As per rotations. (c) Nil. (v) (a) N.A. (b) —. (vi) and (vii) Nil.

**5. RESULTS :****I. Crop : Jowar**

- (i) 514 lb./ac.  
(ii) 152.9 lb./ac.  
(iii) Treatments do not differ significantly.  
(iv) Av. yield of jowar in lb./ac.

Rotation No.	(1)	(2)	(3)
Previous crop	Jowar	Gram	Wheat
Av. yield	452	572	519

S.E./mean = 62.4 lb./ac.

**II. Crop : Wheat**

- (i) 283 lb./ac.  
(ii) 60.63 lb./ac.  
(iii) Treatments do not differ significantly.  
(iv) Av. yield of wheat in lb./ac.

Rotation No.	(5)	(4)	(3)
Previous crop	Wheat	Gram	Jowar
Av. yield	273	297	276

S.E./mean = 24.75 lb./ac.

**III. Crop : Gram**

- (i) 378 lb./ac.  
(ii) 94.14 lb./ac.  
(iii) Treatments do not differ significantly.  
(iv) Av. yield of gram in lb./ac.

Rotation No.	(4)	(2)
Previous crop	Wheat	Jowar
Av. yield	368	389

S.E./mean = 38.44 lb./ac.

Crop :- Jowar—Wheat—Gram (*Rabi*). Ref :- Mh. 53(249)/52(110)/51(35)/  
50(109)/49(106)/48(82).

Site :- Agri. Res. Stn., Mohol. Type :- 'R'.

Object :—To study the rotational effect of *Jowar*, *Wheat* and *Gram*.

**1. BASAL CONDITIONS :**

(i) (a) As per rotations. (b) As per treatments. (c) Nil. (ii) (a) Light black. (b) Refer soil analysis, Mohol. (iii) 14,15.10.1953. (iv) (a) and (b) N.A. (c) *Jowar* 4 lb./ac., *Gram* 30 lb./ac. and *Wheat* 40 lb./ac. (d) 15" between lines for all crops. (e) —. (v) Nil. (vi) *Jowar*-M-35-1; *Gram*-*Chafa*, *Wheat*-*Vijay* (Dry *Wheat*). (vii) Unirrigated. (viii) 2 weedings and 2 hoeings. (ix) 18". (x) *Gram* 30.1.1954, *Wheat* 17.2.1954 and *Jowar* 5.3.1954.

**2. TREATMENTS :**

5 rotations :

1. *Jowar* every year.
2. *Jowar*—*Gram*.
3. *Jowar*—*Wheat*.
4. *Wheat*—*Gram*.
5. *Wheat* every year.

**3. DESIGN:**

(i) R.B.D. (ii) (a) 8. (b) N.A. (iii) 6. (iv) (a) 96'×12'. (b) 91'×12'. (v) N.A. (vi) No, as per rotations.

**4. GENERAL :**

(i) *Gram* good ; *Wheat*—slightly below normal, *Jowar*—below normal. (ii) Sugary disease and Aphids on *Jowar* crop. (iii) Grain yield. (iv) (a) 1946—1955. (b) As per rotations. (c) Nil. (v) (a) N.A. (b) No. (vi) and (vii) Nil.

**5. RESULTS :****I. Crop : Jowar**

- (i) 433 lb./ac.  
(ii) 99.17 lb./ac.  
(iii) Treatments do not differ significantly.  
(iv) Av. yield of *jowar* in lb./ac.

Rotation No.	(2)	(1)	(3)
Previous crop	Gram	<i>Jowar</i>	Wheat
Av. yield	474	389	435

S.E./mean = 40.49 lb./ac.

**II. Crop : Wheat**

- (i) 265 lb./ac.  
(ii) 95.34 lb./ac.  
(iii) Treatments do not differ significantly.  
(iv) Av. yield of wheat in lb./ac.

Rotation No.	(4)	(3)	(5)
Previous crop	Gram	<i>Jowar</i>	Wheat
Av. yield	301	231	261

S E./mean = 38.93 lb./ac.

## III. Crop: Gram

- (i) 579 lb./ac.  
(ii) 130.4 lb./ac.  
(iii) Treatments do not differ significantly.  
(iv) Av. yield of gram in lb./ac.

Rotation No.	(4)	(2)
Previous crop	Wheat	Jowar
Av. yield	588	570
S.E./mean	= 53.3 lb./ac.	

Crop :- Cotton—Jowar—Groundnut.  
Site :- Cotton Res. Stn., Nanded.

Ref :- Mh. 48(9).

Type :- 'R'.

Object :- To determine the most suitable rotation of crops for Cotton.

## 1. BASAL CONDITIONS :

- (i) (a) As per treatments. (b) As per treatments. (c) Nil. (ii) (a) Black cotton soil. (b) Refer soil analysis, Nanded. (iii) 29.6.1948. (iv) (a) to (e) N.A., (v) Nil. (vi) Gaorani-6. (vii) Unirrigated. (viii) Weeding once and hoeing twice in all the cotton plots. (ix) 49°. (x) 16.12.1948.

## 2. TREATMENTS :

5 rotations as follows :-

1. Cotton (C)—Kharif Jowar (KJ).
2. Cotton—Chinamug in Kharif and Jowar in Rabi (RJ).
3. Cotton—Groundnut.
4. Cotton—Kharif Jowar—Groundnut.
5. Cotton—Chinamug in Kharif and Jowar in Rabi—Groundnut.

## 3. DESIGN :

- (i) R.B.D. (ii) (a) 12. (b) N.A. (iii) 4. (iv) (a) 60.5' x 24'. (b) 55' x 12'. (v) 4 rows on either side of the plot and 2'-9" at each end of every row. (vi) Yes.

## 4. GENERAL :

- (i) Shedding of buds and bolls occurred due to heavy rains in November. (ii) No. (iii) Germination, final stand, fibre properties, seed weight, crop growth and yield. (iv) (a) 1941-1950. (b) As per rotations. (c) N.A. (v) (a) and (b) Nil. (vi) and (vii) Nil.

## 5. RESULTS :

## I Crop : Cotton

- (i) 354 lb./ac.  
(ii) 79.94 lb./ac.  
(iii) Treatments differ highly significantly.  
(iv) Av. yield of cotton in lb./ac.

Rotation No.	(1)	(2)	(3)	(4)	(5)
Previous crop	KJ	RJ	G	G	G
Av. yield	215	393	371	287	502
S.E./mean	= 39.97 lb./ac.				

## II Crop : Groundnut

- (i) 1056 lb./ac.  
(ii) 148.63 lb./ac.  
(iii) Treatments differ significantly.  
(iv) Av. yield of groundnut in lb./ac.

Rotation No.	(3)	(4)	(5)
Previous crop	C	KJ	RJ
Av. yield	854	1029	1285
S.E./mean	= 74.30 lb./ac.		

III. Crop : Jowar (*Kharif*)

- (i) 166 lb./ac.  
 (ii) 49.37 lb./ac.  
 (iii) Treatments do not differ significantly.  
 (iv) Av. yield of *jowar* in lb./ac.

Rotation No.	(1)	(4)
Previous crop	C	C
Av. yield.	164	167

S.E./mean = 24.69 lb./ac.

## IV. Crop : Chinamug

- (i) 736 lb./ac.  
 (ii) 152.83 lb./ac.  
 (iii) Treatments do not differ significantly.  
 (iv) Av. yield of *chinamug* in lb./ac.

Rotation No.	(2)	(5)
Previous crop	C	C
Av. yield	680	792

S.E./mean = 76.4 lb./ac.

Note :— *Rabi Jowar* crop not analysed as the yields are too low.

Crop :- Cotton-Jowar-Groundnut.

Ref :- Mh. 49(11)/48(9).

Site :- Cotton Res. Stn., Nanded.

Type :- 'R'.

Object :— To determine the most suitable rotation of crops for Cotton.

## 1. BASAL CONDITIONS :

- (i) (a) As per treatments. (b) As per treatments. (c) Nil. (ii) (a) Black cotton soil. (b) Refer soil analysis, Nanded. (iii) 23.6.1949. (iv) (a) to (e) N.A. (v) Nil. (vi) *Gaorani-6*. (vii) Unirrigated. (viii) Weeding once and hoeing once in all the cotton plots. (ix) 44.88". (x) N.A.

## 2. TREATMENTS :

5 rotations as follows :—

1. Cotton (C)—*Kharif Jowar* (KJ).
2. Cotton—*Mug* in *Kharif* and *Jowar* in *Rabi* (RJ).
3. Cotton—Groundnut.
4. Cotton—*Kharif Jowar*—Groundnut.
5. Cotton—*Mug* in *Kharif* and *Jowar* in *Rabi*—Groundnut.

## 3. DESIGN :

- (i) R.B.D. (ii) (a) 12., (b) N.A. (iii) 4. (iv) (a) 60.5' × 24'. (b) 55' × 12'. (v) 4 rows on either side of the plot and 2'—9" at each end of every row. (vi) Yes.

## 4. GENERAL :

- (i) Normal. (ii) Nil. (iii) Germination and final stand, fibre properties, and crop growth. (iv) (a) 1941—1950. (b) As per rotations. (c) N.A. (v) (a) and (b) Nil. (vi) and (vii) Nil.

## 5. RESULTS :

## I. Crop : Cotton

- (i) 95 lb./ac.  
 (ii) 28.17 lb./ac.  
 (iii) Treatments do not differ significantly.  
 (iv) Av. yield of cotton in lb./ac.

Rotation No.	(1)	(2)	(3)	(4)	(5)
Previous crop	KJ	RJ	G	G	G
Av. yield	255	61	71	45	46

S.E./mean = 14.08 lb./ac.

## II. Crop : Groundnut

- (i) 360 lb./ac.  
 (ii) 56.50 lb./ac.  
 (iii) Treatments do not differ significantly.

III. Crop : (*Kharif*) Jowar

- (i) 219 lb./ac.  
 (ii) 41.71 lb./ac.  
 (iii) Treatments do not differ significantly.

(iv) Av. yield of groundnut in lb./ac.			
Rotation No.	(3)	(4)	(5)
Previous crop	C	KJ	RJ
Av. yield	319	335	425
S.E./mean	=28.25 lb./ac.		

(iv) Av. yield of <i>Kharif jowar</i> in lb./ac.		
Rotation No.	(1)	(4)
Previous crop	C	C
Av. yield	267	171
S.E./mean	=20.85 lb./ac.	

## IV. Crop : Rabi Jowar

(i)	454 lb./ac.	
(ii)	137.50 lb./ac.	
(iii)	Treatments do not differ significantly.	
(iv)	Av. yield of <i>Rabi jowar</i> in lb./ac.	
Rotation No.	(2)	(5)
Previous crop	<i>Mug</i>	<i>Mug</i>
Av. yield	495	413
S.E./mean	=68.74 lb./ac.	

## V. Crop : Mug

(i)	715 lb./ac.	
(ii)	106.3 lb./ac.	
(iii)	Treatments do not differ significantly.	
(iv)	Av. yield of <i>mug</i> in lb./ac.	
Rotation No.	(2)	(5)
Previous crop	C	C
Av. yield	683	747
S.E./mean	=53.17 lb./ac.	

Crop :- Cotton—Jowar—Groundnut.

Ref :- Mh. 50(19)/49(11)/48(9).

Site :- Cotton Res. Stn., Nanded.

Type :- 'R'.

Object :- To determine the most suitable rotation of crops for Cotton.

## 1. BASAL CONDITIONS :

(i) (a) As per treatments. (b) As per treatments. (c) Nil. (ii) (a) Black cotton soil. (b) Refer soil analysis, Nanded. (iii) 6.7.1950. (iv) (a) to (e) N.A. (v) Nil. (vi) *Gaorani-6*. (vii) Unirrigated. (viii) Weeding once, hoeing twice in all the cotton plots. (ix) 29.37%. (x) N.A.

## 2. TREATMENTS :

5 rotations as follows :

1. Cotton (C)—*Kharif Jowar* (KJ).
2. Cotton—*Mug* in *Kharif* and *Jowar* in *Rabi* (RJ).
3. Cotton—Groundnut.
4. Cotton—*Kharif Jowar*—Groundnut.
5. Cotton—*Mug* in *Kharif* and *Jowar* in *Rabi*—Groundnut.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 12. (b) N.A. (iii) 4. (iv) (a) 60.5' × 24'. (b) 55' × 12'. (v) 4 rows on either side of the plot and 2'-9" at each end of every row. (vi) Yes.

## 4. GENERAL :

(i) Growth of cotton crop was satisfactory. (ii) Nil. (iii) Germination, final stand, fibre properties, crop growth and yield. (iv) (a) 1941—1950. (b) As per rotations. (c) N.A. (v) (a) and (b) Nil. (vi) and (vii) Nil.

## 5. RESULTS :

## I. Crop : Cotton :

- (i) 479 lb./ac.  
(ii) 47.70 lb./ac.  
(iii) Treatments differ significantly.

(iv) Av. yield of *kapas* in lb./ac.

Rotation No.	(1)	(2)	(3)	(4)	(5)
Previous crop	KJ	RJ	G	G	G
Av. yield	434	447	473	568	474
S.E./mean	=23.85 lb./ac.				

## II. Crop : Groundnut

- (i) 820 lb./ac.  
(ii) 123.2 lb./ac.  
(iii) Treatments differ highly significantly.

## (iv) Av. yield of pods in lb./ac.

Rotation No.	(3)	(4)	(5)
Previous crop	C	KJ	RJ
Av. yield	693	628	1140
S.E./mean	=61.6 lb./ac.		

III. Crop : Jowar (*Kharif*)

- (i) 796 lb./ac.  
(ii) 207.4 lb./ac.  
(iii) Treatments do not differ significantly.

(iv) Av. yield of *jowar* in lb./ac.

Rotation No.	(1)	(4)
Previous crop	C	C
Av. yield	1029	563
S.E./mean	=103.7 lb./ac.	

IV. Crop : Jowar (*Rabi*)

- (i) 452 lb./ac.  
(ii) 173.4 lb./ac.  
(iii) Treatments do not differ significantly.  
(iv) Av. yield of *jowar* in lb./ac.

Rotation No.	(2)	(5)
Previous crop	<i>Mug</i>	<i>Mug</i>
Av. yield	417	487
S.E./mean	=86.70 lb./ac.	

V. Crop : *Mug*

- (i) 457 lb./ac.  
(ii) 123.3 lb./ac.  
(iii) Treatments do not differ significantly.  
(iv) Av. yield of *mug* in lb./ac.

Rotation No.	(2)	(5)
Previous crop	C	C
Av. yield	510	405
S.E./mean	= 61.5 lb./ac.	

Crop :- Cotton—Jowar—Groundnut.

Ref :- Mh. 52(49).

Site :- Cotton Res. Stn., Nanded.

Type :- 'R'.

Object :- To find out the best rotation along with manuring for *Marathwada* tract.

## 1. BASAL CONDITIONS :

- (i) (a) As per treatments. (b) *Jowar (Rabi)*. (c) As per treatments. (ii) (a) Black cotton soil. (b) Refer soil analysis, Nanded. (iii) 27.6.1952. (iv) (a) 4 *bakharings*. (b) Drilling. (c) Cotton : 16 lb./ac., *Jowar* : 11 lb./ac. and Groundnut : 60 lb./ac. (d) 18" cotton, 12" *jowar* and 12" groundnut. (e) N.A. (v) Nil. (vi) Cotton : *Gaorani-6*, *Kh. Jowar* : PJ4K, Groundnut : Spanish peanut. (vii) Unirrigated. (viii) Hoeing once to *Kharif Jowar* and twice to cotton. One weeding to groundnut and twice to cotton. (ix) 28.83". (x) Groundnut 22.10.1952, *Kharif Jowar* 12.12.1952 and cotton pickings on 6.11.1952, 6.12.1952. and 6.1.1953.

## 2- TREATMENTS :

2 rotations :

- (1) Cotton (C)—*Kharif Jowar* (J).  
(2) Cotton-*Kharif Jowar*-Groundnut (G).

*Jowar* plot is further divided into two ; One plot (say Jm) receiving 4 ton/ac. of F.Y.M. and the other plot (say J) remaining unmanured.

Note :- *Kharif Jowar* was not manured during 1952—1953 in the 2 year rotation plot.

## 3. DESIGN :

- (i) R.B.D. (ii) (a) 10. (b) N.A. (iii) 5. (iv) (a) 63.5' × 15'. (b) 60.5' × 9'. (v) For *Kharif Jowar* 3 rows on either side, for cotton 2 rows on either side, for groundnut 3 rows on either side. Also distance of 1½' at either end of every row was non experimental. (vi) Yes.

## 4. GENERAL :

- (i) N.A. (ii) N.A. (iii) For cotton : Germination, final stand, plant height, boll no., boll and seed weight, ginning percentage and fibre properties. For *jowar* : Final stand and grain yield. For groundnut : pod yield (iv) (a) 1952 to 1957. (b) As per rotations. (c) N.A. (v) (a) and (b) Nil. (vi) and (vii) Nil.

## 5. RESULTS :

## I. Crop : Cotton

- (i) 261 lb./ac.  
(ii) 32.72 lb./ac.  
(iii) Treatments do not differ significantly.  
(iv) Av. yield of *kapas* in lb./ac.

	2 year rotation		3 year rotation	
Crop	C	C	C	C
Av. yield	264	237	283	262
	S.E./mean = 14.63 lb./ac.			

## II. Crop : Groundnut

- (i) 1073 lb./ac.  
(ii) 233.6 lb./ac.  
(iii) Treatments do not differ significantly.  
(iv) Av. yield of pods in lb./ac.

	3 year rotation	
Crop	G	G
Av. yield	1034	1112
	S.E./mean = 104.5 lb./ac.	

## III. Crop : Jowar

- (i) 392 lb./ac.  
 (ii) 83.56 lb./ac.  
 (iii) Treatments differ highly significantly.  
 (iv) Av. yield of grain in lb./ac.

Crop	J	Jm	J	Jm
Av. yield	260	276	640	391
	S.E./mean = 37.37 lb./ac.			

Crop :- Cotton—Jowar—Groundnut.

Ref :- Mh. 53(117)/52(49).

Site :- Cotton Res. Stn., Nanded.

Type :- 'R'.

Object :- To find out the best rotation along with manuring for *Marathwada* tract.

## 1. BASAL CONDITIONS :

- (i) (a) to (c) As per treatments. (ii) (a) Black cotton soil. (b) Refer soil analysis, Nanded. (iii) 24.6.1953. (iv) (a) 4 *bakharings*. (b) Drilling. (c) Cotton : 16 lb./ac., *Jowar* : 11 lb./ac. and Groundnut : 60 lb./ac. (d) Spacing between rows : Cotton : 18", *Jowar* : 12" and Groundnut : 12". (e) N.A. (v) Nil. (vi) Cotton : *Gaorani-6*, *Jowar* : PJ 4K, and Groundnut : Spanish peanut. (vii) Unirrigated. (viii) Hoeing once to *jowar* and twice to cotton, weeding once to cotton and groundnut. (ix) 45.13". (x) Picking of cotton on 11.11.1953, 11.12.1953 and 11.1.1954, harvesting groundnut on 23.10.1953 and harvesting *jowar* on 26.12.1953.

## 1. TREATMENTS :

2 rotations :

1. Cotton (C)—*Kharif Jowar* (KJ).
2. Cotton—*Kharif Jowar*—Groundnut (G)

*Jowar* plot is further divided into two : One plot (say Jm) receiving 4 ton/ac. of F.Y.M. and the other plot (say J) remaining unmanured.

Note :- *Kharif Jowar* was not manured during 1952—53 in the 2 year rotation plots.

## 3. DESIGN :

- (i) R.B.D. (ii) (a) 10. (b) N.A. (iii) 5. (iv) (a) 63.5' × 15'. (b) 60' × 9'. (v) For *Kharif jowar* 3 rows on either side. For cotton 2 rows on either side. For groundnut 3 rows on either side. Also a distance of 1½' at either end of every row was non-experimental. (vi) Yes.

## 4. GENERAL :

- (i) Good. (ii) No. (iii) For cotton : Germination, final stand, plant height, boll no., boll weight, ginning % and fibre properties and *kapas* yield. For *Jowar* : Final stand and grain yield. For Groundnut : pod yield. (iv) (a) 1952—1957. (b) As per rotations. (c) N.A. (v) (a) and (b) No. (vi) and (vii) Nil.

## 5. RESULTS :

## I. Crop : Cotton

- (i) 234 lb./ac.  
 (ii) 21.95 lb./ac.  
 (iii) Treatments differ highly significantly.  
 (iv) Av. yield of *kapas* in lb./ac.

Crop	Two year rotation		Three year rotation	
	C	C	C	C
Previous crop	J	J	G	G
Av. yield	176	169	299	292
	S.E./mean = 9.82 lb./ac.			

## II. Crop : Groundnut

- (i) 1049 lb./ac.  
 (ii) 152.8 lb./ac.  
 (iii) Treatments do not differ significantly.  
 (iv) Av. yield of pods in lb./ac.

Crop	G	G
Previous crop	J	Jm
Av. yield	1048	1050
	S.E./mean = 68.3 lb./ac.	



## III. Crop : Jowar

- (i) 423 lb./ac.  
 (ii) 74.72 lb./ac.  
 (iii) Treatments do not differ significantly.  
 (iv) Av. yield of *jowar* in lb./ac.

Crop	J	Jm	J	Jm
Previous crop	C	C	C	C
Av. yield	396	428	425	444
	S.E./mean		=33.4 lb./ac.	

Crop :- Bajra—Tur—Groundnut—Matki (*Kharif*).

Ref :- Mh. 49 (128).

Site :- Agri. Res. Stn., Sholapur.

Type :- 'R'.

Object :- To fix up suitable crop rotation and to study its effect.

## 1. BASAL CONDITIONS :

- (i) (a) As per treatments. (b), (c) N.A. (ii) (a) Medium deep. (b) Refer soil analysis, Sholapur. (iii) N.A. (iv) (a) 2 harrowing. (b) Drillings. (c) 80 lb./ac. of Groundnut ; 3 lb./ac. of *Bajra* ; 2 lb./ac. of *Tur* and 10 lb./ac. of *Matki*. (d) 12' between rows. (e)—. (v) Nil. (vi) Groundnut—Big Japan ; *Tur* and *Matki*—Local : *Bajra* - Akola. (vii) Unirrigated. (viii) 2 interculturings, 1 weeding for groundnut. (ix) 38.17'. (ix) N.A.

## 2. TREATMENTS .

Rotations as follows :

- BT every year
- BT every year
- BTp—BT
- BT—BT—GNp—GN
- BT—BT—Mtp—Mt

Details of rotations :

- BT = *Bajra-Tur* mixture in 3 : 1.  
 BTp = *Bajra-Tur* mixture manured with 20 lb./ac. of  $P_2O_5$ .  
 GN = Groundnut unmanured.  
 GNp = Groundnut manured with 20 lb./ac. of  $P_2O_5$ .  
 Mt = *Matki* unmanured.  
 Mtp = *Matki* manured with 20 lb./ac. of  $P_2O_5$ .

## 3. DESIGN :

- (i) R.B.D. (ii) 12. (b) N.A. (iii) 7. (iv) (a) 37 × 37'. (b) 30'—3" × 36'. (v) N.A. (vi) Yes.

## 4. GENERAL :

- (i) Normal. (ii) Nil. (iii) Grain and pod yield. (iv) (a) 1949—1959. (b) Yes, as per rotation. (c) Nil. (v) (a), (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

## I. Crop : Bajra

- (i) 196 lb./ac.  
 (ii) 46 80 lb./ac.  
 (iii) Treatments do not differ significantly.  
 (iv) Av. yield of grain in lb./ac.

Rotation No.	(1)	(2)	(3)	(3)	(4)	(4)	(5)	(5)
Crop	BT	BT	BT	BT	BT	BT	BT	BT
Av. yield	188	189	166	181	192	204	191	181
	S.E./mean		=17.68 lb./ac.					

## II. Crop : Groundnut

- (i) 755 lb./ac.  
 (ii) 173.0 lb./ac.  
 (iii) Treatments do not differ significantly.  
 (iv) Av. yield of pods in lb./ac.

Rotation No.	(4)	(4)
Crop	GNp	GN
Av. yield	701	809
	S.E./mean =65.4 lb./ac.	

Note :- *Tur* and *Matki* yields are N.A.

Crop :- Bajra-Tur-Groundnut-Matki (*Kharif*).

Ref :- Mh. 50(152)/49(128).

Site :- Agri. Res. Stn., Sholapur.

Type :- 'R'.

Object :- To fix up a suitable crop rotation and to study its effects.

### 1. BASAL CONDITIONS :

(i) (a) As per rotation. (b) and (c) As per treatments. (ii) (a) Medium black. (b) Refer soil analysis, Sholapur. (iii) N.A. (iv) (a) 2 ploughings and 2 harrowings. (b) Drilling. (c) 80 lb./ac. of Groundnut ; 3 lb./ac. of *Bajra*, 2 lb./ac. of *Tur* and 10 lb./ac. of *Matki*. (d) 12" between rows. (e) —. (v) Nil. (vi) Groundnut—Big Japan, *Tur* and *Matki*-Local and *Bajra*-Akola. (vii) Unirrigated. (viii) 1 interculturing. (ix) 24.04". (x) N.A.

### 2. TREATMENTS :

5 rotations as follows :

1. BT every year
2. BT every year
3. BTp—BT
4. BT - BT—GNp—GN
5. BT—BT—Mtp—Mt

Details of rotations :

BT = *Bajra-Tur* mixture in 3 : 1.  
 BTp = *Bajra-Tur* mixture manured with 20 lb./ac. of P<sub>2</sub>O<sub>5</sub>.  
 GN = Groundnut unmanured.  
 GNp = Groundnut manured with 20 lb./ac. of P<sub>2</sub>O<sub>5</sub>.  
 Mt = *Matki* unmanured.  
 Mtp = *Matki* manured with 20 lb./ac. of P<sub>2</sub>O<sub>5</sub>.

### 3. DESIGN :

(i) R.B.D. (ii) (a) 12. (b) N.A. (iii) 7. (iv) (a) N.A. (b) 30'-.3" x 36'. (v) N.A. (vi) No, as per rotation.

### 4. GENERAL :

(i) Normal. (ii) Nil. (iii) Grain and pod yield. (iv) (a) 1949—1959. (b) As per treatments. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

### 5. RESULTS :

#### I. Crop : Bajra

(i) 226 lb./ac

(ii) 54.00 lb./ac.

(iii) Treatments do not differ significantly.

(iv) Av. yield of *bajra* in lb./ac.

Rotation No.	(1)	(2)	(3)	(3)	(4)	(5)	(5)	(5)
Crop	BT	BT	BT	BTp	BT	BT	BT	BT
Previous crop	BT	BT	BTp	BT	GNp	GN	Mtp	Mt
Av. yield	249	194	238	238	234	221	218	220
	S.E./mean = 20.43 lb./ac.							

#### II. Crop : Groundnut

(i) 748 lb./ac.

(ii) 23.00 lb./ac.

(iii) Treatments differ highly significantly.

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

Rotation No.	(4)	(4)
Crop	GNp	GN
Previous crop	BT	BT
Av. yield	824	673
	S.E./mean = 8.68 lb./ac.	

Note : *Tur* and *Matki* yields are N.A.

Crop :- Bajra-Tur-Groundnut-Matki (*Kharif*) Ref :- Mh. 51(218)/50(152)49(128)

Site :- Agri. Res. Stn., Sholapur.

Type :- 'R'.

Object :- To fix up a suitable crop rotation and to study its effects.

### 1. BASAL CONDITIONS :

(i) (a) As per rotation. (b) and (c) As per treatments. (ii) (a) Medium deep. (b) Refer soil analysis, Sholapur. (iii) 28.6.51. (iv) (a) 2 harrowings. (b) Drilling. (c) 80 lb./ac. of Groundnut ; 3 lb./ac. of *Bajra* ; 2 lb./ac. of *Tur* and 10 lb./ac. of *Matki*. (d) 12" between rows. (e) —. (v) Nil. (vi) Groundnut—Big Japan. *Matki* and *Tur*—Local ; *Bajra*—Akola. (vii) Unirrigated. (viii) 2 interculturings to *Bajra* and 1 weeding to Groundnut. (ix) 24.81". (x) *Bajra* : 3.11.1951, *Tur* : 14.12.1951, *Matki* : 20.10.1951 and Groundnut : 22.11.1951.

## TREATMENTS -

5 rotations as follows :

1. BT every year
2. BT every year
3. BTp—BT
4. BT—BT—GNp—GN
5. BT—BT—Mtp—Mt

Details of rotations :

- BT = *Bajra-Tur* mixture in 3 : 1  
 BTp = *Bajra-Tur* mixture manured with 20 lb./ac. of  $P_2O_5$ .  
 GN = Groundnut unmanured.  
 GNp = Groundnut manured with 20 lb./ac. of  $P_2O_5$ .  
 Mt = *Matki* unmanured.  
 Mtp = *Matki* manured with 20 lb./ac. of  $P_2O_5$ .

## 3. DESIGN

(i) R.B.D. (ii) (a) 12. (b) N.A. (iii) 7. (iv) (a) 40'×40' (b) 30.25'×36'. (v) N.A. (vi) No ; as per rotations.

## 4. GENERAL :

(i) N.A. (ii) Nil (iii) Grain and pod yield. (iv) (a) 1949 to 1959. (b) As per rotations. (c) Nil. (v) (a) N.A. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

## I. Crop : Bajra.

- (i) 229 lb./ac.  
 (ii) 78.16 lb./ac.  
 (iii) Treatments differ significantly.  
 (iv) Av. yield of *bajra* in lb./ac.

Rotation No.	(1)	(2)	(3)	(3)	(4)	(4)	(5)	(5)
Crop	BT	BT	BTp	BT	BT	BT	BT	BT
Previous crop	BT	BT	BT	BTp	GNp	GN	Mtp	Mt
Av. yield	178	181	249	201	251	195	302	278

S.E./mean = 29.53 lb./ac.

## II. Crop : Groundnut.

- (i) 1069 lb./ac.  
 (ii) 114.2 lb./ac.  
 (iii) Treatments do not differ significantly.  
 (iv) Av. yield of pods in lb./ac.

Rotation No.	(4)	(4)
Crop	GNp	GN
Previous crop	BT	BT
Av. yield	1117	1020

S.E./mean = 43.2 lb./ac.

Note :—*Tur* and *Matki* yields are N.A.

Crop :- *Bajra—Tur—Groundnut—Matki (Kharif)*. Ref :- Mh. 52(350)/  
 51(218)/50(152)/49(128).

Site :- Agri. Res. Stn., Sholapur.

Type :- 'R'.

Object :—To fix up a suitable crop rotation and to study its effects.

## 1. BASAL CONDITIONS :

- (i) (a) to (c) As per rotation. (ii) (a) Medium deep. (b) Refer soil analysis, Sholapur. (iii) 20.6.1952.  
 (iv) (a) 2 ploughings and 2 harrowings. (b) Drilling. (c) 80 lb./ac. of Groundnut ; 3 lb./ac. of *Bajra* ; 2 lb./ac. of *Tur* ; 10 lb./ac. of *Matki*. (d) 12" between rows. (e) —, (v) Nil. (vi) Groundnut—Big Japan ; *Bajra*—Ako a ; *Tur* and *Matki*—local. (vii) Unirrigated. (viii) 1 interculturing to *Bajra* and 1 weeding to Groundnut.  
 (ix) 20.76'. (x) *Bajra* and *Tur*—23 and 24.10.1952 ; *Matki*—30.11.1952 and Groundnut—28.11.1952.

## 2. TREATMENTS :

5 rotations as follows :

1. BT every year
2. BT every year
3. BTp—BT
4. BT—BT—GNp—GN
- BT—BT—Mtp—Mt

Details of rotations :

- BT = *Bajra—Tur* mixture in 3 : 1.  
 BTp = *Bajra—Tur* mixture manured with 20 lb./ac. of  $P_2O_5$ .  
 GN = Groundnut unmanured.  
 GNp = Groundnut manured with 20 lb./ac. of  $P_2O_5$ .  
 Mt = *Matki* unmanured.  
 Mtp = *Matki* manured with 20 lb./ac. of  $P_2O_5$ .

## 3. DESIGN :

(i) R.B.D. (ii) (a) 12. (b) N.A. (iii) 7. (iv) (a) N.A. (b) 33' x 33'. (v) N.A. (vi) As per rotations.

## 4. GENERAL :

(i) Growth was checked due to excess of soil moisture. (ii) Nil. (iii) Grain yield. (iv) (a) 1949—1959. (b) As per rotations. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS:

## I. Crop : Bajra

- (i) 178 lb./ac.  
 (ii) 53.40 lb./ac.  
 (iii) Treatments differ highly significantly.  
 (iv) Av. yield of *bajra* in lb./ac.

Rotation No.	(1)	(2)	(3)	(3)	(4)	(4)	(5)	(5)
Crop	BT	BT	BT	BTp	BT	BT	BT	BT
Previous crop	BT	BT	BTp	BT	GNp	GN	Mtp	Mt
Av. yield	148	145	141	152	232	184	231	192

S.E./mean = 20.17 lb./ac.

## II. Crop : Groundnut

- (i) 336 lb./ac.  
 (ii) 31.48 lb./ac.  
 (iii) Treatments differ highly significantly.  
 (iv) Av. yield of pods in lb./ac.

Rotation No.	(4)	(4)
Crop	GNp	GN
Previous crop	BT	BT
Av. yield	371	302

S.E./mean = 11.89 lb./ac.

Note :—*Tur* and *Matki* yields are N.A.

Crop :- Bajra—Tur—Groundnut—Matki (*Kharif*). Ref :- Mh. 53(360)/52(350)/51(218)/50(152)/49(128).

Site :- Agri. Res. Stn., Sholapur.

Type :- 'R'.

Object :- To fix up a suitable crop rotation and to study its effects.

## 1. BASAL CONDITIONS :

(i) (a), (b) and (c) As per rotations. (ii) (a) Medium deep. (b) Refer soil analysis, Sholapur. (iii) 17, 18.7.1952. (iv) (a) 2 harrowings. (b) Drilling. (c) 80 lb./ac. of Groundnut ; 3 lb./ac. of *Bajra* ; 2 lb./ac. of *Tur* ; 10 lb./ac. of *Matki*. (d) 12" between rows. (e) —. (v) Nil. (vi) Big Japan-Groundnut ; *Tur* and *Matki*-Local, *Bajra*-Akola. (vii) Unirrigated. (viii) 2 interculturings and 1 weeding to Groundnut. (ix) 35.96". (x) *Bajra* 13.11.1953 ; *Tur* 23.1.1954 ; *Matki* 19.12.1953 and Groundnut 12.12.1953.

## 2. TREATMENTS :

5 rotations as follows :

- BT every year.
- BT every year
- BTp—BT
- BT—BT—GNp—GN
- BT—BT—Mtp—Mt

Details of rotations :

- BT = *Bajra*—*Tur* mixture in 3 : 1.  
 BTp = *Bajra*—*Tur* mixture manured with 20 lb./ac. of  $P_2O_5$ .  
 GN = Groundnut unmanured.  
 GNp = Groundnut manured with 20 lb./ac. of  $P_2O_5$ .  
 Mt = *Matki* unmanured.  
 Mtp = *Matki* manured with 20 lb./ac. of  $P_2O_5$ .

## 3. DESIGN :

(i) R.B.D. (ii) (a) 12. (b) N.A. (iii) 7. (iv) (a) N.A. (b) 33' x 33'. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) Crop almost failed due to heavy rains. (ii) Nil. (iii) Grain yield. (iv) (a) 1949—1959. (b) As per rotations. (c) Nil. (v) (a) and (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS:

## I. Crop : Bajra

- (i) 26 lb./ac.  
 (ii) 11.10 lb./ac.  
 (iii) Treatments do not differ significantly.

(iv) Av. yield of *bajra* in lb./ac.

Rotation No.	(1)	(2)	(3)	(3)	(4)	(4)	(5)	(5)
Crop	BT	BT	BTp	BT	BT	BT	BT	BT
Previous crop	BT	BT	BT	BTp	GNp	GN	Mtp	Mt
Av. yield	24	25	25	18	28	32	30	29
	S.E./mean				= 4.19 lb./ac.			

## II. Crop : Groundnut

(i) 302 lb./ac.

(ii) 36.00 lb./ac.

(iii) Treatments differ highly significantly.

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

Rotation No.	(4)	(4)
Crop	GNp	GN
Previous crop	BT	BT
Av. yield	370	234
	S.E./mean = 13.60 lb./ac.	

Note :—*Tur* and *Makki* yields are N.A.

Crop :- Jowar-Groundnut-Gram.

Site :- Agri. Res. Stn., Sholapur.

Ref :- Mh. 49(111)

Type :- 'R'.

Object :- To find out suitable crop rotations for *Rabi Jowar* and to determine the effect of  $P_2O_5$  on them.

## 1. BASAL CONDITIONS :

(i) (a) *Jowar*-Gram-Groundnut. (b) *Jowar*. (c) Nil. (ii) (a) Light, medium black soil. (b) Refer soil analysis, Sholapur. (iii) 9.10.1949. (iv) (a) and (b) N.A. (c) *Jowar* 4 lb./ac. ; Groundnut 80 lb./ac. ; Gram 4 lb./ac. (d) *Jowar* 18" ; Gram and groundnut 12". (e) N.A. (v) Nil. (vi) *Jowar*-M-35-I ; Gram-*Chafa* ; Groundnut-Big Japan. (vii) Unirrigated. (viii) N.A. (ix) 3". (x) 5.2.1950.

## 2. TREATMENTS

10 rotations

1. J every year

2. Jm-J-J

3. J-GNp

4. J-GN

5. J-J-GNp

6. J J-GN

7. J-Gp

8. J-G

9. J-J-Gp

10. J-J-G

Details of rotations : -

J = *Jowar* unmanured.Jm = *Jowar* manured with 5 C.L./ac. of F.Y.M.GNp = Groundnut manured with 40 lb./ac. of  $P_2O_5$ .

GN = Groundnut unmanured.

Gp = Gram manured with 40 lb./ac. of  $P_2O_5$ .

G = Gram unmanured.

 $P_2O_5$  applied as Super.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 24. (b) N.A. (iii) 4. (iv) (a) 36.25' x 30'. (b) 30.25' x 18' (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) N.A. (ii) Nil. (iii) Grain and pod yield. (iv) (a) 1949—continued. (b) As per rotations. (c) Nil. (v) (a) Chas and Jeur. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

## I. Crop : Jowar

(i) 382 lb./ac.

(ii) 78.40 lb./ac.

(iii) Treatments do not differ significantly.

(iv) Av. yield of *jowar* in lb./ac.

Rotation No.	(1)	(2)	(2)	(2)	(3)	(4)	(5)	(5)
Crop	J	Jm	J	J	J	J	J	J
Av. yield	441	400	352	326	293	320	437	429
Rotation No.	(6)	(6)	(7)	(8)	(9)	(9)	(10)	(10)
Crop	J	J	J	J	J	J	J	J
Av. yield	354	380	325	434	457	526	328	315
	S.E./mean				= 39.20 lb./ac.			

## II. Crop : Gram

(i) 392 lb./ac.

(ii) 77.00 lb./ac.

(iii) Treatments do not differ significantly.

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

Rotation No.	(7)	(8)	(9)	(10)
Crop	Gp	G	Gp	G
Av. yield	369	373	386	441

S.E./mean = 38.50 lb./ac.

## III. Crop : Groundnut

(i) 1440 lb./ac.

(ii) 460.80 lb./ac.

(iii) Treatments do not differ significantly.

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

Rotation No.	(3)	(4)	(5)	(6)
Crop	GNp	GN	GNp	GN
Av. yield	1780	1300	1340	1340

S.E./mean = 230.4 lb./ac.

Crop :- Jowar-Gram-Groundnut.

Ref :- Mh. 50(110)/49(111).

Site :- Agri. Res. Stn., Sholapur.

Type :- 'R'.

Object :- To find out suitable crop rotations for *Rabi Jowar* and to determine the effect of  $P_2O_5$  on them.

### 1. BASAL CONDITIONS :

(i) (a) *Jowar*-Gram-Groundnut. (b) As per treatments. (c) As per treatments. (ii) (a) Light medium black. (b) Refer soil analysis, Sholapur. (iii) 5.10.1950. (iv) (a) and (b) N.A. (c) *Jowar* 4 lb./ac. and Groundnut 80 lb./ac. (d) *Jowar*-18", Gram and Groundnut-12" apart. (e) N.A. (v) Nil. (vi) *Jowar*-M-35-1, Gram-*Chafa* and Groundnut-Big Japan. (vii) Unirrigated. (viii) N.A. (ix) N.A. (x) 12.2.1951.

### 2. TREATMENTS :

10 rotations :

1. J every year
2. Jm-J-J
3. J-GNp
4. J-GN
5. J-J-GNp
6. J-J-GN
7. J-Gp
8. J-G
9. J-J-Gp
10. J-J-G

Details of rotations :

- J = *Jowar* unmanured.  
 Jm = *Jowar* manured with 5 C.L./ac. of F.Y.M.  
 GNp = G roundnut manured with 40 lb./ac. of  $P_2O_5$ .  
 GN = Groundnut unmanured.  
 Gp = Gram manured with 40 lb./ac. of  $P_2O_5$ .  
 G = Gram unmanured.  
 $P_2O_5$  applied as Super.

### 3. DESIGN :

(i) R.B.D. (ii) (a) 24. (b) N.A. (iii) 4. (iv) (a) 36.25' x 30'. (b) 30.25' x 18'. (v) N.A. (vi) As per rotations.

### 4. GENERAL :

(i) N.A. (ii) Nil. (iii) Height, no. of plants, grain and pod yield. (iv) (a) 1949—contd. (b) As per rotations (c) N.A. (v) (a) Chas and Jeur. (b) N.A. (vi) and (vii) Nil.

### 5. RESULTS :

#### I. Crop : Jowar

(i) 524 lb./ac.

(ii) 186.4 lb./ac.

(iii) Treatments differ significantly.

(iv) Av. yield of *jowar* in lb./ac.

Rotation No.	(1)	(2)	(2)	(2)	(3)	(4)	(5)	(5)
Crop	J	J	Jm	J	J	J	J	J
Previous crop	J	Jm	J	J	GNp	GN	J	GNp
Av. yield	537	386	497	321	596	589	434	805

Rotation No.	(6)	(6)	(7)	(8)	(9)	(9)	(10)	(11)
Crop	J	J	J	J	J	J	J	J
Previous crop	J	GN	Gp	G	J	Gp	J	G
Av. yield	435	626	730	468	455	520	364	627
S.E./mean = 93.20 lb./ac.								

## II. Crop : Gram

- (i) 343 lb./ac.  
(ii) 64.00 lb./ac.  
(iii) Treatments do not differ significantly.  
(iv) Av. yield of gram in lb./ac.

Rotation No.	(7)	(8)	(9)	(10)
Crop	Gp	G	Gp	G
Previous crop	J	J	J	J
Av. yield	361	357	345	310
S.E./mean = 32.00 lb./ac.				

## III. Crop : Groundnut

- (i) 406 lb./ac.  
(ii) 115.6 lb./ac.  
(iii) Treatments do not differ significantly.  
(iv) Av. yield of pods in lb./ac.

Rotation No.	(3)	(4)	(5)	(6)
Crop	GN	GN	GN	GN
Previous crop	J	J	J	J
Av. yield	452	444	406	324
S.E./mean = 57.82 lb./ac.				

Crop :- Jowar—Gram—Groundnut.

Ref :- Mh. 51(95)/50(110)/49(111).

Site :- Agri. Res. Stn., Sholapur.

Type :- 'R'.

Object :- To find out suitable crop rotations for *Rabi Jowar* and to determine the effect of  $P_2O_5$  on them.

### 1. BASAL CONDITIONS :

- (i) (a) *Jowar*—Gram—Groundnut. (b) and (c) As per treatments. (ii) (a) Light, medium black soil. (b) Refer soil analysis, Sholapur (iii) 29.9.1951 for *Jowar*. (iv) (a) One ploughing to some of the plots and 2 harrowings. (b) N.A. (c) *Jowar* 4 lb./ac., Groundnut 8J lb./ac. and Gram 4J lb./ac. (d) and (e) N.A. (v) Nil. (vi) *Jowar*—M-35-1, Gram—*Chafa* and Groundnut—Big Japan. (vii) Unirrigated. (viii) 3 interculturings. (ix) 23°. (x) 12.2.1952.

### 2. TREATMENTS :

10 rotations :

1. J every year
2. Jm - J-J
3. J-GNp
4. J-GN
5. J-J-GNp
6. J-J-GN
7. J-Gp
8. J-G
9. J-J-Gp
10. J-J-G

Details of rotations :

- J = *Jowar* unmanured.  
Jm = *Jowar* manured with 5 C L./ac. of F.Y.M.  
GNp = Groundnut manured with 40 lb./ac. of  $P_2O_5$ .  
GN = Groundnut unmanured.  
Gp = Gram manured with 40 lb./ac. of  $P_2O_5$ .  
G = Gram unmanured.  
 $P_2O_5$  applied as Super.

### 3. DESIGN :

- (i) R.B.D. (ii) (a) 24. (b) N.A. (iii) 4. (iv) (a) 36.25' × 30'. (b) 30.25' × 18'. (v) N.A. (vi) As per rotations.

### 4. GENERAL :

- (i) N.A. (ii) Nil. (iii) Height, no. of plants, grain and pod yield. (iv) (a) 1949—contd. (b) As per rotations. (c) N.A. (v) (a) Chas and Jeur. (b) N.A. (vi) and (vii) Nil.

### 5. RESULTS :

#### I. Crop : Jowar

- (i) 242 lb./ac.  
(ii) 31.20 lb./ac.  
(iii) Treatments differ significantly.

(iv) Av. yield of *Jowar* in lb./ac.

Rotation No.	(1)	(2)	(2)	(2)	(3)	(4)	(5)	(5)
Crop	J	J	J	Jm	J	J	J	J
Previous crop	J	J	Jm	J	GNp	GN	GNp	J
Av. yield	205	217	272	260	287	240	250	217
Rotation No.	(6)	(6)	(7)	(8)	(9)	(9)	(10)	(10)
Crop	J	J	J	J	J	J	J	J
Previous crop	GN	J	Gp	G	Gp	J	G	J
Av. yield	202	240	272	275	247	240	215	237
	S.E./mean				=15.60 lb./ac.			

## II. Crop : Gram

(i) 205 lb./ac.

(ii) 38.40 lb./ac.

(iii) Treatments do not differ significantly.

## (iv) Av. yield of gram in lb./ac.

Rotation No.	(7)	(8)	(9)	(10)
Crop	Gp	G	Gp	G
Previous crop	J	J	J	J
Av. yield	250	190	210	170
	S.E./mean		=19.20 lb./ac.	

## III. Crop : Groundnut

(i) 1410 lb./ac.

(ii) 259.8 lb./ac.

(iii) Treatments do not differ significantly.

## (iv) Av. yield of pod in lb./ac.

Rotation No.	(3)	(4)	(5)	(6)
Crop	GNp	GN	GNp	GN
Previous crop	J	J	J	J
Av. yield	1480	1220	1540	1400
	S.E./mean		=129.9 lb./ac.	

Crop :- *Jowar*-*Gram*-*Groundnut*.

Ref :- Mh. 52(186)/51(95)/50(110)/49(111).

Site :- Agri. Res. Stn., Sholapur.

Type :- 'R'.

Object : - To find out suitable crop rotations for *Rabi Jowar* and to determine the effect of  $P_2O_5$  on them.

## 1. BASAL CONDITIONS :

(i) (a) *Jowar*-*Gram*-*Groundnut*. (b) and (c) As per treatments. (ii) (a) Light medium black soil. (b) Refer soil analysis, Sholapur. (iii) 8.10.1952-(*Jowar*). (iv) (a) Ploughing once to particular plots and 4 harrowings (b) N.A. (c) *Jowar*-4 lb./ac.; *Groundnut*-80 lb./ac.; *Gram* 40 lb./ac. (d) *Jowar*-18", *Gram* and *Groundnut*-12" apart. (e) N.A. (v) Nil. (vi) *Jowar*-M-35-1; *Gram*-*Chafa*, *Groundnut*-Big Japan. (vii) Unirrigated. (viii) 2 interculturings. (ix) 2". (x) 11.2.1953.

## 2. TREATMENTS :

10 rotations :

1. J every year.
2. Jm-J-J.
3. J-GNp.
4. J-GN.
5. J-J-GNp.
6. J J-GN.
7. J-Gp.
8. J-G.
9. J-J-Gp.
10. J-J-G.

Details of rotations :

J = *Jowar* unmanured.  
 Jm = *Jowar* manured with 5 C.L./ac. of F.Y.M.  
 GNp = *Groundnut* manured with 40 lb./ac. of  $P_2O_5$ .  
 GN = *Groundnut* unmanured.  
 Gp = *Gram* manured with 40 lb./ac. of  $P_2O_5$ .  
 G = *Gram* unmanured.

 $P_2O_5$  applied as Super.



## 3. DESIGN :

(i) R.B.D. (ii) (a) 24. (b) N.A. (iii) 4. (iv) (a) 36.25' x 30'. (b) 30.25' x 18'. (v) N.A. (vi) As per rotations.

## 4. GENERAL :

(i) N.A. (ii) Nil. (iii) Height, no. of plants, grain and pod yield. (iv) (a) 1949—contd. (b) As per rotation. (c) N.A. (v) (a) Chas and Jeur. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

## I. Crop : Jowar

- (i) 702 lb./ac.  
 (ii) 183.0 lb./ac.  
 (iii) Treatments do not differ significantly.  
 (iv) Av. yield of grain in lb./ac.

Rotation No.	(1)	(2)	(2)	(2)	(3)	(4)	(5)	(5)
Crop	J	Jm	J	J	J	J	J	J
Previous crop	J	J	J	Jm	GNp	GN	GNp	J
Av. yield	617	645	637	615	865	725	1040	652
Rotation No.	(6)	(6)	(7)	(8)	(9)	(9)	(10)	(10)
Crop	J	J	J	J	J	J	J	J
Previous crop	GN	J	Gp	G	Gp	J	G	J
Av. yield	790	570	717	645	795	612	737	565

S.E./mean = 94.0 lb./ac.

## II. Crop : Gram

- (i) 305 lb./ac.  
 (ii) 100.8 lb./ac.  
 (iii) Treatments do not differ significantly.  
 (iv) Av. yield of gram in lb./ac.

Rotation No.	(7)	(8)	(9)	(10)
Crop	Gp	G	Gp	G
Previous crop	J	J	J	J
Av. yield	307	265	382	265

S.E./mean = 50.4 lb./ac.

## III. Crop : Groundnut

- (i) 695 lb./ac.  
 (ii) 100.8 lb./ac.  
 (iii) Treatments do not differ significantly.  
 (iv) Av. yield of pod in lb./ac.

Rotation No.	(3)	(4)	(5)	(6)
Crop	GNp	GN	GNp	GN
Previous crop	J	J	J	J
Av. yield	780	660	720	620

S.E./mean = 50.40 lb./ac.

Crop :- Jowar-Gram. Ref :- Mh. 53(291)/52(186)/51(95)/50(110)/49(111).  
 Groundnut (*Rabi*).

Site :- Agri. Res. Stn., Sholapur.

Type :- 'R'.

Object :- To find out suitable crop rotation for *Rabi* Jowar and to determine the effect of  $P_2O_5$  on them.

## 1. BASAL CONDITIONS :

- (i) (a) Jowar-Gram-Groundnut. (b) and (c) As per treatments. (ii) (a) Light medium black soil. (b) Refer soil analysis, Sholapur. (iii) 13.10.1953. (iv) (a) Ploughing once to particular plots and 3 harrowings. (b) N.A. (c) Jowar 4 lb./ac, Gram 40 lb./ac. and Groundnut 80 lb./ac. (d) Jowar—18", Gram and Groundnut—12". (v) Nil. (vi) Jowar—M-35—1, Gram—*Chafa* and Groundnut—*Big-Japan*. (vii) Unirrigated. (viii) 3 interculturings. (ix) 9". (x) 26.2.1954.

## 2. TREATMENTS :

10 rotations :

1. J every year.
2. Jm—J—J.
3. J—GNp.
4. J—GN.
5. J—J—GNp.
6. J—J—GN.
7. J—Gp.
8. J—G.
9. J—J—Gp.
10. J—J—G.

Details of rotations

- J = Jowar unmanured.  
 Jm = Jowar manured with 5 C.L./ac. of F.Y.M.  
 GNp = Groundnut manured with 40 lb./ac. of  $P_2O_5$ .  
 GN = Groundnut unmanured.  
 Gp = Gram manured with 40 lb./ac. of  $P_2O_5$ .  
 G = Gram unmanured.  
 $P_2O_5$  applied as Super.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 24. (b) N.A. (iii) 4. (iv) (a) 36-25'×30'. (b) 30.25'×30'. (v) N.A. (vi) As per rotations.

## 4. GENERAL :

(i) Nil. (ii) Nil. (iii) Height, no. of plants, grain and pod yield. (iv) (a) 1949—contd. (b) As per rotation. (c) N.A. (v) (a) Chas and Jeur. (b) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

## I. Crop: Jowar

- (i) 230 lb./ac.  
 (ii) 130.4 lb./ac.  
 (iii) Treatments do not differ significantly.  
 (iv) Av. yield of Jowar in lb./ac.

Rotation No.	(1)	(2)	(2)	(2)	(3)	(4)	(5)	(5)
Crop	J	J	Jm	J	J	J	J	J
Previous crop	J	Jm	J	J	GNp	GN	J	GNp
Av. yield	142	172	262	215	335	207	195	332
Rotation No.	(6)	(6)	(7)	(8)	(9)	(9)	(10)	(10)
Crop	J	J	J	J	J	J	J	J
Previous crop	J	GN	Gp	G	J	Gp	J	G
Av. yield	230	310	230	217	175	237	170	247

S.E./mean = 65.2 lb./ac.

## II. Crop: Gram

- (i) 430 lb./ac.  
 (ii) 126.8 lb./ac.  
 (iii) Treatments do not differ significantly.  
 (iv) Av. yield of gram in lb./ac.

Rotation No.	(7)	(8)	(9)	(10)
Crop	Gp	G	Gp	G
Previous crop	J	J	J	J
Av. yield	510	372	387	450

S.E./mean = 63.4 lb./ac.

## III. Crop: Groundnut

- (i) 700 lb./ac.  
 (ii) 53.20 lb./ac.  
 (iii) Treatments do not differ significantly.  
 (iv) Av. yield of pod in lb./ac.

Rotation No.	(3)	(4)	(5)	(6)
Crop	GNp	GN	GNp	GN
Previous crop	J	J	J	J
Av. yield	740	680	740	640

S.E./mean = 26.60 lb./ac.

Crop :-Basrai Banana.

Ref :-Mh. 53(288).

Site :-College of Agriculture, Poona.

Type :-'M'.

Object :-To find out an economical manurial dose for Basrai Banana.

## 1. BASAL CONDITIONS :

(i) Banana was grown upto June 1952 then sunnhemp and then gram in *Rabi*. (ii) Medium black. (iii) By suckers. (iv) basrai banana. (v) June 1953, suckers were planted at a distance of 6'x6'. (vi) N.A. (vii) 40 lb./plant of F.Y.M. in pits. (viii) N.A. (ix) No intercropping. (x) Irrigated. (xi) 22" (x) N.A.

## 2. TREATMENTS :

1. 0.1 lb./plant of N as G.N.C. + A/S in 1 : 1 ratio.
2. 0.2 lb./plant of N as G.N.C. + A/S in 1 : 1 ratio.
3. 0.4 lb./plant of N as G.N.C. + A/S in 1 : 1 ratio.
4. 0.2 lb./plant of N+1.8 lb./plant of P<sub>2</sub>O<sub>5</sub>.
5. 0.2 lb./plant of N+0.2 lb./plant of K<sub>2</sub>O.
6. 0.2 lb./plant of N+1.8 lb./plant of P<sub>2</sub>O<sub>5</sub>+2 lb./plant of K<sub>2</sub>O.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) 6 and 4 (further details N.A.) (v) Two guard rows between two plants in north-south direction; one guard row between two plants in east-west direction for plots with 6 trees and one guard row all round the net plot for plots with 4 trees. (vi) Yes.

## 4. GENERAL :

(i) Fair crop. (ii) Nil. (iii) Weight and number of bananas. (iv) (a) 1953—1955. (b) N.A. (v) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 23.70 lb./plot.  
 (ii) 3.408 lb./plot.  
 (iii) The treatments do not differ significantly.  
 (iv) Av. yield of bananas in lb./plot.

Treatment	Av. yield
1.	23.68
2.	21.77
3.	22.38
4.	27.40
5.	25.03
6.	21.92
S.E./mean	=1.704 lb./plot.

Crop :-Grape.

Ref :-Mh. 52(203).

Site :-Ganeshkhind Fruit Exptl. Stn., Poona.

Type :-'M'.

Object :-To fix up a suitable manurial dose of N, P and K for *Bhokari* Grape vine.

## 1. BASAL CONDITIONS :

(i) Grapes. (ii) Medium black soil varying from 2' to 3' in depth. (iii) By cutting. (iv) *Bhokari*. (v) N.A. (vi) N.A. (vii) N.A. (viii) Pruning in April and October, 1952. Ploughing, harrowing and digging in between two lines. (ix) No. (x) Irrigated. (xi) 21". (xii) N.A.

## 2. TREATMENTS :

1. 60 lb. of F.Y.M. + 1 lb. of A/S +3 lb. of G.N.C. + 0 lb. + 0 lb. of Pot. Sul. per tree.
2. 60 lb. of F.Y.M. + 1½ lb. of A/S +5 lb. of G.N.C. + 0 lb. + 0 lb. of Pot. Sul. per tree.
3. 60 lb. of F.Y.M. + 1½ lb. of A/S +5 lb. of G.N.C. + 5½ lb. + 0 lb. of Pot. Sul. per tree.
4. 60 lb. of F.Y.M. + 1½ lb. of A/S +5 lb. of F.Y.M. + 0 lb. + ½ lb. of Pot. Sul. per tree.
5. 60 lb. of F.Y.M. + 1½ lb. of A/S +5 lb. of F.Y.M. + 5½ lb. + ½ lb. of Pot. Sul. per tree.
6. 60 lb. of F.Y.M. + 1 lb. of A/S +3 lb. of F.Y.M. + 5½ lb. + ½ lb. of Pot. Sul. per tree.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 6. (iv) One vine per plot occupying area of 100 sq. ft. (v) N.A. (vi) Yes.

## 4. GENERAL :

(i) Good. (ii) Nil. Ten sprays of bordeaux mixture, two sulphur dustings. (iii) Grape yield. (iv) (a) and (b) N.A. (v) N.A. (vi) and (vii) Nil.

## 5. RESULTS :

- (i) 6806 lb./ac.  
 (ii) 1718.25 lb./ac.  
 (iii) Treatments do not differ significantly.  
 (iv) Av. yield of grape in lb./ac.

Treatment	Av. yield
1.	7623
2.	6260
3.	7052
4.	6470
5.	6769
6.	6663
S.E./mean	=701.61 lb./ac.

Crop :-Grape.

Site :-Ganeshkhind Fruit Exptl. Stn., Poona.

Ref :-Mh. 50(130).

Type :-'C'.

Object :—To study the effect of close spacing and different systems of training on wire trellis on growth and yield of *Bhokari* grape.

## 1. BASAL CONDITIONS :

(i) Grape. (ii) Medium black varying from 2' to 4' in depth. (iii) By cutting. (iv) *Bhokari*. (v) 10.2.1949 to 22.2.1949. Spacing between two vines and two rows as per treatments. (vi) N.A. (vii) N.A. (viii) April and October prunings were done in time. (ix) No. (x) Irrigated. (xi) 28". (xii) N.A.

## 2. TREATMENTS :

- Single standard vines spread 2' apart are trained as single horizontal cordons. Cordons of three successive plants are trained singly on superimposed wires at a distance of 4½', 5½' and 6½' respectively. The length of two cordons of each vine is 6'. The number of vines being 2722 in one acre the total cordon length would be 16332 feet.
- Double standard vines spread 2' apart are trained as horizontal cordons in opposite directions tied at the same level. The cordons of alternate plants are tied overlapping each other on wires at a height of 4½', 5½' and 6½', respectively. The length of the cordon of each vine is 8' i.e., 4 and 4 feet in opposite directions. The number of vines being 2722 per acre, the cordon length will be 21,766 feet.
- Single standard vines spread 1½' apart are trained as single horizontal cordons. The cordons of every three successive plants are tied singly on wires at 4½', 5½' and 6 feet respectively. The length of the cordon of each vine is 4½' feet. The number of vines being 3630 per acre, the total cordon length will be 16,335 feet.
- Twin vines planted at one hill and placed 3' apart are trained as single horizontal cordons in opposite directions at the same level. The cordons of alternate plants are tied overlapping each other on wires at a height of 4½' and 6½' respectively. The length of the cordon of each vine is 6'. The number of vines being 3630, the total cordon length would be 21780'.
- Single standard vines spread 3' apart are trained at two arms kniffen system. The two arms of cordons given out to the same trunk are tied in opposite directions. The arms of the alternate plants are tied at 4½' and 6½' respectively. The arms of one plant will overlap those of its alternate neighbour on the same level. Each vine has a cordon length of 12 and 6' in opposite directions and the number of vines per acre being 1815, the total length of the cordon would be 21780'.
- Single standard vines spread 4' apart are trained as single horizontal cordons. The cordons of every three successive vines are trained singly on wires at 4½', 5½' and 6½' respectively. The length of the cordon of each vine is 12. The number of vines being 1361 per acre, the total cordon length would be 16332'.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) 69, 69, 92, 90, 90 and 35 for treatments 1, 2, 3, 4, 5 and 6 respectively. (vi) Only two treatments are randomised independently in each block.

## 4. GENERAL :

(i) The vines continued to remain healthy throughout the year. (ii) 12 sprays of bordeaux mixture were applied along with 4 sulphur dustings (during the fruit season). (iii) Grapes yield. (iv) (a) 1949—continued. (L) N.A. (v) N.A. (vi) Nil. (vii) Nil.

## 5. RESULTS :

- (i) 11517 lb./ac.  
 (ii) 1963.69 lb /ac.  
 (iii) Treatments do not differ significantly.  
 (iv) Av. yield of grapes in lb./ac.

Treatment	Av. yield
1.	12718
2.	11421
3.	12765
4.	11839
5.	9646
6.	16715
S.E./mean	=981.84 lb./ac.

Crop :- Grape.

Ref :- Mh. 51(175).

Site :- Ganeshkhind Fruit Exptl. Stn., Poona.

Type :- 'C'.

Object :- To study the effect of close spacing and different systems of training on wire trellis, on growth and yield of *Bhokari* grapes.

## 1. BASAL CONDITIONS :

(i) Grape. (ii) Medium black, varying from 2' to 4' in depth. (iii) By cutting. (iv) *Bhokari*. (v) Planting as per treatments. (vi) N.A. (vii) Nil. (viii) Pruning and training of vines continued during the year. (ix) No. (x) Irrigated. (xi) 24". (xii) N.A.

## 2. TREATMENTS :

1. Single standard vines spaced 2 feet apart are trained as single horizontal cordons. The cordons of three successive plants are trained, singly on superimposed wires at a distance of 4½', 5½' and 6½' respectively. The length of the cordon of each vine is 6 feet. The number of vines being 2722 in one acre, the total cordon length would be 16322 feet.
2. Double standard vines spaced 2 feet apart are trained as horizontal cordons in opposite directions tied at the same level. The cordons of alternate plants are tied overlapping each other on wires at height of 4½' and 6½' respectively. The length of the cordon of each vines is 8' i.e. 4' and 4' in opposite directions. The number of vines being 2722 per acre the total cordon length will be 21776 feet.
3. Single standard vines spread 1½' apart are trained as single horizontal cordons. The cordons of every three successive plants are tied singly on wires at 4½', 5½' and 6' respectively. The length of the cordon of each vine is 4½'. The number of vines being 3630 per acre and the total cordon length will be 16335 feet.
4. Twin vines planted at one hill and spaced 3' apart are trained as single horizontal cordons in opposite directions at the same level. The cordons at alternate plants are tied overlapping each other on wires at a height of 4½' and 6½' respectively. The length of cordon is 6'. The number of vines being 3630 per acre, the total cordon length will be 21,80 feet.
5. Single standard vines spaced 3' apart are trained as two arm kniffen system. The two arms of cordons given out by the same trunk are tied in opposite directions.
6. Single standard vines spaced 4' apart are trained as single horizontal cordons. The cordons of every three successive vines are trained singly on wires at 4½', 5½' and 6½' respectively. The length of the cordon of each vine is 12'. The number of vines being 1361 per acre. The total cordon length would be 16332 feet.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) 69, 69, 92, 90, 46 and 35 for treatments 1, 2, 3, 4, 5 and 6 respectively. (vi) Treatments are independently randomised in each block.

## 4. GENERAL :

(i) Due to improper nutrition of sulphur and copper in bordeaux mixture, crop was damaged. (ii) 11 sprays of bordeaux mixture and 4 sulphur dustings. (iii) Grape yield. (iv) (a) 1949—contd. (b) N.A. (v) N.A. (vi) and (vii) Nil.

## 5. RESULTS:

- (i) 1268 lb./ac.  
 (ii) 497.8 lb./ac.  
 (iii) Treatments do not differ significantly.  
 (iv) Av. yield of grape in lb./ac.

Treatment	Av. yield
1.	1311
2.	784
3.	1130
4.	1185
5.	1342
6.	1855
S.E./mean	= 248.91 lb./ac.

Crop :- Grape.

Ref :- Mh. 52(204).

Site :- Ganeshkhind Fruit Exptl. Stn., Poona.

Type :- 'C'.

Object :—To study the effect of close spacing and different systems of training on wire trellis, on growth and yield of *Bhokari* grapes.

## 1. BASAL CONDITIONS:

(i) Grape. (ii) Medium black varying from 2' to 4' in depth. (iii) By cutting. (iv) *Bhokari*. (v) Planted from 10.2 1949. (vi) N.A. (vii) Nil. (viii) No. (ix) No. (x) Irrigated. (xi) 21". (xii) N.A.

## 2. TREATMENTS:

- Single standard vines spaced 2 feet apart are trained as single horizontal cordons. The cordons of three successive plants are trained singly on superimposed wires at a distance of 4½', 5½' and 6½' respectively. The length of the cordon of each vine is 6 feet. The number of vines being 2722 in one acre, the total cordon length would be 16332 feet.
- Double standard vines spaced 2 feet apart are trained as horizontal cordons in opposite directions tied at same level. The cordons of alternate plants are tied overlapping each other on wires at height of 4½' and 6½' respectively. The length of the cordon of each vine is 8' i.e., 4' and 4' in opposite directions. The number of vines being 2722 per acre, the total cordon length will be 21776 feet.
- Single standard vines spaced 1½' apart are trained as single horizontal cordons. The cordons of every three successive plants are tied singly on wires at 4½', 5½' and 6½' respectively. The length of the cordon of each vine is 4½'. The number of vines being 3630 per acre and the total cordon length will be 16335 feet.
- Twin vines planted at one hill and spaced 3' apart are trained as single horizontal cordons in opposite directions at the same level. The cordons of alternate plants are tied overlapping each other on wires at a height of 4½' and 6½' respectively. The length of cordon of each vine is 6½'. The number of vines being 3630 per acre. The total cordon length will be 21780 feet.
- Single standard vines spaced 3' apart are trained as two arms kniffen system. The two arms of cordon given out by the same trunk are tied in opposite directions.
- Single standard vines spaced 4' apart are trained as single horizontal cordons. The cordons of every three successive vines are trained singly on wires at 4½', 5½' and 6½' respectively. The length of the cordon of each vine is 12'. The number of vines being 1361 per acre. The total cordon length would be 16332 feet.

## 3. DESIGN:

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) 69, 69, 92, 90, 90, and 35 for treatments 1, 2, 3, 4, 5 and 6 respectively. (v) Yes. (vi) Yes.

## 4. GENERAL:

(i) Good. (ii) Nine sprays of bordeaux mixture and 4 sulphur dusting. (iii) Grapes yield. (iv) (a) 1949—contd. (b) and (c) N.A. (v) N.A. (vi) and (vii) Nil.

## 5. RESULTS:

- (i) 14615 lb./ac.  
 (ii) 1540 lb./ac.  
 (iii) Treatments do not differ significantly.

## (iv) Av. yield of grape in lb./ac.

Treatment	Av. yield
1.	16245
2.	13758
3.	13394
4.	14426
5.	15158
6.	14713
S.E./mean	= 769.9 lb./ac.

Crop :-Grape.

Ref :-Mh. 53(156).

Site :-Ganeshkhind Fruit Exptl. Stn., Poona.

Type :-'C'.

Object :-To study the effect of close spacing and different systems of training on wire trellis on growth and yield of *Bhokari* vines.

## 1. BASAL CONDITIONS :

(i) The plot, before this crop was under *Kandhari* grapes trained in four armed system for 15 years 1932—1947. (ii) Medium black. (iii) Cuttings were planted in raised bed and then transplanted on permanent area. (iv) *Bhokari*. (v) The vines were planted on 24.2.1949 as per treatments. (vi) 6 months. (vii) After April pruning, 10 C.L. of F.Y.M., 1620 lb. of G.N.C. and 540 lb. of A/S on 29.4.1953. The manure is broadcasted along the rows (viii) Usual operations like ploughing, harrowing pruning twice a year (October and April). (ix) No. (x) Irrigated. (xi) N.A. (xii) 4.2.1954 to 23.3.1954.

## 2. TREATMENTS :

- Single standard vines spaced 2' apart are trained as single horizontal cordons. The cordons of every three successive plants are trained singly on superimposed wires at a distance of 4½', 5½' and 6½' respectively. The length of the cordon of each vine is 6 feet. The number of vines in each row is 69. The number of vines in an acre is 2722.
- Double standard vines, spaced 2' apart are trained as horizontal cordons in opposite directions at the same level. The cordons of alternate plants are tied overlapping each other on wires at a height of 4½' and 6½' respectively. The length of cordons of each vine is 8' i.e. 4' and 4' in opposite directions. The number of vines in each tract is 69. The number of vines per acre is 2722.
- Single standard vines spaced 1½' apart are trained as single horizontal cordons. The cordons of every three successive plants are tied single on wires at 4½', 5½' and 6½' respectively. The length of cordon of each vine is 1½'. The number of vines per treatment is 92. The number of vines per acre is 3630.
- Twin vines planted at one hill and spaced 3' apart are trained as single horizontal cordons in opposite directions at the same level. The cordon of alternate plants are tied overlapping each other on vines at height of 4½', and 6½' respectively. The length of cordon of each vine is 6 ft. The number of vines per treatment is 90. The number of vines per acre is 3630.
- Single standard vines spaced 3' apart are trained as two arms kniffin system. The two arms of cordons given out by the same trunk are tied in opposite directions. The arms of the alternate plants are tied 4½' and 6½' respectively. The arms of one plant will overlap those of its alternate neighbour on the same level. Each vine has cordon length of 12' (6' in opposite directions). The number of vines per treatment is 46. The number of vine per acre is 1815.
- Single standard vine spaced 4' apart are trained as single horizontal cordons. The cordons of every three successive vines are trained singly on wires at 4½', 5½' and 6½' respectively. The length of cordon of each vine is 12'. The number of vine in the treatment is 35. The number of vine per acre is 1361.

## 3. DESIGN :

(i) R.B.D. (ii) (a) 6. (b) N.A. (iii) 4. (iv) The number of vines in each treatment differ and the same is given in the description of the treatment. (v) One guard row. (vi) Yes.

## 4. GENERAL :

(i) Normal. (ii) No. of bordeaux mixture sprays in rainy season and sulphur dusting in winter. (iii) The weight of the pruned material in October, weight of bunches, number of bunches. Weight of bunches is per vine. (iv) (a) 1949—continued. (b) N.A. (v) N.A. (vi) and (vii) A missing plot for treatment 1 and replication 1.

**5. RESULT**

(i) 5534 lb./ac.

(ii) 1203 lb./ac.

(iii) Treatments do not differ significantly.

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

Treatment	Av. yield
1.	5174
2.	5964
3.	5027
4.	6533
5.	5171
6.	5332

S.E. of mean of treatments 2 to 6

= 601.5 lb./ac.

S.E. of difference of treatment 1 and any other treatment mean

= 931.7 lb./ac.



## ADDENDUM

### STATEMENT SHOWING DETAILED SOIL TYPES OF MAHARASHTRA STATE

According to a soil survey of the sugarcane areas under six major Deccan canals, the soils in Maharashtra State have been grouped into twelve distinct soil types chronologically named from 'A' to 'L'. The classification is briefly summarised below.

#### GROUP—I

**Soils developed under restricted drainage :**

These soils are characterised by the presence of high soluble salts in the profiles increasing with depth and finally attain low value. This distribution of salts gives a close type curve. The soils often show high degree of sodium saturation. The soil types under this group are B, C, I and K.

#### GROUP—II

**The soils developed under free drainage :**

The soils of this group show considerable variation in the soil colour and free lime content. Primarily they are divided according to free lime content.

(i) Low lime content—free lime, less than 2%—F and H type (ii) Moderate lime content—2 to 5% A, E and G types and (iii) High lime content above 10%—D, J and L types.

Further classification depends on CaO/MgO ratio and other morphological features.

Toposequence of these types can be briefly given as below :

1. High level shallow soils—F, G and H types.
2. Intermediate soils—A, D, E, K and L types.
3. Low level deep soils—B, C, I and J types.

Toposequence chart is given at the end for reference.

**Detailed characteristics of soil types are given below :**

*Soil type 'A' :*

(a) *Morphological characters :*

'A' type has two horizons of uniform black colour with a tinge of red, the upper 12 inches or so having a well defined crumb structure and interspersed with roots and the lower horizon with a faintly crystal like structure. The depth of the soil is about 2' to 4' resting on murum of the medium hardness, impregnated with lime.

(b) *Physico-chemical characters :*

This type has moderately high clay content over the whole profile which is also usually characterised by an alluviation in the lower horizon. The soil is well supplied with calcium carbonate which shows a tendency of leaching, soil reaction is fairly high (pH 8.6 to 8.8) in the profile, showing a high base status throughout. Humus content is high throughout the profile (above 1 percent). The soil is highly colloidal over the whole profile, the total base saturation capacity varying from 77-81 m.c. base percent, which explains the well developed structure of the soil. Exchangeable magnesium and sodium are comparatively much lower and the CaO/MgO ratio, which is found to be a good index for characterising the Deccan soils, is usually greater than 10 in the surface

horizon in these soils. From the chemical properties, this type can be said to be very suitable for sugarcane cultivation.

*Soil type 'B' :*

*(a) Morphological characters :*

It is characterised by three horizons, the first horizon is about 20 m. thickness, greyish black in colour with a distinct brown shade, with more or less cloddy structure (clods breaking up easily into crumbs under pressure) the second horizon is mottled with black and brown increasing with depth, thickness 20" to 30", a pure reddish brown horizon follows which shows concretions of lime and often gypsum crystals. The soil depth is never less than  $3\frac{1}{2}'$  but may extend to a great depth.

*(b) Physico-chemical characters :*

'B' type has a high percentage of clay (56-62 percent) throughout the profiles which also shows alluviation in the lower horizon. There is an accumulation zone of soluble salts and gypsum in the lower horizon which renders it pervious and thus improves the natural drainage. Humus is fairly high in the surface layer (1 percent) but suffers a sharp fall in lower layers which is characteristic of this type ; calcium carbonate is quite abundant in the soil varying from 9 to 14 percent over the the profile. Soil reaction is high on the surface (pH 8.8) but the presence of salts helps to lower it down in the lower layer. A low base saturation in spite of its clayey nature is the peculiarity of the soil, the values varying from 43-64 m.e. percent of base in the different horizons. Exchangeable calcium is also typically low (26-45 m.e.) forming 45-73 percent of the total bases, the lowest values occurring specially in the upper layers. There is comparatively high exchangeable magnesium and sodium, the latter increasing down the profile, and the CaO/MgO ratio is about 3 or less.

The structure of this type is, therefore, inferior and the drainage would have been ordinarily bad but for the coagulating action of the soluble salts referred to above. The areas covered by this type are liable to have greater or smaller extents of the degraded phase of this type where the sodium saturation on the surface exceeds a certain limit thus rendering soil alkaline and unsuitable for cultivation. Such alkali soils are locally known as *chopan* which requires careful management for the cultivation of sugarcane.

*Soil type 'C' :*

*(a) Morphological characters :*

This is also one of the deeper types having two or three horizons which are not sharply differentiated. The greyish black surface horizon has hard and lumpy structure often coated with incrustation of salts but gets definitely stickier and more impervious with depth. Below this, there is occasionally a reddish brown material of silt or in the shallower phase (4 feet) a sandy material with heavy deposits of lime. Profuse black concretions of lime are present through out the profile.

*(b) Physico-chemical properties :*

'C' type also possesses fairly abundant proportion of clay in its mineral fraction, which again shows alluviation in the lower horizon. There is an appreciable proportion of silt in the profile (round about 30 percent), calcium carbonate is about 4 percent on the surface and tendency in this soil for high concentration of salts in the surface layer is indicated by a white powdery efflorescence.

This is due to the characteristic topography of this soil type, which is also generally responsible for the occurrence of a high sub-soil water table. Humus is fairly high but decreases gradually in lower layers, in contrast to 'B' type (varying from 1.5 at top to 1.0 percent below) soil reaction tends to be high throughout the profile (pH 8.5 to 9.00) unlike 'B' type the colloidal constituents appears to be high in this soil as evidenced by the high base saturation which varies from 6 to 73 m.e. percent in the profile.

But as in the 'B' type, exchangeable magnesium and sodium form considerable proportion, being 15-33 percent and 6-17 percent of total bases respectively. Exchangeable calcium, though higher than in 'B' type is proportionately low, varying from 46 m.e. on the surface to 35 m.e. in the lower most layer forming 63 and 50 percent of the total bases respectively. CaO/MgO ratio is lower than 3, the high proportion of exchangeable magnesium and sodium thus tending to impart an inferior cloddy structure to the soil. This type has the further disadvantage compared to the 'B' type having a less pervious second horizon (there being no coagulation constituents and sodium saturation being high) and this soil requires very great care and skillful management for successful cane cultivation. A varying extent of degradation is also found in areas of this type.

*Soil type 'D' :*

(a) *Morphological characters :*

'D' type has a single horizon possessing a dark grey colour with brown shade, fairly loose and granular with faint structure [appearing in lower depths which attains distinct lamination in the lowest layer. Intervening between the soil and murum below, is a lime band of dirty white colour and of varying thickness. The depth of the soil layer varies from 2' to 4'.

(b) *Physico-chemical characters :*

The 'D' type has a uniformly high clay content throughout the profile (varying from 55 to 58%) high calcium carbonate content and high pH (8.8 to 9.0) increasing in lower layers are typical of this soil in spite of its medium depth, though the total soluble salts are fairly low. The Humus contents are fairly high (above 1% throughout), the total base saturation capacity is uniformly high throughout the profile (63 to 66 m.e.) but there is considerable variation in the amounts of different bases in the different layers.

Thus, while exchangeable calcium (which starts from 52.5 m.e. or 80% of the total bases decreases progressively both exchangeable magnesium and sodium (which are 8.8 and 1.34 m.e. or 14 and 2 percent of total bases, respectively) increase in the lower layers. The resultant effect is the inferior structure and drainage condition of lower layers. The presence of the lime band which hinders the free movement of the products of weathering is particularly responsible for the high base saturation of this soil, particularly with magnesium and sodium in the lower layers and also for the presence of  $\text{Na}_2\text{CO}_3$  in lower layers. In spite of its moderate depth, therefore, careful management of this soil type is necessary under cane cultivation as deterioration may otherwise result.

*Soil type 'E' :*

(a) *Morphological characters :*

It has an upper loose and friable horizon of about 12" depth and of dull greyish black colour, loamy texture, followed by markedly compact second horizon having a slightly darker colour and laminated structure. Clay loam depth of soil is about 2½ to 5 feet resting on murum, grey and yellow with glauconite.

(b) *Physico-chemical characters :*

A peculiar characteristic of the 'E' type is that although the percentage of clay is uniformly very high (60—62%) throughout the profile, there is loose and granular structure of the surface horizon followed by compact second horizon with lamination which is difficult to explain from its chemical properties. The faint zone of accumulation of soluble salts (which are otherwise fairly low, starting from 0.2% at the surface) and of calcium carbonate, which however is abundant varying from 7 to 9% may indicate certain amount of impedence exerted by second horizon. pH values and Humus are uniform; pH being round about 8.6 in all layers and Humus varying from 1.4 to 1.5%, the high base saturation capacity of the soil (74-80 m.e. base %) is well associated with the high clay content of this soil. Exchangeable magnesium is fairly high (7.8 mc. %) in

the profile which gives the soil a lower ratio (less than 10) than the 'A' type which may account for the inferior structure though exchangeable sodium is quite low (0.5 to 1 m.e. %). The chemical properties indicate high potential fertility of the soil although some care will be necessary in view of the compact second horizon while bringing those soils under perennial irrigation.

*Soil type 'F' :*

(a) *Morphological characters :*

'F' type is a shallow soil 12"-15" in depth, consisting of two well defined horizons the upper horizon (7"-8" thick) has a light brown colour, lighter texture, loose and granular structure with broken pieces of murum. The lower horizon is darker in colour and distinctly compact. This lower horizon is of variable thickness and in very shallow phase may often be entirely absent. The murum is hard with only a faint in crustation of lime.

(b) *Physico-chemical characters :*

Considering the comparatively shallow depth of the 'F' type there is a well defined alluviation of clay in the lower horizon, the values changing from 46 to 56 percent, which tallies with the field observation of the profile. Calcium carbonate is low, starting from about 1 percent in the surface layer but increases gradually to about 5%. Soluble salts are moderately high (round about 0.4%) considering the shallow nature of the soil, pH values are comparatively low and uniform (round about 8.1). The alluviation of clay in the profile corresponds to the increasing base saturation capacity of the soil which starts from about 60 m.e. base percent and reaches 76 m.e. percent lower down; the exchangeable calcium saturation from 56 to 64 m.e. percent, forming a very high proportion of the total bases, 94% at top changing to 86 percent at bottom. The other bases are thus proportionately low and do not vary much and the compact nature of the second horizon can be attributed more to its higher clay contents than to the base status of the colloidal complex. The presence of a compact horizon in this shallow soil is a favourable factor for cane growing as it improves its retentivity for water and manure.

*Soil type 'G' :*

(a) *Morphological characters :*

'G' type is a uniform dark brown colour throughout but the upper horizon has a crumb structure which yields small grains under pressure while the lower horizon shows slight lamination with white concretion of lime and particles of well. Weathered murum is in the lower most parts. The murum below is fairly weathered and coated with lime. The soil depth is from 1-3 feet.

(b) *Physico-chemical characters :*

The 'G' type is characterised by a fairly uniform mechanical composition over the entire profile, the clay varying from 52 percent on the surface to 56 percent in the lower horizon. Calcium carbonate contents are moderate (about 4% at the top) showing a gentic leaching towards lower layers. Soil reaction which starts with about 8.3 on surface, shows a slight tendency to decrease lower down. Humus is moderate and fairly uniform in the profile. The total base saturation, capacity varies from 67 to 73 m.e. percent and exchangeable calcium from 55 to 57 m.e. percent over the profile. The percentage saturation of calcium thus varies from 76 to 82. This type is characterised by fairly high contents of exchangeable magnesium, the quantities varying from the surface of the bottom layer (12 to 16 percent saturation of total bases). The low CaO/MgO ratio indicates a general inferior drainage condition of the soil. Exchangeable sodium, however is fairly low over the entire profile on the whole and it is a moderately good soil for cane growing, although, because of its low CaO/MgO ratio, the structure is likely to be rather impaired under heavy irrigation.

A brief summary of soil types in Maharashtra State :

- A Intermediate, medium deep black clay loam with reddish tinge-moderate lime 2 to 5%-developed under free drainage.
- B Low lying, high lime deep brown black clay loam, often showing high degree of sodium saturation-developed under restricted drainage.

# MODE OF SOIL FORMATION

	GROUP I HIGH LEVEL SHALLOW SOILS - DO NOT SHOW A ZONE OF ACCUMULATION OF SOLUBLE SALTS.			GROUP II LOW LEVEL SHALLOW SOILS - WITHOUT AN ACCUMULATION ZONE OF SALTS BUT GET THE LEACHINGS FROM HIGH LEVEL SOILS				GROUP III DEEP SOILS - LOWLYING : INCREASING SALT CONTENT OR ACCUMULATION ZONE OF SALTS.				
	G	H	F	E	A	D	K	L	C	I	B	J
TOPOGRAPHY :—	FLAT	GENTLY SLOPING	SHARPLY SLOPING	SLOPING	GENTLY SLOPING	UNDULATING	SLOPING	SHARPLY SLOPING	SHARPLY SLOPING	MODERATELY SLOPING	GENTLY SLOPING TO FLAT.	GENTLY SLOPING TO FLAT.
DRAINAGE OF SUBSTRATUM :—	FAIR	VERY GOOD	FAIR	INFERIOR	GOOD	GOOD	FAIR	INFERIOR	BAD	GOOD	GOOD	GOOD
SUB-SOIL WATER TABLE :—	DEEP	DEEP	DEEP	DEEP	FAIRLY NEAR	FAIRLY NEAR	DEEP	NEAR	VERY NEAR	FAIRLY NEAR	NEAR	NEAR
COLOUR :—	DARK BROWN	REDDISH BROWN	LIGHT BROWN	GREYISH BLACK	BLACK WITH REDDISH TINGE	DARK BROWN-ISH GREY	DEEP BLACK	DEEP GREYISH BLACK	GREYISH BLACK	GREYISH BLACK	BROWNISH BLACK	GREYISH BLACK
STRUCTURE :—	GRANULAR TO SMALL CRUMB	GRANULAR	GRANULAR	CRUMB	CRUMB	CRUMB	CLODDY	HARD CLODDY	HARD LUMPY	NUTTY	MEDIUM CLODS	MEDIUM CLODS
CLAY % :—	52.0	47.0	46.0	60.0	49.0	55.0	44.0	50.0	50.0	50.0	56.0	50.0
CaCO <sub>3</sub> % :—	4.0	0.6	1.0	7.0	8.3	9.4	7.0	10.0	4.0	9.3	9.0	8.0
pH VALUE :—	8.3	8.3	8.1	8.6	8.5	8.8	8.5	8.4	8.5	8.7	8.8	8.6
EX. CALCIUM :—	55.0	54.0	57.0	69.0	69.0	53.0	39.0	45.0	46.0	38.0	26.0	35.0
EX. Ca/Mg :—	< 10	> 10	> 10	< 10	> 10	< 3	-	-	< 3	-	< 3	-

- C Low lying, deep black, clay soils or compact clays often showing high degree of sodium saturation developed under restricted drainage
- D Intermediate dark brown, calcareous clay loams. High lime content above 10%-developed under free drainage.
- E Intermediate greyish black clays. Lime content moderate 2 to 5%-developed under free drainage.
- F High level, low lime shallow, brown loams-developed under free drainage-free lime less than 2%.
- G High level, moderate lime dark brown shallow clay loam. Lime content 2 to 5%-developed under free drainage
- H High level, low lime developed under free drainage, free lime less than 2%.
- I Low lying, often shows high degree of sodium saturation, developed under restricted drainage.
- J Calcareous clay loams—high lime content above 10%-developed under free drainage.
- K Intermediate soils, often showing high degree of sodium saturation developed under restricted drainage.
- L Intermediate soils, high lime content about 10%-developed under free drainage.

Statement showing details of Physico-Chemical properties of soils of some of the Research Stations/farms in Maharashtra State.

I. Government Experimental Farm, Akola.

<i>Mechanical analysis</i>		<i>Chemical analysis</i>	
1. Clay %	49.25	1. Moisture %	7.20 to 10.45
2. Silt %	24.75	2. Nitrogen %	0.036 to 0.05
3. Fine Sand %	14.92	3. Avl. P <sub>2</sub> O <sub>5</sub> %	4.00 to 6.50
4. Coarse Sand %	2.12	4. Avl. K <sub>2</sub> O %	4.50 to 15.00
5. Lime nodules %	5.20	5. pH value	7.9 to 8.3
6. Moisture %	3.76		

II. Agricultural Research Station Igatpuri.

<i>Soil analysis (expressed as percent on dry fine matter)</i>			
1. Moisture	4.75	4. Avl. K <sub>2</sub> O (mgm.)	7.23
2. Nitrogen	0.08	5. Total soluble salts	0.01
3. Avl. P <sub>2</sub> O <sub>5</sub> (mgm.)	3.48	6. pH. value	7.0

III. Agricultural Research Station, Jeur.

<i>Mechanical analysis.</i>			
1. Gravel percent	Nil.	8. Total soluble salts %	0.2 to 0.3
2. Coarse sand %	2 to 5	9. Exchangeable Ca (m.e.) %	55 to 65
3. Fine sand %	3 to 10	10. Exchangeable Mg. (m.e.) %	7 to 15
4. Silt %	10 to 16	11. Exchangeable Na. (m.e.) %	0.5 to 3.5
5. Clay %	55 to 65	12. Avl. P <sub>2</sub> O <sub>5</sub> mgm. %	9 to 13
6. Free lime %	10 to 14	13. Avl. K <sub>2</sub> O mgm. %	20 to 55
7. Organic Carbon %	0.6 to 0.9	14. Total nitrogen %	0.03 to 0.05

IV. Government Fruit Experimental Station, Poona

	<i>Soil analysis (% on original fine sample)</i>		
	A	B	C
1. Total soluble salts	0.32	0.32	0.32
2. Carbonate (CO <sub>3</sub> )	Nil	Nil	Nil
3. Bi-Carbonates (HCO <sub>3</sub> )	0.072	0.070	0.070
4. Chlorides Cl <sub>2</sub>	0.064	0.057	0.064
5. Sulphates (SO <sub>4</sub> )	0.082	0.099	0.082
6. Calcium (Ca)	0.016	0.014	0.017
7. Magnesium (Mg)	0.011	0.008	0.007
8. pH. value	7.7	7.5	7.9
9. Total Nitrogen	0.13	0.08	0.18
10. Avl. Phosphate P <sub>2</sub> O <sub>5</sub> (mgm)	18.00	17.59	16.12

Statement giving Chemical & Mechanical analysis of soil samples at Agricultural Research Stn., Achalpur

Field No.	Area	Total soluble salts	Lime	Organic matter	pH	Available P <sub>2</sub> O <sub>5</sub>	Available K <sub>2</sub> O	Silt	Clay	Coarse Sand
1.	23.3	0.182	5.74	—	7.7	12.84	0.0198	26.0	39.0	8.34
2.	33.1	0.104	6.72	—	7.9	7.42	0.016	31.0	43.5	11.09
3.	30.6	0.172	4.73	—	7.4	10.88	0.208	15.5	48.0	22.52
4.	35.0	0.13	5.00	—	7.8	10.90	0.014	23.5	33.0	20.98
5.	9.8	0.42	6.78	0.4608	7.7	33.40	0.232	19.8	41.0	5.86
6a.	24.0	0.15	5.04	0.8233	7.0	37.20	0.870	16.5	54.5	4.83
6b.	16.0	0.13	4.64	0.9296	7.7	42.06	0.218	9.5	49.5	8.22
7a.	32.0	0.28	3.57	—	7.5	10.50	0.0166	17.5	31.4	10.64
7b.	24.0	0.15	4.60	1.3524	7.7	15.90	0.202	33.6	23.5	7.84
8.	23.2	0.24	5.14	1.4447	7.7	23.88	0.200	15.0	33.0	16.98

Statement giving Chemical and Mechanical Analysis of Agricultural Farms at Vadegaon, Ganeshkhind, Padegaon, Igatpuri, Phondaghat, Dhulia and Sindewahi

Name of Farm	Vadegaon	Ganeshkhind		Padegaon		Igatpuri		Phondaghat	Dhulia		Sindewahi
1	2	3	4	5	6	7	8				
Lab. No.	179 62-63	323 42	324 43	379 31	388 32	1458 59-60	1459 59-60	375 60-61	265 29	269 30	239
Description	Experimental site	0-5"	5"-12"			Up land	Low land				
Percent on air dry fine matter						Paddy soil					
Moisture	7.10	—	—	7.45	5.50	4.75	4.57	2.40	6.30	5.74	—
Total Nitrogen	0.08	0.059	0.047	0.054	0.045	0.086	0.080	0.082	0.059	0.06	—
Av. Phosphate (P <sub>2</sub> O <sub>5</sub> ) in mgm.	4.49	0.19	0.05	—	—	5.49	3.48	5.59	0.18	0.056	—
Av. Potash (K <sub>2</sub> O) in mgm.	—	0.19	0.16	—	—	7.83	7.23	13.25	0.33	0.52	—

	1	2	3	4	5	6	7	8		
T.S.S.%	—	0.068	0.10	—	—	0.095	0.010	—	—	0.19
pH. Value	6.6	8.2	7.8	—	—	6.7	7.0	6.3	—	6.1
Percent on air dry matter										
Calcium as CaCO <sub>3</sub>	1.50	—	—	—	—	—	—	—	—	—
Lime (CaO)	—	—	—	3.07	6.28	—	—	0.31	3.89	3.30
Gravel	—	—	—	—	—	—	—	12.50	—	—
Stone	—	—	—	6.00	20.00	—	—	—	4.00	3.79
Coarse Sand	—	—	—	—	—	—	—	39.20	—	—
Fine Sand	—	—	—	—	—	—	—	32.08	—	—
Silt	—	—	—	—	—	—	—	10.00	—	21.25
Clay	—	—	—	—	—	—	—	10.00	—	31.25
Organic matter	—	—	—	10.69	12.45	—	—	4.40	—	—
Organic carbon	—	1.04	0.98	—	—	—	—	—	—	—
Other carbonates	—	0.025	0.028	—	—	—	—	—	—	—
Chlorine (NaCl)	—	0.018	0.012	—	—	—	—	—	—	—
Base Exch. capacity (milli. equivalents)	—	67.80	71.61	—	—	—	—	—	—	—
Exch. Calcium ( " " )	—	61.53	65.26	—	—	—	—	—	—	—
Exch. Sodium ( " " )	—	0.55	0.39	—	—	—	—	—	—	—
Exch. Magnesium ( " " )	—	2.30	2.21	—	—	—	—	—	—	—
Exch. Potassium ( " " )	—	1.84	2.21	—	—	—	—	—	—	—
C : N Ratio	—	17	21	—	—	—	—	—	—	—



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