

**1948 FIELD RESULTS  
WITH CERTAIN  
RADIOACTIVE MATERIALS  
AS  
PLANT STIMULANTS**

**A PROGRESS REPORT OF  
UNITED STATES DEPARTMENT OF AGRICULTURE  
Agricultural Research Administration  
Bureau of Plant Industry, Soils, and Agricultural Engineering**

**IN COOPERATION WITH**

**ARKANSAS AGRICULTURAL EXPERIMENT STATION  
CORNELL UNIVERSITY AGRICULTURAL EXPERIMENT STATION  
AGRICULTURAL EXPERIMENT STATION  
AGRICULTURAL EXPERIMENT STATION  
AGRICULTURAL EXPERIMENT STATION  
IPPI AGRICULTURAL EXPERIMENT STATION  
AGRICULTURAL EXPERIMENT STATION**

**NORTH CAROLINA AGRICULTURAL EXPERIMENT STATION  
OHIO AGRICULTURAL EXPERIMENT STATION  
NEW YORK (GENEVA) AGRICULTURAL EXPERIMENT STATION  
UNIVERSITY OF GEORGIA, COLLEGE OF AGRICULTURE  
WASHINGTON AGRICULTURAL EXPERIMENT STATION  
WEST VIRGINIA AGRICULTURAL EXPERIMENT STATION**

**Under Contract From**

**THE UNITED STATES ATOMIC ENERGY COMMISSION**

**Washington, D. C.**

**May 1949**

## Contents

|  | Page |
|--|------|
| PROGRESS REPORT 1948 . . . . .               | 1    |
| Materials Used . . . . .                     | 1    |
| Experimental Design . . . . .                | 2    |
| Method of Application of Materials . . . . . | 3    |
| Results . . . . .                            | 3    |
| Crop Data . . . . .                          | 3    |
| Corn . . . . .                               | 4    |
| Wheat . . . . .                              | 7    |
| Barley . . . . .                             | 10   |
| Oats . . . . .                               | 11   |
| Soybeans . . . . .                           | 12   |
| Beans . . . . .                              | 14   |
| Sugar beets . . . . .                        | 16   |
| Table beets . . . . .                        | 18   |
| Turnips . . . . .                            | 19   |
| Carrots . . . . .                            | 21   |
| Potatoes . . . . .                           | 22   |
| Sweetpotatoes . . . . .                      | 25   |
| Spinach . . . . .                            | 28   |
| Tomatoes . . . . .                           | 30   |
| Cotton . . . . .                             | 38   |
| Tobacco . . . . .                            | 40   |
| Peanuts . . . . .                            | 41   |

## PROGRESS REPORT 1948

Since the discovery of radioactivity, claims have been made that plant growth is stimulated by radioactive substances. Many experiments have been conducted in this country and in Europe to measure the effects. Because the experiments have not been conducted under carefully controlled conditions with adequate replication, the results have been conflicting and inconclusive. In some experiments beneficial effects have been shown; in others no effects were observed, while in still others harmful effects were noted.

Following the development and use of the atomic bomb, interest in this matter has greatly increased. This interest was due in part at least to the reports from Japan that indicated greatly enhanced crop yields in the vicinity of the bombed areas due to radioactivity. In spite of the refutation of these claims by well-qualified scientists, interest in the use of radioactive materials to improve crop yields and quality has continued to mount. The present project was undertaken by the United States Department of Agriculture and a number of State experiment stations, under a contract from the Atomic Energy Commission, with the objective of determining whether radioactive material does indeed stimulate plant growth. One of the first aims was to ascertain whether the farmer or gardener could expect to get an increased crop yield by adding one of several naturally radioactive materials that either have been used in scientific experiments or that have been advocated by commercial interests.

This report gives the results of the field tests that were conducted during the 1948 crop season. Although these experiments cover only one

season, the range of soil types and climatic conditions covered make the experimental results rather reliable with respect to the materials tested and the method of application used.

### MATERIALS USED

Three radioactive materials were used in the field experiments. The commercial material Alphanon<sup>1</sup> was used at the rates of 5, 10, and 20 pounds per acre. This material is said by the manufacturer to have an alpha ray disintegration rate of 8 million per pound per second, largely from actinium. Dolomitic limestone is the carrier material and constitutes more than 99 percent of its weight. The second material that was used is radium. Dolomitic limestone was the carrier for this material also. As used, it contained 30 micrograms of radium per pound. The radium source was radium bromide. The third material used was uranyl nitrate. Radium and uranium were used in the experiments because of the fact that most of the results reported by previous workers were obtained with these elements. Since the radium and Alphanon materials are principally dolomite, this material was used on all check plots in an amount corresponding to the amount applied in the treatment getting the largest amount of Alphanon. By diluting other Alphanon, uranium, and radium treatments with dolomite all plots were brought to the same application of dolomite. The dolomite used on the checks was same lot as that used in the preparation of the Alphanon and radium materials.

<sup>1</sup> The Alphanon, radium, and dolomite materials used in these experiments, was furnished by the Canadian Radium and Uranium Corporation of New York. The promptness with which they made and shipped us these materials contributed very materially to the program.

## EXPERIMENTAL DESIGN<sup>2</sup>

One of the blocks of the experimental design used for all of the field experiments is given below.

|                |                |                |                |
|----------------|----------------|----------------|----------------|
| ck             | U <sub>2</sub> | ck             | R <sub>2</sub> |
| A <sub>2</sub> | ck             | A <sub>1</sub> | A <sub>4</sub> |

| Symbol         | Material       | Rate used per acre |
|----------------|----------------|--------------------|
| A <sub>1</sub> | Alphatron      | 5 pounds           |
| A <sub>2</sub> | do             | 10 pounds          |
| A <sub>4</sub> | do             | 20 pounds          |
| R <sub>2</sub> | Radium         | 300 micrograms     |
| U <sub>2</sub> | Uranyl nitrate | 13.4 pounds        |

The amounts of radium and uranium used in this experiment are calculated to give the same number of alpha-particle disintegrations per unit of experimental area as is given by the 10-pound rate of Alphatron.

The quarter blocks are randomized within the blocks and the pairs within the quarter blocks.

The tabulated data for each experiment include the pertinent information regarding it. It is to be noted that the least significant differences for

comparing A<sub>2</sub>, R<sub>2</sub>, and uranium are in general less than for comparing A<sub>1</sub> and A<sub>4</sub> with the average of the checks. The reason for this is evident from the experimental design. As an example, the complete calculations involved in the analysis of variance of the corn experiment at Illinois are given below.

CORN - URBANA, ILL.  
(Bushels per acre)

$$C = \frac{(10690.7)^2}{80} = 1,428,638.33$$

| Total:               | Whole plots:         | Replications:        |
|----------------------|----------------------|----------------------|
| 1,437,309.09         | 1,433,888.70         | 1,430,530.71         |
| <u>-1,428,638.33</u> | <u>-1,428,638.33</u> | <u>-1,428,638.33</u> |
| 8,670.76             | 5,250.37             | 1,892.38             |

Treatment pairs:

|                      |                      |
|----------------------|----------------------|
| 1,428,925.74         | Error (a) = 3,070.58 |
| <u>-1,428,638.33</u> |                      |
| 287.41               |                      |

Subplots:                      Treatment in pairs:                      Error (b) = 3,239.19

|                  |                      |
|------------------|----------------------|
| 8,670.76         | 1,429,106.94         |
| <u>-5,250.37</u> | <u>-1,428,638.33</u> |
| 3,420.39         | 468.61               |
|                  | <u>-287.41</u>       |
|                  | 181.20               |

<sup>2</sup> The experimental design and analyses of variance were handled through arrangements with the North Carolina Institute of Statistics, North Carolina State College, Raleigh.

## ANALYSIS OF VARIANCE

|                              | Degrees of<br>freedom | Sum of<br>squares | Mean<br>squares |
|------------------------------|-----------------------|-------------------|-----------------|
| Whole plots . . . . .        | 39                    | 5,250.37          | ----            |
| Replications . . . . .       | 9                     | 1,892.38          | 210.26          |
| Treatment pairs . . . . .    | 3                     | 287.41            | 95.80           |
| Error ( <u>a</u> ) . . . . . | 27                    | 3,070.58          | 113.72          |
| Subplots . . . . .           | 40                    | 3,420.39          | ----            |
| Treatment in pairs . . . . . | 4                     | 181.20            | 45.30           |
| Error ( <u>b</u> ) . . . . . | 36                    | 3,239.19          | 89.98           |
| <br>Total . . . . .          | <br>79                | <br>8,670.76      | <br>----        |

$$\sqrt{1/15 (E_a + E_b)} = \sqrt{13.58} = 3.69 \times \begin{matrix} (.05) 2.042 = 7.53 \\ (.01) 2.750 = 10.15 \end{matrix}$$

$$\sqrt{1/30 (E_a + 3E_b)} = \sqrt{12.79} = 3.58 \times \begin{matrix} (.05) 2.042 = 7.31 \\ (.01) 2.750 = 9.84 \end{matrix}$$

### METHOD OF APPLICATION OF MATERIALS

All radioactive materials were applied broadcast to the soil and then worked into ground by disking prior to seeding of the crop.

### RESULTS

No comment will be made with regard to the individual experiments. The general conclusion to be drawn from the data is that no effect of the radioactive materials was found, either beneficial or harmful. There are a few cases of differences that reach the 5-percent level of significance, but they are no more than would be expected from normal distributions. Further field work, greenhouse tests, and germination trials are being conducted

and will be reported when completed. It seemed desirable, however, to make public the results of this year's experiment at this time.

### CROP DATA

Data from field experiments with radioactive materials as plant stimulants carried on by the Bureau of Plant Industry, Soils, and Agricultural Engineering in cooperation with the State agricultural experiment stations of Arkansas, Illinois, Kentucky, Michigan, Mississippi, Montana, North Carolina, Ohio, New York, Washington, West Virginia, and the College of Agriculture, University of Georgia, are given in the following tabulations.

# CORN

Corn -- Urbana, Champaign County, Ill.

Cooperating agency ..... Illinois Agricultural Experiment Station

Cooperators  
conducting experiment .. F. C. Bauer, A. L. Lang, and L. B. Miller

Soil type ..... Flanagan silt loam

Plot size ..... 13'4" x 40'

Harvest area ..... 6'8" x 26'8"

Planting date ..... May 18, 1948

Harvest dates ..... October 19, 21, 1948

Variety ..... DeKalb Hybrid 847

Fertilizer ..... Limestone, rock phosphate, potash,  
sweetclover green manure crop  
plowed down preceding corn crop;  
previous crop, oats.

## YIELD IN BUSHELS PER ACRE

| Replication<br>No. | Treatments     |                  |                |                  |                |                  |                |                |
|--------------------|----------------|------------------|----------------|------------------|----------------|------------------|----------------|----------------|
|                    | A <sub>2</sub> | CkA <sub>2</sub> | R <sub>2</sub> | CkR <sub>2</sub> | U <sub>2</sub> | CkU <sub>2</sub> | A <sub>4</sub> | A <sub>1</sub> |
| 1                  | 120.1          | 117.3            | 126.1          | 133.6            | 137.3          | 133.2            | 135.9          | 138.2          |
| 2                  | 135.7          | 129.5            | 139.4          | 143.7            | 116.7          | 134.7            | 146.0          | 139.0          |
| 3                  | 136.2          | 119.1            | 130.9          | 135.9            | 156.7          | 124.8            | 141.1          | 140.1          |
| 4                  | 121.9          | 122.7            | 116.0          | 114.6            | 154.9          | 127.8            | 114.0          | 134.5          |
| 5                  | 131.6          | 116.0            | 129.6          | 142.8            | 118.9          | 132.9            | 147.2          | 133.8          |
| 6                  | 109.6          | 114.0            | 145.2          | 121.3            | 129.4          | 116.5            | 138.5          | 129.1          |
| 7                  | 150.1          | 144.4            | 129.0          | 135.8            | 120.3          | 151.8            | 130.0          | 137.7          |
| 8                  | 143.7          | 141.8            | 137.3          | 135.0            | 150.6          | 136.9            | 144.0          | 132.3          |
| 9                  | 149.1          | 137.9            | 134.6          | 140.7            | 126.1          | 142.9            | 130.3          | 129.9          |
| 10                 | 135.4          | 138.2            | 140.8          | 134.5            | 139.0          | 142.4            | 144.6          | 129.6          |
| Mean yield         | 133.3          | 128.1            | 132.9          | 133.8            | 135.0          | 134.4            | 137.2          | 134.4          |

Average for 3 checks is 132.1.

Least significant difference at 5-percent level for comparing treatments A<sub>2</sub>, R<sub>2</sub>, or U<sub>2</sub> with average of 3 checks is 7.31.

## ANALYSIS OF VARIANCE

| Variants           | Degrees of<br>freedom | Mean squares |
|--------------------|-----------------------|--------------|
| Replications       | 9                     | 210.26       |
| Treatment pairs    | 3                     | 95.80        |
| Error (a)          | 27                    | 113.72       |
| Treatment in pairs | 4                     | 45.30        |
| Error (b)          | 36                    | 89.98        |

Least significant difference at 5-percent level for comparing treatments A<sub>1</sub> or A<sub>4</sub> with average of 3 checks is 7.53.

Corn-- Lakin, Mason County, W. Va.

Cooperating agency ... West Virginia Agricultural Experiment Station  
 Cooperators conducting experiment ..... D. R. Browning, Lakin, and G. G. Pohlman, Morgantown  
 Soil type ..... Wheeling gravelly loam  
 Plot size ..... 20' x 24.5'  
 Harvest area ..... 13.3' x 17.5'  
 Planting date ..... May 12, 1948  
 Harvest date ..... October 2, 1948  
 Variety ..... U.S. 13  
 Fertilizer ..... 1,000 lb. per acre of 10-10-10

YIELD OF GRAIN, POUNDS PER PLOT

| Replication No.          | Treatments     |                  |                |                  |                |                  |                |                |
|--------------------------|----------------|------------------|----------------|------------------|----------------|------------------|----------------|----------------|
|                          | A <sub>2</sub> | CkA <sub>2</sub> | R <sub>2</sub> | CkR <sub>2</sub> | U <sub>2</sub> | CkU <sub>2</sub> | A <sub>4</sub> | A <sub>1</sub> |
| 1                        | 32.6           | 26.6             | 31.2           | 29.6             | 27.1           | 24.1             | 28.4           | 26.2           |
| 2                        | 22.2           | 26.3             | 24.0           | 25.1             | 21.7           | 23.6             | 25.3           | 21.9           |
| 3                        | 30.1           | 28.5             | 26.2           | 26.2             | 23.3           | 17.3             | 28.4           | 23.1           |
| 4                        | 23.6           | 25.3             | 26.0           | 24.0             | 22.6           | 25.9             | 29.6           | 27.3           |
| 5                        | 27.3           | 26.4             | 27.0           | 26.7             | 26.6           | 30.8             | 24.2           | 24.4           |
| 6                        | 17.1           | 28.2             | 28.2           | 27.8             | 21.4           | 22.4             | 29.5           | 23.5           |
| 7                        | 23.8           | 25.7             | 25.8           | 25.7             | 27.9           | 22.8             | 27.7           | 21.3           |
| 8                        | 28.4           | 20.6             | 28.9           | 21.7             | 22.7           | 25.1             | 20.2           | 22.0           |
| 9                        | 24.3           | 22.4             | 24.0           | 23.0             | 22.0           | 21.6             | 20.7           | 25.7           |
| 10                       | 21.5           | 26.6             | 26.6           | 24.4             | 22.6           | 22.0             | 26.1           | 25.6           |
| Mean yield--<br>Lb./plot | 25.09          | 25.66            | 26.79          | 25.44            | 23.79          | 23.56            | 26.01          | 24.10          |
| Bu./acre                 | 65.0           | 66.5             | 69.4           | 65.9             | 61.6           | 61.0             | 67.4           | 62.4           |

Average for 3 checks is 24.89 lb. per plot, or 64.5 bu. per acre.  
 Least significant difference at 5-percent level for comparing treatments A<sub>2</sub>, R<sub>2</sub>, or U<sub>2</sub> with average of 3 checks is 2.04 lb. per plot, or 5.3 bu. per acre.

Least significant difference at 5-percent level for comparing treatments A<sub>1</sub> or A<sub>4</sub> with average of 3 checks is 2.04 lb. per plot, or 5.3 bu. per acre.

Corn - Lakin, W. Va. (Con't.)

YIELD OF CORNSTALKS, POUNDS PER PLOT

| Replication No.          | Treatments     |                  |                |                  |                |                  |                |                |
|--------------------------|----------------|------------------|----------------|------------------|----------------|------------------|----------------|----------------|
|                          | A <sub>2</sub> | CkA <sub>2</sub> | R <sub>2</sub> | CkR <sub>2</sub> | U <sub>2</sub> | CkU <sub>2</sub> | A <sub>4</sub> | A <sub>1</sub> |
| 1                        | 20.4           | 16.4             | 15.8           | 20.4             | 12.9           | 15.9             | 13.6           | 16.8           |
| 2                        | 18.7           | 14.9             | 15.0           | 14.9             | 13.8           | 15.4             | 15.2           | 13.6           |
| 3                        | 18.1           | 15.4             | 15.8           | 16.3             | 14.2           | 10.7             | 15.9           | 17.8           |
| 4                        | 13.4           | 13.7             | 15.0           | 14.0             | 13.9           | 14.1             | 15.4           | 15.7           |
| 5                        | 15.7           | 13.6             | 12.0           | 10.3             | 14.9           | 15.2             | 13.3           | 15.6           |
| 6                        | 12.9           | 14.8             | 19.8           | 16.2             | 15.1           | 15.6             | 19.0           | 16.5           |
| 7                        | 16.2           | 18.3             | 18.2           | 18.3             | 14.1           | 12.2             | 17.8           | 14.7           |
| 8                        | 18.1           | 14.9             | 16.1           | 14.8             | 18.3           | 16.4             | 17.2           | 15.5           |
| 9                        | 18.2           | 16.6             | 13.0           | 15.0             | 15.0           | 14.9             | 11.8           | 15.3           |
| 10                       | 15.5           | 14.4             | 13.4           | 17.6             | 16.4           | 17.0             | 12.9           | 19.9           |
| Mean yield--<br>Lb./plot | 16.72          | 15.30            | 15.41          | 15.78            | 14.86          | 14.74            | 15.21          | 16.14          |
| Lb./acre                 | 3,122          | 2,856            | 2,877          | 2,946            | 2,774          | 2,752            | 2,840          | 3,013          |

Average of 3 checks is 15.27 lb. per plot, or 2,850 lb. per acre.  
 Least significant difference at 5-percent level for comparing treatments A<sub>2</sub>, R<sub>2</sub>, or U<sub>2</sub> with average of 3 checks is 1.42 lb. per plot, or 265 lb. per acre.

Least significant difference at 5-percent level for comparing treatments A<sub>1</sub> or A<sub>4</sub> with average of 3 checks is 1.53 lb. per plot, or 286 lb. per acre.

ANALYSIS OF VARIANCE

| Variants           | Degrees of freedom | Mean squares |            |
|--------------------|--------------------|--------------|------------|
|                    |                    | Grain        | Cornstalks |
| Replications       | 9                  | 19.01        | 6.66       |
| Treatment pairs    | 3                  | 20.73        | 5.26       |
| Error (a)          | 27                 | 7.08         | 5.34       |
| Treatment in pairs | 4                  | 7.38         | 3.79       |
| Error (b)          | 36                 | 7.62         | 3.18       |

Corn-- State College, Oktibbeha County, Miss.

Cooperating agency ... Mississippi Agricultural Experiment Station  
 Cooperators conducting experiment ..... U. S. Jones and C. D. Hoover  
 Soil type ..... Kauffman fine sandy loam  
 Plot size ..... 13.3' x 30'  
 Harvest area ..... 6.67' x 24' (160.08 sq. ft.)  
 Planting date ..... May 15, 1948  
 Harvest date ..... September 7, 1948  
 Variety ..... Laguna  
 Fertilizer ..... 1,000 lb. 6-8-8 at planting; 60 lb. of N from ammonium nitrate as a side-dressing

YIELD OF GRAIN, POUNDS PER PLOT

| Replication No.         | Treatments     |                  |                |                  |                |                  |                |                |
|-------------------------|----------------|------------------|----------------|------------------|----------------|------------------|----------------|----------------|
|                         | A <sub>2</sub> | CkA <sub>2</sub> | R <sub>2</sub> | CkR <sub>2</sub> | U <sub>2</sub> | CkU <sub>2</sub> | A <sub>4</sub> | A <sub>1</sub> |
| 1                       | 15.2           | 13.9             | 17.3           | 18.9             | 19.4           | 22.7             | 22.5           | 21.0           |
| 2                       | 19.6           | 21.2             | 19.6           | 19.6             | 17.7           | 23.7             | 14.8           | 15.0           |
| 3                       | 18.2           | 20.7             | 16.6           | 16.6             | 14.8           | 19.5             | 18.9           | 18.9           |
| 4                       | 18.5           | 17.6             | 15.9           | 20.4             | 16.7           | 14.0             | 17.6           | 22.5           |
| 5                       | 21.3           | 18.8             | 22.0           | 25.9             | 18.6           | 19.6             | 18.8           | 19.0           |
| 6                       | 15.0           | 16.9             | 15.6           | 16.8             | 15.9           | 15.4             | 18.1           | 17.0           |
| 7                       | 12.8           | 11.1             | 15.4           | 16.0             | 16.8           | 15.2             | 17.3           | 18.6           |
| 8                       | 16.6           | 17.8             | 14.0           | 12.6             | 16.5           | 18.1             | 13.0           | 13.8           |
| 9                       | 17.7           | 21.0             | 17.6           | 17.8             | 24.1           | 18.4             | 18.5           | 19.8           |
| 10                      | 19.7           | 21.3             | 18.5           | 15.3             | 24.1           | 23.6             | 20.2           | 26.7           |
| Mean yield-<br>Lb.-plot | 17.46          | 18.03            | 17.25          | 17.99            | 18.46          | 19.02            | 17.97          | 19.23          |
| Bu./acre                | 66.0           | 68.1             | 65.2           | 68.0             | 69.8           | 71.9             | 67.9           | 72.7           |

Average of 3 checks is 18.35 lb. per plot, or 69.3 bu. per acre.  
 Least significant difference at 5-percent level for comparing treatments A<sub>2</sub>, R<sub>2</sub>, or U<sub>2</sub> with average of 3 checks is 1.74 lb. per plot, or 6.6 bu. per acre.  
 Least significant difference at 5-percent level for comparing treatments A<sub>1</sub> or A<sub>4</sub> with average of 3 checks is 2.02 lb. per plot, or 7.6 bu. per acre.

Corn - State College, Miss.

YIELD OF CORNSTALKS, POUNDS PER PLOT

| Replication No.         | Treatments     |                  |                |                  |                |                  |                |                |
|-------------------------|----------------|------------------|----------------|------------------|----------------|------------------|----------------|----------------|
|                         | A <sub>2</sub> | CkA <sub>2</sub> | R <sub>2</sub> | CkR <sub>2</sub> | U <sub>2</sub> | CkU <sub>2</sub> | A <sub>4</sub> | A <sub>1</sub> |
| 1                       | 22.9           | 21.5             | 24.5           | 25.5             | 25.8           | 27.1             | 24.0           | 24.0           |
| 2                       | 26.7           | 30.7             | 26.0           | 28.4             | 24.5           | 31.5             | 24.0           | 21.9           |
| 3                       | 25.2           | 25.3             | 22.0           | 25.2             | 28.3           | 28.0             | 20.3           | 26.6           |
| 4                       | 25.5           | 24.2             | 23.5           | 25.8             | 23.8           | 24.5             | 21.8           | 24.9           |
| 5                       | 26.8           | 27.2             | 26.5           | 37.7             | 24.9           | 26.3             | 24.1           | 24.1           |
| 6                       | 21.7           | 21.8             | 22.0           | 21.8             | 19.0           | 17.5             | 23.7           | 21.0           |
| 7                       | 17.0           | 18.7             | 24.4           | 23.0             | 21.4           | 19.6             | 24.7           | 25.2           |
| 8                       | 22.4           | 24.3             | 17.1           | 19.8             | 20.0           | 22.9             | 18.8           | 18.0           |
| 9                       | 22.5           | 26.0             | 18.0           | 22.9             | 27.0           | 23.2             | 22.1           | 24.3           |
| 10                      | 24.3           | 23.6             | 25.0           | 21.3             | 33.5           | 28.4             | 24.4           | 30.0           |
| Mean yield-<br>lb./plot | 23.5           | 24.3             | 22.9           | 25.1             | 24.8           | 24.9             | 22.8           | 24.0           |
| Lb./acre                | 6,390          | 6,610            | 6,230          | 6,830            | 6,750          | 6,780            | 6,200          | 6,530          |

Average of 3 checks is 24.8 lb. per plot, or 6,740 lb. per acre.  
 Least significant difference at 5-percent level for comparing treatments A<sub>2</sub>, R<sub>2</sub>, or U<sub>2</sub> with average of 3 checks is 1.99 lb. per plot, or 541 lb. per acre.

Least significant difference at 5-percent level for comparing treatments A<sub>1</sub> or A<sub>4</sub> with average of 3 checks is 2.27 lb. per plot, or 620 lb. per acre.

ANALYSIS OF VARIANCE

| Variants            | Degrees of freedom | Mean squares |            |
|---------------------|--------------------|--------------|------------|
|                     |                    | Grain        | Cornstalks |
| Replications        | 9                  | 32.23        | 45.79      |
| Treatment pairs     | 3                  | 6.62         | 7.36       |
| Error (a)           | 27                 | 11.22        | 13.31      |
| Treatments in pairs | 4                  | 3.47         | 8.97       |
| Error (b)           | 36                 | 3.51         | 5.10       |



# WHEAT

Wheat -- Mandan, Morton County, N. Dak.

Cooperating agency ..... United States Northern Great Plains  
Field Station

Cooperators conducting  
experiment..... E. J. George, R. W. Carpenter, and  
H. J. Haas

Soil type ..... Cheyenne fine sandy loam

Plot size ..... 7' x 12'

Harvest area ..... 5' x 10'

Planting date ..... April 28, 1948

Harvest date ..... July 30, 1948

Variety ..... Pilot 13

Fertilizer ..... Nitraprills, with 33.5 percent  
nitrogen, at rate of 17.5 lb. N  
per acre applied June 22, 1948,  
3 days before first heading

Wheat - Mandan, N. Dak.

## YIELD IN POUNDS PER PLOT

| Replication<br>No.       | Treatments     |                  |                |                  |                |                  |                |                |
|--------------------------|----------------|------------------|----------------|------------------|----------------|------------------|----------------|----------------|
|                          | A <sub>2</sub> | CkA <sub>2</sub> | R <sub>2</sub> | CkR <sub>2</sub> | U <sub>2</sub> | CkU <sub>2</sub> | A <sub>4</sub> | A <sub>1</sub> |
| 1                        | 0.87           | 0.86             | 0.90           | 0.76             | 0.78           | 0.88             | 1.02           | 0.83           |
| 2                        | .82            | .85              | .86            | .93              | .84            | .74              | .97            | .94            |
| 3                        | .94            | .83              | .69            | .88              | .65            | .73              | 1.01           | .75            |
| 4                        | .69            | .65              | .95            | .76              | .71            | .84              | .70            | .76            |
| 5                        | .75            | .78              | .86            | .85              | .83            | .76              | .88            | .82            |
| 6                        | .87            | .96              | .91            | .92              | .95            | .98              | .95            | .72            |
| 7                        | .94            | 1.04             | .99            | .83              | 1.12           | .95              | .98            | .98            |
| 8                        | 1.05           | .99              | .85            | .75              | .83            | .84              | .80            | .80            |
| 9                        | .86            | .82              | .78            | .75              | .76            | .82              | .75            | .77            |
| 10                       | .81            | .67              | .75            | .74              | .64            | .77              | .83            | .74            |
| Mean yield--<br>Lb./plot | .86            | .84              | .85            | .82              | .81            | .83              | .89            | .81            |
| Bu./acre                 | 12.5           | 12.2             | 12.3           | 11.9             | 11.8           | 12.1             | 12.9           | 11.8           |

Average for 3 checks is 0.83 lb. per plot, or 12.1 bu. per acre.  
Least significant difference at 5-percent level for comparing  
treatments A<sub>2</sub>, R<sub>2</sub>, or U<sub>2</sub> with average of 3 checks is 0.059 lb. per  
plot or 0.9 bu. per acre.

Least significant difference at 5-percent level for comparing  
treatments A<sub>1</sub> or A<sub>4</sub> with average of 3 checks is 0.063 lb. per plot,  
or 0.9 bu. per acre.

## ANALYSIS OF VARIANCE

| Variants            | Degrees of<br>freedom | Mean squares |
|---------------------|-----------------------|--------------|
| Replications        | 9                     | 0.0408       |
| Treatment pairs     | 3                     | .0043        |
| Error (a)           | 27                    | .0090        |
| Treatments in pairs | 4                     | .0101        |
| Error (b)           | 36                    | .0053        |

Wheat-- Pullman, Whitman County, Wash.

GRAIN, GRAMS PER PLOT

Cooperating agency ..... Washington Agricultural Experiment Station  
 Cooperators conducting experiment ..... S. C. Vandecaveye and W. K. Kennedy  
 Soil type ..... Palouse silt loam  
 Plot size ..... 7' x 20'  
 Harvest area ..... 5' x 18'  
 Planting date ..... April 16, 1948  
 Harvest date ..... August 17, 1948  
 Variety ..... Marfed  
 Fertilizer ..... 20 lb. nitrogen as  $NH_4NO_3$

SHEAF WEIGHT, GRAMS PER PLOT

| Replication No. | Treatments     |                  |                |                  |                |                  |                |                |
|-----------------|----------------|------------------|----------------|------------------|----------------|------------------|----------------|----------------|
|                 | A <sub>2</sub> | CkA <sub>2</sub> | R <sub>2</sub> | CkR <sub>2</sub> | U <sub>2</sub> | CkU <sub>2</sub> | A <sub>4</sub> | A <sub>1</sub> |
| 1               | 3,145          | 3,035            | 3,300          | 3,175            | 2,975          | 2,895            | 3,230          | 3,430          |
| 2               | 3,620          | 3,770            | 3,465          | 3,775            | 2,870          | 2,920            | 3,655          | 3,130          |
| 3               | 3,380          | 3,055            | 3,045          | 2,925            | 3,955          | 3,200            | 3,615          | 3,385          |
| 4               | 3,280          | 2,855            | 2,915          | 3,065            | 3,500          | 3,230            | 3,420          | 3,335          |
| 5               | 3,115          | 2,850            | 3,175          | 2,970            | 2,960          | 3,325            | 3,735          | 3,120          |
| 6               | 4,625          | 4,650            | 3,630          | 3,710            | 3,775          | 3,525            | 3,410          | 5,380          |
| 7               | 3,285          | 3,425            | 3,480          | 3,060            | 4,280          | 4,375            | 4,680          | 4,265          |
| 8               | 3,380          | 3,890            | 3,490          | 3,175            | 3,540          | 3,050            | 4,565          | 3,975          |
| 9               | 3,350          | 3,060            | 5,130          | 4,290            | 5,770          | 6,630            | 3,155          | 3,025          |
| 10              | 6,630          | 5,945            | 2,905          | 2,975            | 4,885          | 5,315            | 3,270          | 2,755          |
| Mean yield      | 3,781.0        | 3,653.5          | 3,473.5        | 3,312.0          | 3,851.0        | 3,846.5          | 3,673.5        | 3,580.0        |

Average of 3 checks is 3,604.0.

Least significant difference at 5-percent level for comparing treatments A<sub>2</sub>, R<sub>2</sub>, or U<sub>2</sub> with average of 3 checks is 476.9.

Least significant difference at 5-percent level for comparing treatments A<sub>1</sub> or A<sub>4</sub> with average of 3 checks is 619.1.

| Replication No.            | Treatments     |                  |                |                  |                |                  |                |                |
|----------------------------|----------------|------------------|----------------|------------------|----------------|------------------|----------------|----------------|
|                            | A <sub>2</sub> | CkA <sub>2</sub> | R <sub>2</sub> | CkR <sub>2</sub> | U <sub>2</sub> | CkU <sub>2</sub> | A <sub>4</sub> | A <sub>1</sub> |
| 1                          | 1,292          | 1,296            | 1,388          | 1,345            | 1,209          | 1,333            | 1,430          | 1,458          |
| 2                          | 1,518          | 1,537            | 1,387          | 1,539            | 1,211          | 1,190            | 1,508          | 1,270          |
| 3                          | 1,387          | 1,256            | 1,283          | 1,229            | 1,701          | 1,303            | 1,458          | 1,403          |
| 4                          | 1,365          | 1,218            | 1,211          | 1,190            | 1,498          | 1,369            | 1,470          | 1,469          |
| 5                          | 1,357          | 1,222            | 1,406          | 1,250            | 1,256          | 1,432            | 1,577          | 1,320          |
| 6                          | 1,902          | 1,904            | 1,621          | 1,639            | 1,580          | 1,529            | 1,369          | 2,234          |
| 7                          | 1,444          | 1,500            | 1,589          | 1,353            | 1,787          | 1,792            | 1,904          | 1,784          |
| 8                          | 1,777          | 1,584            | 1,520          | 1,400            | 1,575          | 1,345            | 1,828          | 1,465          |
| 9                          | 1,482          | 1,308            | 1,973          | 1,737            | 2,169          | 2,494            | 1,371          | 1,261          |
| 10                         | 2,407          | 2,050            | 1,164          | 1,174            | 1,850          | 1,975            | 1,320          | 1,119          |
| Mean yield--<br>Grams/plot | 1,593.1        | 1,487.5          | 1,454.2        | 1,385.6          | 1,583.6        | 1,576.2          | 1,523.5        | 1,498.0        |
| Bu./acre                   | 28.3           | 26.5             | 25.9           | 24.6             | 28.2           | 28.0             | 27.1           | 26.0           |

Average of 3 checks is 1,483.1 grams per plot, or 26.4 bu. per acre.

Least significant difference at 5-percent level for comparing treatment A<sub>2</sub>, R<sub>2</sub>, or U<sub>2</sub> with average of 3 checks is 166.6 grams per plot, or 3.0 bu. per acre.

Least significant difference at 5-percent level for comparing treatments A<sub>1</sub> or A<sub>4</sub> with average of 3 checks is 207.3 grams per plot, or 3.7 bu. per acre.

Wheat - Pullman, Wash.

GRAIN TEST WEIGHT, POUNDS PER BUSHEL

| Replication No. | Treatments     |                  |                |                  |                |                  |                |                |
|-----------------|----------------|------------------|----------------|------------------|----------------|------------------|----------------|----------------|
|                 | A <sub>2</sub> | CkA <sub>2</sub> | R <sub>2</sub> | CkR <sub>2</sub> | U <sub>2</sub> | CkU <sub>2</sub> | A <sub>4</sub> | A <sub>1</sub> |
| 1               | 59.4           | 59.6             | 59.8           | 59.8             | 59.4           | 60.2             | 59.6           | 59.7           |
| 2               | 60.2           | 60.4             | 59.8           | 59.8             | 59.5           | 59.4             | 59.8           | 60.2           |
| 3               | 59.6           | 59.4             | 59.6           | 59.7             | 60.2           | 59.1             | 59.6           | 59.4           |
| 4               | 59.2           | 58.8             | 59.2           | 60.0             | 59.8           | 59.5             | 60.2           | 59.7           |
| 5               | 58.6           | 57.7             | 60.3           | 58.6             | 57.8           | 58.7             | 59.8           | 59.5           |
| 6               | 58.5           | 58.5             | 59.5           | 60.4             | 59.3           | 59.0             | 59.3           | 59.3           |
| 7               | 59.6           | 59.4             | 60.6           | 58.8             | 58.0           | 58.3             | 59.4           | 59.1           |
| 8               | 58.8           | 59.0             | 59.8           | 60.0             | 60.0           | 59.2             | 59.6           | 59.0           |
| 9               | 59.0           | 58.8             | 58.2           | 59.0             | 60.2           | 59.8             | 59.5           | 59.0           |
| 10              | 60.3           | 59.4             | 57.0           | 58.1             | 59.7           | 59.2             | 59.1           | 57.6           |
| Mean weight     | 59.32          | 59.10            | 59.38          | 59.42            | 59.39          | 59.24            | 59.59          | 59.25          |

Average of 3 checks is 59.25.

Least significant difference at 5-percent level for comparing treatments A<sub>2</sub>, R<sub>2</sub>, or U<sub>2</sub> with average of 3 checks is 0.45.

Least significant difference at 5-percent level for comparing treatments A<sub>1</sub> or A<sub>4</sub> with average of 3 checks is 0.51.

ANALYSIS OF VARIANCE

| Variants            | Degrees of freedom | Mean squares              |                           |                          |
|---------------------|--------------------|---------------------------|---------------------------|--------------------------|
|                     |                    | Sheaf weight (grams/plot) | Grain weight (grams/plot) | Test weight (lb./bushel) |
| Replications        | 9                  | 1,795,364                 | 212,404                   | 0.9833                   |
| Treatment pairs     | 3                  | 737,931                   | 92,619                    | .1800                    |
| Error (a)           | 27                 | 1,248,425                 | 131,781                   | .7370                    |
| Treatments in pairs | 4                  | 63,876                    | 20,690                    | .2375                    |
| Error (b)           | 36                 | 130,047                   | 22,722                    | .2372                    |

Barley - Mandan, N. Dak.

BARLEY

Barley--Mandan, Morton County, N. Dak.

Cooperating agency ..... United States Northern Great Plains  
Field Station

Cooperators conducting  
experiment ..... E. J. George, R. W. Carpenter, and  
H. J. Hess

Soil type ..... Cheyenne fine sandy loam

Plot size ..... 7' x 12'

Harvest area ..... 5' x 10'

Planting date ..... April 28, 1948

Harvest date ..... July 28, 1948

Variety ..... Tregal

Fertilizer ..... Nitraprills, with 33.5 percent  
nitrogen, at rate of 17.5 lbs.  
N per acre applied June 22,  
1948, 3 days before first  
heading.

YIELD IN POUNDS PER PLOT

| Replication<br>No.        | Treatments     |                  |                |                  |                |                  |                |                |
|---------------------------|----------------|------------------|----------------|------------------|----------------|------------------|----------------|----------------|
|                           | A <sub>2</sub> | CkA <sub>2</sub> | R <sub>2</sub> | CkR <sub>2</sub> | U <sub>2</sub> | CkU <sub>2</sub> | A <sub>4</sub> | A <sub>1</sub> |
| 1                         | 1.13           | 1.30             | 1.11           | 1.10             | 1.01           | 1.15             | 1.10           | 0.97           |
| 2                         | 1.13           | 1.39             | 1.08           | 1.06             | 1.13           | 1.08             | 1.11           | 1.18           |
| 3                         | .98            | 1.18             | 1.47           | 1.15             | 1.13           | .99              | 1.25           | 1.26           |
| 4                         | 1.25           | 1.35             | 1.36           | 1.01             | 1.08           | 1.10             | 1.06           | 1.08           |
| 5                         | 1.16           | 1.15             | 1.20           | 1.14             | 1.04           | 1.10             | 1.31           | 1.27           |
| 6                         | 1.19           | 1.17             | 1.15           | .95              | 1.20           | 1.27             | .85            | .92            |
| 7                         | .88            | .92              | 1.07           | 1.20             | 1.05           | .87              | .88            | .90            |
| 8                         | 1.01           | 1.19             | .99            | 1.08             | 1.12           | .80              | 1.21           | .95            |
| 9                         | 1.26           | 1.14             | 1.17           | 1.25             | 1.08           | 1.08             | 1.31           | 1.19           |
| 10                        | 1.23           | 1.03             | 1.26           | 1.12             | 1.00           | 1.50             | 1.43           | 1.08           |
| Mean yield --<br>Lb./plot | 1.12           | 1.18             | 1.19           | 1.11             | 1.08           | 1.09             | 1.15           | 1.08           |
| Bu./acre                  | 20.3           | 21.4             | 21.6           | 20.1             | 19.6           | 19.8             | 20.9           | 19.6           |

Average for 3 checks is 1.13 lb. per plot, or 20.5 bu. per acre.  
Least significant difference at 5-percent level for comparing  
treatments A<sub>2</sub>, R<sub>2</sub>, or U<sub>2</sub> with average of 3 checks is 0.0945 lb. per  
plot or 1.7 bu. per acre.

Least significant difference at 5-percent level for comparing  
treatments A<sub>1</sub> or A<sub>4</sub> with average of 3 checks is 0.0980 lb. per plot  
or 1.8 bu. per acre.

ANALYSIS OF VARIANCE

| Variants            | Degrees of<br>freedom | Mean squares |
|---------------------|-----------------------|--------------|
| Replications        | 9                     | 0.0432       |
| Treatment pairs     | 3                     | .0170        |
| Error (a)           | 27                    | .0197        |
| Treatments in pairs | 4                     | .0189        |
| Error (b)           | 36                    | .0149        |

Oats - Urbana, Ill.

YIELD IN BUSHELS PER ACRE

| Replication No. | Treatments     |                  |                |                  |                |                  |                |                |
|-----------------|----------------|------------------|----------------|------------------|----------------|------------------|----------------|----------------|
|                 | A <sub>2</sub> | CkA <sub>2</sub> | R <sub>2</sub> | CKR <sub>2</sub> | U <sub>2</sub> | CKU <sub>2</sub> | A <sub>4</sub> | A <sub>1</sub> |
| 1               | 73.5           | 72.0             | 60.0           | 64.5             | 68.7           | 70.8             | 58.5           | 61.5           |
| 2               | 82.8           | 74.7             | 67.8           | 60.6             | 67.5           | 64.8             | 84.3           | 69.0           |
| 3               | 73.2           | 72.0             | 68.7           | 66.6             | 72.0           | 73.5             | 63.9           | 66.3           |
| 4               | 69.3           | 67.2             | 64.2           | 60.9             | 75.6           | 65.1             | 70.8           | 73.5           |
| 5               | 59.1           | 59.1             | 65.7           | 63.6             | 62.1           | 61.5             | 71.7           | 65.4           |
| 6               | 59.4           | 59.1             | 56.4           | 52.8             | 57.6           | 57.0             | 57.3           | 62.7           |
| 7               | 60.0           | 60.9             | 64.2           | 59.4             | 61.2           | 63.9             | 62.1           | 65.1           |
| 8               | 66.0           | 66.6             | 57.9           | 57.0             | 71.4           | 69.9             | 56.7           | 57.0           |
| 9               | 55.2           | 63.6             | 64.2           | 60.9             | 63.0           | 63.3             | 57.0           | 57.6           |
| 10              | 63.9           | 67.8             | 59.1           | 62.1             | 61.2           | 54.0             | 59.1           | 62.4           |
| Mean yield      | 66.2           | 66.3             | 62.8           | 60.8             | 66.0           | 64.4             | 64.1           | 64.1           |

OATS

Oats-- Urbana, Champaign County, Ill.

Cooperating agency ..... Illinois Agricultural Experiment Station

Cooperators conducting experiment ..... F. C. Bauer, A. L. Lang, and L.B. Miller

Soil type ..... Flanagan silt loam

Plot size ..... 13'4" x 40'

Harvest area ..... 5' x 20'

Planting date ..... April 17, 1948

Harvest dates ..... July 12, 13, 1948

Variety ..... Clinton

Fertilizer ..... Limestone, rock phosphate, potash; previous crop, soybeans

Average for 3 checks is 63.8.

Least significant difference at 5-percent level for comparing treatments A<sub>2</sub>, R<sub>2</sub>, or U<sub>2</sub> with average of 3 checks is 3.15.

ANALYSIS OF VARIANCE

| Variants            | Degrees of freedom | Mean squares |
|---------------------|--------------------|--------------|
| Replications        | 9                  | 152.31       |
| Treatment pairs     | 3                  | 72.22        |
| Error (a)           | 27                 | 38.86        |
| Treatments in pairs | 4                  | 8.31         |
| Error (b)           | 36                 | 10.75        |

Least significant difference at 5-percent level for comparing treatments A<sub>1</sub> or A<sub>4</sub> with average of 3 checks is 3.72.

## SOYBEANS

Soybeans--Urbana, Champaign County, Ill.

Cooperating agency ..... Illinois Agricultural Experiment Station

Cooperators conducting  
experiment ..... F. C. Bauer, A. L. Lang, and L. B. Miller

Soil type ..... Flanagan silt loam

Plot size ..... 13'4" x 40'

Harvest area ..... 5' x 20'

Planting date ..... May 28, 1948

Harvest date ..... September 24, 1948

Variety ..... Lincoln

Fertilizer ..... Limestone, rock phosphate, potash;  
previous crop, corn

Soybeans - Urbana, Ill.

### YIELD IN BUSHELS PER ACRE

| Replication<br>No. | Treatments     |                  |                |                  |                |                  |                |                |
|--------------------|----------------|------------------|----------------|------------------|----------------|------------------|----------------|----------------|
|                    | A <sub>2</sub> | CkA <sub>2</sub> | R <sub>2</sub> | CkR <sub>2</sub> | U <sub>2</sub> | CkU <sub>2</sub> | A <sub>4</sub> | A <sub>1</sub> |
| 1                  | 27.0           | 26.7             | 30.6           | 33.6             | 32.3           | 34.1             | 33.0           | 27.4           |
| 2                  | 32.3           | 35.5             | 33.4           | 34.1             | 29.3           | 30.4             | 33.0           | 32.3           |
| 3                  | 32.3           | 32.5             | 32.5           | 34.1             | 31.7           | 34.4             | 32.6           | 31.5           |
| 4                  | 34.4           | 37.0             | 33.8           | 33.3             | 33.1           | 30.9             | 35.8           | 36.8           |
| 5                  | 41.1           | 37.1             | 33.1           | 32.3             | 32.6           | 32.6             | 37.3           | 37.6           |
| 6                  | 32.0           | 31.8             | 31.0           | 35.4             | 27.7           | 33.0             | 33.8           | 32.2           |
| 7                  | 34.9           | 34.7             | 30.2           | 32.8             | 33.0           | 28.0             | 33.0           | 28.3           |
| 8                  | 32.8           | 32.5             | 29.4           | 30.9             | 32.2           | 32.3             | 28.2           | 33.1           |
| 9                  | 34.2           | 37.1             | 31.4           | 34.4             | 36.2           | 37.3             | 35.7           | 33.4           |
| 10                 | 34.6           | 35.2             | 33.1           | 33.6             | 31.2           | 33.8             | 35.8           | 36.2           |
| Mean yield         | 33.6           | 34.0             | 31.9           | 33.5             | 31.9           | 32.7             | 33.8           | 32.9           |

Average for 3 checks is 33.4.

Least significant difference at 5-percent level for comparing treatments A<sub>2</sub>, R<sub>2</sub>, or U<sub>2</sub> with average of 3 checks is 1.52.

### ANALYSIS OF VARIANCE

| Variants            | Degrees of freedom | Mean squares |
|---------------------|--------------------|--------------|
| Replications        | 9                  | 21.27        |
| Treatment pairs     | 3                  | 8.95         |
| Error (a)           | 27                 | 7.64         |
| Treatments in pairs | 4                  | 5.26         |
| Error (b)           | 36                 | 3.00         |

Least significant difference at 5-percent level for comparing treatments A<sub>1</sub> or A<sub>4</sub> with average of 3 checks is 1.72.

Soybeans--Brownstown, Fayette County, Ill.

Cooperating agency ..... Illinois Agricultural Experiment Station  
 Cooperators conducting  
 experiment ..... F. C. Bauer and A. L. Lang, Urbana,  
 and P. E. Johnson, Brownstown  
 Soil type ..... Cisne silt loam  
 Plot size ..... 13'4" x 40'  
 Harvest area ..... 6'8" x 40'  
 Planting date ..... May 29, 1948  
 Harvest date ..... September 23, 1948  
 Variety ..... Lincoln  
 Fertilizer ..... Limestone, rock phosphate, potash;  
 previous crop, corn

ANALYSIS OF VARIANCE

| Variants            | Degrees of freedom | Mean squares |
|---------------------|--------------------|--------------|
| Replications        | 9                  | 21.25        |
| Treatment pairs     | 3                  | 11.67        |
| Error (a)           | 27                 | 4.84         |
| Treatments in pairs | 4                  | 1.93         |
| Error (b)           | 36                 | 2.37         |

Least significant difference at 5-percent level for comparing treatments  $A_1$  or  $A_4$  with average of 3 checks is 1.42.

YIELD IN BUSHELS PER ACRE

| Replication No. | Treatments |         |       |         |       |         |       |       |
|-----------------|------------|---------|-------|---------|-------|---------|-------|-------|
|                 | $A_2$      | $CkA_2$ | $R_2$ | $CkR_2$ | $U_2$ | $CkU_2$ | $A_4$ | $A_1$ |
| 1               | 34.0       | 34.6    | 27.6  | 26.8    | 29.1  | 31.7    | 34.8  | 34.0  |
| 2               | 30.3       | 28.2    | 29.0  | 25.6    | 27.9  | 32.7    | 31.3  | 29.3  |
| 3               | 30.1       | 32.0    | 29.7  | 27.8    | 30.5  | 28.6    | 29.1  | 28.4  |
| 4               | 29.9       | 30.2    | 30.3  | 28.2    | 29.0  | 29.1    | 30.5  | 29.1  |
| 5               | 26.9       | 29.7    | 29.5  | 29.8    | 30.1  | 28.4    | 30.8  | 32.1  |
| 6               | 29.3       | 26.1    | 24.9  | 25.3    | 25.7  | 26.4    | 24.5  | 26.3  |
| 7               | 28.2       | 30.2    | 29.9  | 29.1    | 23.8  | 28.6    | 28.2  | 29.0  |
| 8               | 25.4       | 28.2    | 28.0  | 31.4    | 24.5  | 28.9    | 28.9  | 28.2  |
| 9               | 30.8       | 29.0    | 31.2  | 30.9    | 30.3  | 28.4    | 33.1  | 34.4  |
| 10              | 30.1       | 31.8    | 29.7  | 32.9    | 29.8  | 29.1    | 31.4  | 32.1  |
| Mean yield      | 29.5       | 30.0    | 29.0  | 28.8    | 28.1  | 29.2    | 30.3  | 30.3  |

Average for 3 checks is 29.3

Least significant difference at 5-percent level for comparing treatments  $A_2$ ,  $R_2$ , or  $U_2$  with average of 3 checks is 1.29.

# BEANS

White Beans--Akron, Tuscola County, Mich.

Cooperating agency ..... Michigan Agricultural Experiment Station

Cooperators conducting experiment ..... R.L. Cook and L.M. Turk, East Lansing, and J. Horst (at location of experiment)

Soil type ..... Brookston clay loam

Plot size ..... 14' x 28'

Harvest area ..... 4'8" x 20'

Planting date ..... June 14, 1948

Harvest date ..... September 13, 1948

Variety ..... Michelite

Fertilizer ..... None

White Beans - Akron, Mich.

## YIELD IN BUSHEL PER ACRE

| Replication No. | Treatments     |                  |                |                  |                |                  |                |                |
|-----------------|----------------|------------------|----------------|------------------|----------------|------------------|----------------|----------------|
|                 | A <sub>2</sub> | CkA <sub>2</sub> | R <sub>2</sub> | CkR <sub>2</sub> | U <sub>2</sub> | CkU <sub>2</sub> | A <sub>4</sub> | A <sub>1</sub> |
| 1               | 15.6           | 20.3             | 25.7           | 23.4             | 22.6           | 23.0             | 24.5           | 23.8           |
| 2               | 24.1           | 23.8             | 24.1           | 22.2             | 22.2           | 24.9             | 14.8           | 20.6           |
| 3               | 24.1           | 25.3             | 25.3           | 22.2             | 14.0           | 18.7             | 26.1           | 22.2           |
| 4               | 22.2           | 26.5             | 22.6           | 17.1             | 23.8           | 25.3             | 18.7           | 16.4           |
| 5               | 28.0           | 26.9             | 22.6           | 20.6             | 24.1           | 25.3             | 25.7           | 25.7           |
| 6               | 22.2           | 24.5             | 23.0           | 19.9             | 24.5           | 24.5             | 21.4           | 27.7           |
| 7               | 23.8           | 19.5             | 23.4           | 21.4             | 25.3           | 23.0             | 17.9           | 22.2           |
| 8               | 23.0           | 22.6             | 20.3           | 23.4             | 24.9           | 22.2             | 22.2           | 22.2           |
| 9               | 21.0           | 23.4             | 22.6           | 26.1             | 23.0           | 22.2             | 18.7           | 21.0           |
| 10              | 25.3           | 22.6             | 27.3           | 21.4             | 22.2           | 24.1             | 23.4           | 25.3           |
| Mean yield      | 22.9           | 23.5             | 23.7           | 21.8             | 22.7           | 23.3             | 21.3           | 22.7           |

Average for 3 checks is 22.9.

Least significant difference at 5-percent level for comparing treatments A<sub>2</sub>, R<sub>2</sub>, or U<sub>2</sub> with average of 3 checks is 1.90.

## ANALYSIS OF VARIANCE

| Variants            | Degrees of freedom | Mean squares |
|---------------------|--------------------|--------------|
| Replications        | 9                  | 8.34         |
| Treatment pairs     | 3                  | 5.46         |
| Error (a)           | 27                 | 12.87        |
| Treatments in pairs | 4                  | 7.96         |
| Error (b)           | 36                 | 4.32         |

Least significant difference at 5-percent level for comparing treatments A<sub>1</sub> or A<sub>4</sub> with average of 3 checks is 2.19.



Beans--Prosser, Benton County, Wash.

Cooperating agencies .... Washington Agricultural Experiment Station  
and the Bureau of Plant Industry, Soils,  
and Agricultural Engineering

Cooperators conducting  
experiment ..... H. P. Singleton, F. G. Viets, and  
C. E. Nelson

Soil type ..... Fine sandy loam  
Plot size ..... 8' x 25'  
Harvest area ..... 4' x 21'  
Planting date ..... May 12, 1948  
Harvest date ..... September 14, 1948  
Variety ..... Red Mexican, U. I. No. 34  
Fertilizer ..... 80 lb. N, 40 lb. P<sub>2</sub>O<sub>5</sub> per acre

YIELD, POUNDS PER ACRE

| Replication<br>No.      | Treatments     |                  |                  |                  |                |                  |                |                |
|-------------------------|----------------|------------------|------------------|------------------|----------------|------------------|----------------|----------------|
|                         | A <sub>2</sub> | CkA <sub>2</sub> | CkR <sub>2</sub> | CkR <sub>2</sub> | U <sub>2</sub> | CkU <sub>2</sub> | A <sub>4</sub> | A <sub>1</sub> |
| 1                       | 3,380          | 3,300            | 3,130            | 3,370            | 3,840          | 3,460            | 3,500          | 3,350          |
| 2                       | 3,170          | 3,650            | 3,420            | 3,540            | 3,510          | 3,290            | 3,530          | 3,200          |
| 3                       | 3,970          | 3,760            | 3,460            | 3,280            | 3,600          | 3,810            | 3,970          | 3,210          |
| 4                       | 3,480          | 3,760            | 3,860            | 4,140            | 3,810          | 3,810            | 4,060          | 3,560          |
| 5                       | 3,390          | 3,330            | 3,580            | 4,260            | 4,100          | 3,840            | 3,950          | 2,940          |
| 6                       | 3,220          | 3,710            | 4,100            | 4,040            | 3,120          | 3,440            | 3,430          | 3,530          |
| 7                       | 3,500          | 4,110            | 3,550            | 4,250            | 3,510          | 3,430            | 3,700          | 3,770          |
| 8                       | 3,550          | 3,440            | 3,210            | 3,160            | 3,720          | 3,580            | 3,630          | 3,970          |
| 9                       | 3,110          | 3,860            | 3,210            | 3,270            | 3,570          | 3,920            | 3,680          | 3,550          |
| 10                      | 3,530          | 3,630            | 3,950            | 3,700            | 3,940          | 3,300            | 3,860          | 4,010          |
| Mean yield-<br>lb./acre | 3,430          | 3,655            | 3,547            | 3,701            | 3,672          | 3,588            | 3,731          | 3,509          |
| Bu./acre                | 57.2           | 60.9             | 59.1             | 61.7             | 61.2           | 59.8             | 62.2           | 58.5           |

Average of 3 checks is 3,648 lb. per acre, or 60.8 bu. per acre.

Least significant difference at 5-percent level for comparing treatments A<sub>2</sub>, R<sub>2</sub>, and U<sub>2</sub> with average of 3 checks is 204 lb. per acre, or 3.4 bu. per acre.

Least significant difference at 5-percent level for comparing treatments A<sub>4</sub> or A<sub>1</sub> with average of 3 checks is 217 lb. per acre, or 3.6 bu. per acre.

Beans - Prosser, Wash.

ANALYSIS OF VARIANCE

| Variants            | Degrees of<br>freedom | Mean squares<br>(lb./acre) |
|---------------------|-----------------------|----------------------------|
| Replications        | 9                     | 147,717                    |
| Treatment pairs     | 3                     | 34,095                     |
| Error (a)           | 27                    | 106,128                    |
| Treatments in pairs | 4                     | 163,351                    |
| Error (b)           | 36                    | 63,532                     |

## SUGAR BEETS

Sugar beets--Prosser, Benton County, Wash.

Cooperating agencies ... Washington Agricultural Experiment Station  
and Bureau of Plant Industry, Soils, and  
Agricultural Engineering

Cooperators conducting  
experiment ..... H. P. Singleton, F. G. Viets, and  
C. E. Nelson

Soil type ..... Fine sandy loam

Plot size ..... 8' x 25'

Harvest area ..... 4' x 21'

Planting date ..... April 19, 1948

Harvest dates ..... October 28 and 29, 1948

Variety ..... U. S. No. 22, 3d release

Fertilizer ..... 120 pounds N, 80 pounds P<sub>2</sub>O<sub>5</sub> per acre

## YIELD IN TONS PER ACRE

| Replication<br>No. | Treatments     |                  |                |                  |                |                  |                |                |
|--------------------|----------------|------------------|----------------|------------------|----------------|------------------|----------------|----------------|
|                    | A <sub>2</sub> | CkA <sub>2</sub> | R <sub>2</sub> | CkR <sub>2</sub> | U <sub>2</sub> | CkU <sub>2</sub> | A <sub>4</sub> | A <sub>1</sub> |
| 1                  | 18.41          | 16.00            | 16.31          | 18.07            | 20.15          | 18.18            | 19.06          | 19.29          |
| 2                  | 17.76          | 20.69            | 18.95          | 19.40            | 20.82          | 20.38            | 17.76          | 15.01          |
| 3                  | 21.16          | 22.46            | 19.29          | 21.47            | 21.47          | 21.06            | 23.00          | 18.85          |
| 4                  | 21.37          | 21.16            | 19.16          | 23.34            | 21.37          | 22.01            | 21.24          | 19.29          |
| 5                  | 18.85          | 19.71            | 19.06          | 20.38            | 19.60          | 19.94            | 18.18          | 19.53          |
| 6                  | 18.95          | 21.78            | 19.94          | 17.87            | 19.06          | 18.41            | 19.29          | 18.95          |
| 7                  | 17.53          | 19.16            | 19.06          | 16.60            | 18.18          | 16.23            | 17.76          | 14.03          |
| 8                  | 22.25          | 20.07            | 22.90          | 17.53            | 17.22          | 18.62            | 21.78          | 17.76          |
| 9                  | 18.41          | 19.53            | 19.06          | 20.38            | 17.09          | 18.41            | 18.51          | 19.60          |
| 10                 | 18.85          | 18.18            | 18.41          | 17.87            | 16.67          | 17.22            | 18.75          | 16.98          |
| Mean yield         | 19.35          | 19.87            | 19.21          | 19.29            | 19.16          | 19.05            | 19.53          | 17.93          |

Average of 3 checks is 19.40.

Least significant difference at 5-percent level for comparing  
treatments A<sub>2</sub>, R<sub>2</sub>, or U<sub>2</sub> with average of 3 checks is 1.06.

Least significant difference at 5-percent level for comparing  
treatments A<sub>1</sub> or A<sub>4</sub> with average of 3 checks is 1.06.

Sugar beets - Prosser, Wash.

SUCROSE PERCENTAGE ON FRESH-WEIGHT BASIS

| Replication No. | Treatments     |                  |                |                  |                |                  |                |                |
|-----------------|----------------|------------------|----------------|------------------|----------------|------------------|----------------|----------------|
|                 | A <sub>2</sub> | CkA <sub>2</sub> | R <sub>2</sub> | CkR <sub>2</sub> | U <sub>2</sub> | CkU <sub>2</sub> | A <sub>4</sub> | A <sub>1</sub> |
| 1               | 18.0           | 17.3             | 17.8           | 17.9             | 18.8           | 17.5             | 18.2           | 18.2           |
| 2               | 18.5           | 18.2             | 18.5           | 18.4             | 17.8           | 18.2             | 18.0           | 17.7           |
| 3               | 18.1           | 17.8             | 18.0           | 17.8             | 18.4           | 18.0             | 18.0           | 17.6           |
| 4               | 18.5           | 17.8             | 18.0           | 18.0             | 18.1           | 18.1             | 18.0           | 18.0           |
| 5               | 18.0           | 17.5             | 17.8           | 18.2             | 18.0           | 17.8             | 17.8           | 18.2           |
| 6               | 18.1           | 18.0             | 18.4           | 18.3             | 18.1           | 18.3             | 17.9           | 18.2           |
| 7               | 18.2           | 18.4             | 17.7           | 17.8             | 18.0           | 17.5             | 18.0           | 18.4           |
| 8               | 17.9           | 18.7             | 17.2           | 17.9             | 18.8           | 18.0             | 17.9           | 18.3           |
| 9               | 18.8           | 18.3             | 17.6           | 18.2             | 18.0           | 17.9             | 18.0           | 17.5           |
| 10              | 17.8           | 18.7             | 18.7           | 18.5             | 18.3           | 17.9             | 17.8           | 18.2           |
| Mean yield      | 18.19          | 18.07            | 17.97          | 18.10            | 18.23          | 17.92            | 17.96          | 18.03          |

Average of 3 checks is 18.03 percent.

Least significant difference at 5-percent level for comparing treatments A<sub>2</sub>, R<sub>2</sub>, or U<sub>2</sub> with average of 3 checks is 0.25 percent.

Least significant difference at 5-percent level for comparing treatments A<sub>1</sub> or A<sub>4</sub> with average of 3 checks is 0.26 percent.

Sugar beets - Prosser, Wash.

ANALYSIS OF VARIANCE

| Variants            | Degrees of freedom | Mean squares  |                    |
|---------------------|--------------------|---------------|--------------------|
|                     |                    | Tons per acre | Sucrose percentage |
| Replications        | 9                  | 12.635        | 0.088              |
| Treatment pairs     | 3                  | 2.672         | .070               |
| Error (a)           | 27                 | 1.919         | .134               |
| Treatments in pairs | 4                  | 3.578         | .165               |
| Error (b)           | 36                 | 2.108         | .102               |

Table Beets - Michigan

YIELD IN TONS PER ACRE

TABLE BEETS

Table Beets-- Michigan Muck Experimental Farm,  
Clinton County, Mich.

Cooperating agency ..... Michigan Agricultural Experiment Station

Cooperators conducting  
experiment ..... P. M. Harmer, J. F. Davis, and  
L. M. Turk, East Lansing

Soil type ..... Carlisle muck

Plot size ..... 10'8" x 24' (split between beets and  
spinach)

Harvest area..... 3 10/12' x 20'

Planting date ..... June 20, 1948

Harvest date ..... October 13, 1948

Variety ..... Detroit Dark Red

Fertilizer ..... 1,500 pounds per acre 0-10-20, contain-  
ing 5 percent copper sulfate and 2½  
percent borax; 500 pounds per acre of  
salt

| Replication<br>No. | Treatments     |                  |                |                  |                |                  |                |                |
|--------------------|----------------|------------------|----------------|------------------|----------------|------------------|----------------|----------------|
|                    | A <sub>2</sub> | ClA <sub>2</sub> | R <sub>2</sub> | ClR <sub>2</sub> | U <sub>2</sub> | ClU <sub>2</sub> | A <sub>4</sub> | A <sub>1</sub> |
| 1                  | 19.84          | 17.55            | 18.07          | 17.87            | 13.08          | 14.88            | 17.54          | 16.11          |
| 2                  | 17.87          | 17.76            | 17.43          | 16.29            | 16.09          | 18.31            | 16.54          | 17.60          |
| 3                  | 13.81          | 20.94            | 15.53          | 15.12            | 20.23          | 16.93            | 16.48          | 16.80          |
| 4                  | 17.00          | 17.00            | 18.40          | 17.54            | 13.39          | 18.06            | 17.09          | 17.46          |
| 5                  | 20.31          | 18.51            | 15.74          | 19.34            | 17.98          | 17.37            | 20.11          | 19.16          |
| 6                  | 16.42          | 17.09            | 18.73          | 19.40            | 15.56          | 13.71            | 18.07          | 17.20          |
| 7                  | 16.37          | 17.67            | 16.89          | 17.05            | 17.06          | 18.31            | 16.28          | 15.76          |
| 8                  | 15.13          | 14.60            | 14.04          | 16.24            | 16.27          | 16.60            | 15.67          | 15.71          |
| 9                  | 15.36          | 15.70            | 17.24          | 17.76            | 15.17          | 15.65            | 15.50          | 15.69          |
| 10                 | 18.35          | 17.85            | 15.97          | 18.89            | 17.45          | 17.20            | 15.87          | 15.98          |
| Mean yield         | 17.05          | 17.47            | 16.80          | 17.55            | 16.23          | 16.70            | 16.92          | 16.75          |

Average for 3 checks is 17.24.

Least significant difference at 5-percent level for comparing  
treatments A<sub>2</sub>, R<sub>2</sub>, or U<sub>2</sub> with average of 3 checks is 1.09.

Least significant difference at 5-percent level for comparing  
treatments A<sub>1</sub>, or A<sub>4</sub> with average of 3 checks is 1.16.

ANALYSIS OF VARIANCE

| Variants            | Degrees of<br>freedom | Mean squares |
|---------------------|-----------------------|--------------|
| Replications        | 9                     | 5.0291       |
| Treatment pairs     | 3                     | 2.6241       |
| Error (a)           | 27                    | 2.9652       |
| Treatments in pairs | 4                     | 1.2333       |
| Error (b)           | 36                    | 1.8553       |

# TURNIPS

Turnips-- Beltsville, Prince Georges County, Md.

Cooperating agency ..... Bureau of Plant Industry, Soils, and  
Agricultural Engineering

Cooperators conducting  
experiment ..... Hans Jorgensen and V. R. Boswell

Soil type ..... Morgensac loamy sand

Plot size ..... 20' x 25'

Harvest area ..... 8' x 21'

Planting date ..... August 9, 1948

Harvest dates ..... October 15 and 18, 1948

Variety ..... Purple Top White Globe

Fertilizer ..... 900 lb. 5-10-5 and 100 lb. ammonium  
nitrate

TOTAL WEIGHT OF TOPS AND ROOTS, POUNDS PER PLOT

| Replication<br>No.       | Treatments     |                  |                |                  |                |                  |                |                |
|--------------------------|----------------|------------------|----------------|------------------|----------------|------------------|----------------|----------------|
|                          | A <sub>2</sub> | CkA <sub>2</sub> | R <sub>2</sub> | CkR <sub>2</sub> | U <sub>2</sub> | CkU <sub>2</sub> | A <sub>4</sub> | A <sub>1</sub> |
| 1                        | 107.4          | 100.7            | 108.6          | 100.1            | 109.1          | 105.4            | 84.1           | 81.7           |
| 2                        | 83.0           | 85.7             | 87.5           | 68.5             | 124.9          | 99.3             | 96.9           | 60.1           |
| 3                        | 86.4           | 96.6             | 89.0           | 86.0             | 103.0          | --*              | 57.4           | 74.9           |
| 4                        | 96.0           | 89.8             | 46.2           | 70.3             | 67.0           | 77.9             | 116.7          | 125.5          |
| 5                        | 86.1           | 100.6            | 118.8          | 90.4             | 108.7          | 96.2             | 86.4           | 111.1          |
| 6                        | 89.0           | 101.0            | 75.2           | 95.6             | 96.5           | 108.7            | 115.6          | 133.8          |
| 7                        | 109.3          | 95.7             | 66.7           | 53.8             | --*            | 66.3             | 91.8           | 64.8           |
| 8                        | 103.7          | 128.2            | 98.4           | 112.0            | 123.4          | 137.8            | 125.0          | 100.5          |
| 9                        | 55.8           | 67.7             | 66.6           | 107.2            | 61.2           | 58.9             | 58.2           | 84.6           |
| 10                       | 92.6           | 127.9            | 108.8          | 108.0            | 108.3          | 69.2             | 84.3           | 68.5           |
| Mean yield--<br>Lb./plot | 90.93          | 99.39            | 86.58          | 89.19            | 97.41          | 91.70            | 91.64          | 90.55          |
| Tons/acre                | 11.78          | 12.88            | 11.22          | 11.56            | 12.62          | 11.88            | 11.88          | 11.74          |

\* Not harvested because of poor stand.

Average of 3 checks is 93.43 lb. per plot, or 12.11 tons per acre.

Least significant difference at 5-percent level for comparing treatments A<sub>2</sub>, R<sub>2</sub>, or U<sub>2</sub> with average of 3 checks is 12.62 lb. per plot, or 1.64 tons per acre.

Least significant difference at 5-percent level for comparing treatments A<sub>1</sub> or A<sub>4</sub> with average of 3 checks is 14.29 lb. per plot, or 1.85 tons per acre.

Turnips - Beltsville, Md.

WEIGHT OF ROOTS, POUNDS PER PLOT

| Replication No.            | Treatments     |                  |                |                  |                |                  |                |                |
|----------------------------|----------------|------------------|----------------|------------------|----------------|------------------|----------------|----------------|
|                            | A <sub>2</sub> | CkA <sub>2</sub> | R <sub>2</sub> | CkR <sub>2</sub> | U <sub>2</sub> | CkU <sub>2</sub> | A <sub>4</sub> | A <sub>1</sub> |
| 1                          | 61.0           | 56.7             | 61.2           | 58.5             | 59.8           | 59.8             | 50.8           | 49.6           |
| 2                          | 47.2           | 56.6             | 55.3           | 43.0             | 68.7           | 56.3             | 54.0           | 36.3           |
| 3                          | 52.3           | 59.0             | 57.9           | 54.4             | 64.0           | --*              | 35.3           | 43.5           |
| 4                          | 61.2           | 55.5             | 29.2           | 44.9             | 39.7           | 46.2             | 69.7           | 71.6           |
| 5                          | 56.5           | 65.5             | 74.4           | 59.5             | 60.0           | 62.4             | 54.1           | 69.0           |
| 6                          | 58.8           | 65.4             | 57.1           | 57.0             | 61.1           | 66.9             | 70.6           | 75.3           |
| 7                          | 68.8           | 60.3             | 40.0           | 33.5             | --*            | 40.2             | 52.8           | 41.2           |
| 8                          | 65.8           | 82.0             | 64.7           | 72.0             | 82.5           | 83.9             | 73.9           | 62.5           |
| 9                          | 33.5           | 42.0             | 42.5           | 63.0             | 37.5           | 34.8             | 34.3           | 53.5           |
| 10                         | 55.8           | 72.2             | 61.3           | 62.2             | 62.0           | 40.0             | 49.3           | 41.0           |
| Mean yield--<br>Lbs. /plot | 56.09          | 61.52            | 54.36          | 54.80            | 57.81          | 55.19            | 54.48          | 54.35          |
| Tons /acre                 | 7.27           | 7.97             | 7.05           | 7.10             | 7.49           | 7.15             | 7.06           | 7.03           |

\* Not harvested because of poor stand.

Average of 3 checks is 57.17 lb. per plot, or 7.41 tons per acre.

Least significant difference at 5-percent level for comparing treatments A<sub>2</sub>, R<sub>2</sub>, or U<sub>2</sub> with average of 3 checks is 6.87 lb. per plot, or 0.89 tons per acre.

Least significant difference at 5-percent level for comparing treatments A<sub>1</sub> or A<sub>4</sub> with average of 3 checks is 7.88 lb. per plot, or 1.02 tons per acre.

ANALYSIS OF VARIANCE

| Variants            | Degrees of freedom | Mean squares |        |
|---------------------|--------------------|--------------|--------|
|                     |                    | Tops - roots | Roots  |
| Replications        | 9                  | 1,410.48     | 622.65 |
| Treatment pairs     | 3                  | 227.63       | 84.16  |
| Error (a)           | 27                 | 531.58       | 166.61 |
| Treatments in pairs | 4                  | 140.22       | 45.70  |
| Error (b)           | $\frac{1}{34}$     | 201.57       | 56.60  |

$\frac{1}{2}$  Two missing plots.

# CARROTS

Carrots - Geneva, Ontario County, N. Y.

Cooperating agency ..... New York Agricultural Experiment Station

Cooperators conducting  
experiment ..... M. T. Vittum

Soil type ..... Yates gravelly loam

Plot size ..... 16' x 24'

Harvest area ..... 8' x 20'

Planting date ..... June 10, 1948

Harvest dates ..... October 21 and 22, 1948

Variety ..... Red Cored Chanteney

Fertilizer ..... 1,100 pounds 5-10-10

Carrots - Geneva, N. Y.

## YIELD IN TONS PER ACRE

| Replication<br>No. | Treatments     |                  |                |                  |                |                  |                |                |
|--------------------|----------------|------------------|----------------|------------------|----------------|------------------|----------------|----------------|
|                    | A <sub>2</sub> | CkA <sub>2</sub> | R <sub>2</sub> | CkR <sub>2</sub> | U <sub>2</sub> | CkU <sub>2</sub> | A <sub>4</sub> | A <sub>1</sub> |
| 1                  | 9.94           | 11.54            | 13.07          | 10.99            | 12.52          | 9.26             | 12.32          | 12.80          |
| 2                  | 13.48          | 15.18            | 11.50          | 14.30            | 13.54          | 12.76            | 15.59          | 14.02          |
| 3                  | 13.34          | 11.33            | 12.16          | 10.14            | 9.15           | 11.04            | 12.80          | 11.54          |
| 4                  | 13.07          | 13.88            | 12.93          | 15.52            | 13.95          | 14.36            | 14.70          | 13.66          |
| 5                  | 10.35          | 11.43            | 11.88          | 10.94            | 9.77           | 13.24            | 11.98          | 11.50          |
| 6                  | 12.80          | 13.17            | 11.91          | 14.02            | 13.27          | 12.80            | 12.08          | 10.02          |
| 7                  | 12.86          | 13.79            | 13.88          | 13.51            | 12.66          | 12.88            | 14.70          | 12.29          |
| 8                  | 14.09          | 15.72            | 16.10          | 13.65            | 16.51          | 14.19            | 16.68          | 15.31          |
| 9                  | 12.80          | 13.85            | 15.48          | 14.07            | 13.52          | 15.25            | 15.28          | 12.63          |
| 10                 | 13.92          | 14.91            | 13.92          | 14.19            | 13.82          | 16.71            | 15.35          | 17.59          |
| Mean yield         | 12.66          | 13.48            | 13.28          | 13.13            | 12.87          | 13.33            | 14.15          | 13.22          |

Average for 3 checks is 13.31.

Least significant difference at 5-percent level for comparing treatments A<sub>2</sub>, R<sub>2</sub>, or U<sub>2</sub> with average of 3 checks is 0.841.

Least significant difference for comparing A<sub>1</sub> or A<sub>4</sub> with check is same as for A<sub>2</sub>, U<sub>2</sub>, or R<sub>2</sub>.

## ANALYSIS OF VARIANCE

| Variants            | Degrees of freedom | Mean squares |
|---------------------|--------------------|--------------|
| Replications        | 9                  | 16.602       |
| Treatment pairs     | 3                  | 1.610        |
| Error (a)           | 27                 | .977         |
| Treatments in pairs | 4                  | 2.206        |
| Error (b)           | 36                 | 1.534        |

# POTATOES

Potatoes--Bozeman, Gallatin County, Mont.

Cooperating agency ..... Montana Agricultural Experiment Station

Cooperators conducting experiment ..... F. M. Harrington and H. N. Metcalf

Soil type ..... Huffine silt loam

Plot size ..... 13.3' x 36'

Harvest area ..... 6.7' x 30'

Planting dates ..... May 17 and 18, 1948

Harvest date ..... September 13, 1948

Variety ..... Netted Gem

Fertilizer ..... 200 pounds per acre of 10-20-0

Potatoes - Bozeman, Mont.

## YIELD IN POUNDS PER PLOT

| Replication No.          | Treatments     |                  |                |                  |                |                  |                |                |
|--------------------------|----------------|------------------|----------------|------------------|----------------|------------------|----------------|----------------|
|                          | A <sub>2</sub> | CkA <sub>2</sub> | R <sub>2</sub> | CkR <sub>2</sub> | U <sub>2</sub> | CkU <sub>2</sub> | A <sub>4</sub> | A <sub>1</sub> |
| 1                        | 160            | 156              | 170            | 180              | 148            | 166              | 162            | 157            |
| 2                        | 164            | 165              | 173            | 173              | 176            | 166              | 178            | 178            |
| 3                        | 181            | 166              | 176            | 168              | 180            | 165              | 163            | 178            |
| 4                        | 150            | 158              | 170            | 173              | 168            | 164              | 162            | 160            |
| 5                        | 164            | 161              | 156            | 150              | 156            | 174              | 168            | 176            |
| 6                        | 178            | 170              | 186            | 178              | 180            | 186              | 182            | 188            |
| 7                        | 184            | 170              | 202            | 178              | 186            | 184              | 184            | 176            |
| 8                        | 188            | 178              | 156            | 164              | 182            | 178              | 192            | 162            |
| 9                        | 162            | 158              | 176            | 158              | 166            | 158              | 182            | 173            |
| 10                       | 149            | 163              | 157            | 174              | 155            | 138              | 170            | 160            |
| Mean yield--<br>Lb./plot | 168.0          | 164.5            | 172.2          | 169.6            | 169.7          | 167.9            | 174.3          | 170.8          |
| 100 wt./acre             | 365.9          | 358.3            | 375.1          | 369.4            | 369.6          | 365.7            | 379.6          | 372.0          |

Average for 3 checks is 167.3 lb. per plot, or 364.4 100-weights per acre.

Least significant difference at 5-percent level for comparing treatments A<sub>2</sub>, R<sub>2</sub>, or U<sub>2</sub> with average of 3 checks is 6.53 lb. per plot, or 14.2 100 weights per acre.

Least significant difference at 5-percent level for comparing treatments A<sub>1</sub> or A<sub>4</sub> with average of 3 checks is 6.86 lb. per plot, or 14.9 100-weights per acre.

## ANALYSIS OF VARIANCE

| Variants            | Degrees of freedom | Mean squares |
|---------------------|--------------------|--------------|
| Replications        | 9                  | 553.67       |
| Treatment pairs     | 3                  | 148.33       |
| Error (a)           | 27                 | 100.30       |
| Treatments in pairs | 4                  | 43.25        |
| Error (b)           | 36                 | 68.94        |



Potatoes-- Richford, Tioga Co., N. Y.

Cooperating agency ..... Cornell University Agricultural Experiment Station

Cooperators conducting experiment ..... Ora Smith and H. C. Thompson, Ithaca, and Clark Seed Farm, Richford

Soil type ..... Lordstown silt loam

Plot size ..... 11.7' x 40'

Harvest area ..... 5.8' x 37'

Planting date ..... May 22, 1948

Harvest date ..... October 6, 1948

Variety ..... Katahdin

Fertilizer ..... 5-10-10, 2,700 lb. per acre

TOTAL YIELD IN POUNDS PER PLOT

| Replication No.     | Treatments     |                  |                |                  |                |                  |                |                |
|---------------------|----------------|------------------|----------------|------------------|----------------|------------------|----------------|----------------|
|                     | A <sub>2</sub> | CkA <sub>2</sub> | R <sub>2</sub> | CkR <sub>2</sub> | U <sub>2</sub> | CkU <sub>2</sub> | A <sub>4</sub> | A <sub>1</sub> |
| 1                   | 116.0          | 131.0            | 135.0          | 169.0            | 121.0          | 155.0            | 119.0          | 124.5          |
| 2                   | 103.0          | 139.5            | 133.5          | 139.0            | 162.0          | 129.5            | 142.0          | 143.0          |
| 3                   | 164.0          | 175.0            | 152.0          | 107.0            | 134.0          | 142.0            | 144.5          | 106.5          |
| 4                   | 146.5          | 127.5            | 114.0          | 149.0            | 104.0          | 174.0            | 97.0           | 161.5          |
| 5                   | 179.5          | 168.0            | 149.0          | 147.5            | 170.5          | 156.0            | 155.0          | 130.5          |
| 6                   | 141.0          | 147.0            | 153.5          | 160.5            | 126.0          | 171.5            | 160.0          | 107.0          |
| 7                   | 155.0          | 85.0             | 133.5          | 141.0            | 148.5          | 136.5            | 129.0          | 156.0          |
| 8                   | 184.5          | 175.0            | 156.5          | 172.5            | 139.5          | 118.0            | 135.0          | 158.0          |
| 9                   | 73.0           | 147.5            | 113.5          | 129.0            | 135.0          | 116.0            | 165.5          | 102.5          |
| 10                  | 159.5          | 167.0            | 145.5          | 163.0            | 148.0          | 133.5            | 114.0          | 163.5          |
| Mean yield-Lb./plot | 142.20         | 146.25           | 138.60         | 147.75           | 138.85         | 143.20           | 136.10         | 135.30         |
| 100-wt./acre        | 287.0          | 295.1            | 279.7          | 298.2            | 280.2          | 289.0            | 274.6          | 273.0          |

Average of 3 checks is 145.73 lb. per plot, or 294.1 100-wt. per acre.

Least significant difference at 5-percent level for comparing treatments A<sub>2</sub>, R<sub>2</sub>, or U<sub>2</sub> with average of 3 checks is 17.69 lb. per plot, or 35.70 100-wt. per acre.

Least significant difference for comparing A<sub>1</sub> or A<sub>4</sub> with mean of checks is same as for A<sub>2</sub>, R<sub>2</sub>, or U<sub>2</sub>.

Potatoes - Richford, N. Y.

YIELD OF U. S. NO. 1, POUNDS PER PLOT

| Replication No.     | Treatments     |                  |                |                  |                |                  |                |                |
|---------------------|----------------|------------------|----------------|------------------|----------------|------------------|----------------|----------------|
|                     | A <sub>2</sub> | CkA <sub>2</sub> | R <sub>2</sub> | CkR <sub>2</sub> | U <sub>2</sub> | CkU <sub>2</sub> | A <sub>4</sub> | A <sub>1</sub> |
| 1                   | 113.0          | 128.5            | 133.0          | 164.5            | 118.0          | 150.5            | 114.5          | 120.5          |
| 2                   | 99.0           | 137.0            | 129.0          | 137.0            | 158.0          | 126.5            | 138.5          | 138.0          |
| 3                   | 161.5          | 173.0            | 150.0          | 104.5            | 129.5          | 140.0            | 141.0          | 105.0          |
| 4                   | 143.0          | 124.0            | 110.0          | 146.5            | 103.0          | 171.0            | 94.0           | 160.5          |
| 5                   | 177.5          | 165.5            | 146.5          | 145.5            | 168.5          | 153.0            | 152.0          | 127.5          |
| 6                   | 140.0          | 144.5            | 150.5          | 158.5            | 123.0          | 170.0            | 157.5          | 104.5          |
| 7                   | 152.5          | 82.5             | 130.5          | 137.0            | 143.5          | 134.5            | 125.0          | 152.5          |
| 8                   | 181.0          | 171.5            | 154.5          | 170.5            | 138.0          | 117.0            | 132.0          | 155.0          |
| 9                   | 71.5           | 145.0            | 109.5          | 127.5            | 130.5          | 113.0            | 163.0          | 99.5           |
| 10                  | 157.5          | 165.0            | 141.5          | 161.5            | 146.5          | 131.5            | 112.0          | 160.5          |
| Mean yield-Lb./plot | 139.65         | 143.65           | 135.50         | 145.30           | 135.85         | 140.70           | 132.95         | 132.35         |
| 100-wt./acre        | 281.8          | 289.9            | 273.4          | 293.2            | 274.1          | 283.9            | 268.3          | 267.1          |

Average of 3 checks is 143.22 lb. per plot, or 289.0 100-wt. per acre.

Least significant difference at 5-percent level for comparing treatments A<sub>2</sub>, R<sub>2</sub>, or U<sub>2</sub> with average of 3 checks is 17.61 lb. per plot, or 35.54 100-wt. per acre.

Least significant difference for comparing A<sub>1</sub> or A<sub>4</sub> with mean of checks is same as for A<sub>2</sub>, R<sub>2</sub>, or U<sub>2</sub>.

ANALYSIS OF VARIANCE

| Variants            | Degrees of freedom | Mean squares |             |
|---------------------|--------------------|--------------|-------------|
|                     |                    | Total yield  | U. S. No. 1 |
| Replications        | 9                  | 908          | 959         |
| Treatment pairs     | 3                  | 288          | 317         |
| Error (a)           | 27                 | 383          | 370         |
| Treatments in pairs | 4                  | 150          | 170         |
| Error (b)           | 36                 | 615          | 612         |

Potatoes - Elba, N. Y.

Cooperating agency .....Cornell University Agricultural Experiment Station

Cooperators conducting experiment ..... G. J. Raleigh, Antonio Mercado, Joe Antognini, and H. C. Thompson, Ithaca, and L. R. Gillard Farm, Elba

Soil type ..... Elba muck  
 Plot size ..... 11.3' x 33.9'  
 Harvest area ..... 5.7' x 30.9'  
 Planting date ..... April 30, 1948  
 Harvest date ..... October 7, 1948  
 Variety ..... Chippewa  
 Fertilizer ..... 1,800 pounds 3-9-15

TOTAL YIELD IN POUNDS PER PLOT

| Replication No.     | Treatments     |                  |                |                  |                |                  |                |                |
|---------------------|----------------|------------------|----------------|------------------|----------------|------------------|----------------|----------------|
|                     | A <sub>2</sub> | CkA <sub>2</sub> | R <sub>2</sub> | CkR <sub>2</sub> | U <sub>2</sub> | CkU <sub>2</sub> | A <sub>4</sub> | A <sub>1</sub> |
| 1                   | 133.4          | 134.3            | 145.8          | 137.2            | 163.8          | 146.9            | 171.2          | 158.9          |
| 2                   | 122.0          | 118.1            | 127.3          | 116.7            | 124.1          | 139.1            | 122.6          | 135.3          |
| 3                   | 98.3           | 129.8            | 143.6          | 124.2            | 114.3          | 138.7            | 131.2          | 119.8          |
| 4                   | 139.8          | 135.6            | 137.2          | 148.7            | 137.5          | 154.2            | 160.9          | 134.8          |
| 5                   | 124.6          | 120.0            | 145.9          | 137.2            | 133.4          | 121.4            | 122.9          | 134.0          |
| 6                   | 98.0           | 125.4            | 138.1          | 127.6            | 115.2          | 134.0            | 126.6          | 114.6          |
| 7                   | 123.6          | 155.6            | 129.8          | 129.0            | 143.6          | 117.2            | 134.2          | 125.5          |
| 8                   | 126.6          | 132.3            | 139.1          | 122.8            | 137.9          | 126.0            | 118.9          | 140.9          |
| 9                   | 127.2          | 134.4            | 141.4          | 134.6            | 126.9          | 124.9            | 119.4          | 111.5          |
| 10                  | 129.6          | 124.4            | 143.6          | 158.6            | 138.0          | 146.9            | 138.2          | 140.8          |
| Mean yield-Lb./plot | 122.3          | 131.0            | 139.2          | 133.7            | 133.5          | 134.9            | 134.6          | 131.6          |
| 100-wt./acre        | 304.5          | 328.7            | 346.6          | 332.9            | 332.4          | 335.9            | 335.2          | 327.7          |

Average for 3 checks is 133.2 lb. per plot or 331.2 100-weight per acre.

Least significant difference at 5-percent level for comparing treatments A<sub>2</sub>, R<sub>2</sub>, or U<sub>2</sub> with average of 3 checks is 7.90 lb. per plot, or 19.67 100-wt. per acre.

Least significance for A<sub>1</sub> or A<sub>4</sub> same as A<sub>2</sub>, R<sub>2</sub>, or U<sub>2</sub>.

Potatoes - Elba, N. Y.

YIELD OF U. S. NO. 1, POUNDS PER PLOT

| Replication No.     | Treatments     |                  |                |                  |                |                  |                |                |
|---------------------|----------------|------------------|----------------|------------------|----------------|------------------|----------------|----------------|
|                     | A <sub>2</sub> | CkA <sub>2</sub> | R <sub>2</sub> | CkR <sub>2</sub> | U <sub>2</sub> | CkU <sub>2</sub> | A <sub>4</sub> | A <sub>1</sub> |
| 1                   | 132.5          | 133.1            | 145.1          | 136.1            | 162.5          | 145.8            | 170.2          | 157.2          |
| 2                   | 118.9          | 116.9            | 125.1          | 115.9            | 121.2          | 138.1            | 120.5          | 134.6          |
| 3                   | 96.2           | 128.7            | 142.6          | 122.9            | 113.6          | 136.8            | 130.1          | 118.1          |
| 4                   | 139.1          | 133.8            | 136.7          | 147.7            | 136.8          | 153.8            | 160.2          | 133.8          |
| 5                   | 121.6          | 117.8            | 143.7          | 135.6            | 132.3          | 120.2            | 121.6          | 131.8          |
| 6                   | 96.2           | 123.1            | 137.4          | 125.2            | 114.0          | 132.2            | 125.1          | 112.4          |
| 7                   | 121.9          | 153.9            | 128.8          | 127.6            | 141.9          | 116.5            | 133.1          | 124.9          |
| 8                   | 124.9          | 130.2            | 137.8          | 121.6            | 136.9          | 124.3            | 117.1          | 140.9          |
| 9                   | 126.1          | 133.6            | 139.2          | 134.1            | 126.4          | 123.8            | 117.3          | 109.6          |
| 10                  | 128.9          | 123.4            | 142.1          | 158.1            | 137.3          | 146.2            | 136.6          | 139.6          |
| Mean yield-Lb./plot | 120.6          | 129.4            | 137.8          | 132.5            | 133.3          | 133.8            | 133.2          | 130.3          |
| 100-wt./acre        | 300.3          | 322.2            | 343.1          | 329.9            | 331.9          | 333.2            | 331.7          | 324.4          |

Average for 3 checks is 131.9 lb. per plot, or 328.4 100-wt. per acre.

Least significant difference at 5-percent level for comparing treatments A<sub>2</sub>, R<sub>2</sub>, or U<sub>2</sub> with average of 3 checks is 7.94 lb. per plot, or 19.77 100-wt. per acre.

Least significant difference for A<sub>1</sub> or A<sub>4</sub> same as A<sub>2</sub>, R<sub>2</sub>, or U<sub>2</sub>.

ANALYSIS OF VARIANCE

| Variants            | Degrees of freedom | Mean squares |             |
|---------------------|--------------------|--------------|-------------|
|                     |                    | Total yield  | U. S. No. 1 |
| Replications        | 9                  | 613          | 648         |
| Treatment pairs     | 3                  | 352          | 382         |
| Error (a)           | 27                 | 110          | 109         |
| Treatments in pairs | 4                  | 146          | 146         |
| Error (b)           | 36                 | 111          | 113         |

# SWEETPOTATOES

Sweetpotatoes - Hope, Hempstead County, Ark.

Cooperating agency ..... Arkansas Agricultural Experiment Station

Cooperators conducting experiment ..... J. R. Cooper, Roy Lambert, Fayetteville, and Cecil Bittle, Hope

Soil type ..... Ruston fine sandy loam

Plot size ..... 12' x 50'

Harvest area ..... 6' x 50'

Planting date ..... April 27, 1948

Harvest date ..... September 14, 1948

Variety ..... Porto Rico

Fertilizer ..... 500 pounds 5-10-5

## TOTAL YIELD, POUNDS PER PLOT

| Replication No.          | Treatments     |                  |                |                  |                |                  |                |                |
|--------------------------|----------------|------------------|----------------|------------------|----------------|------------------|----------------|----------------|
|                          | A <sub>2</sub> | CkA <sub>2</sub> | R <sub>2</sub> | CkR <sub>2</sub> | U <sub>2</sub> | CkU <sub>2</sub> | A <sub>4</sub> | A <sub>1</sub> |
| 1                        | 53.2           | 75.5             | 53.9           | 44.8             | 63.9           | 61.9             | 57.1           | 83.6           |
| 2                        | 73.7           | 71.1             | 65.7           | 56.3             | 47.1           | 72.2             | 68.4           | 67.1           |
| 3                        | 76.2           | 75.0             | 76.0           | 76.2             | 70.9           | 55.6             | 68.4           | 71.2           |
| 4                        | 72.8           | 71.1             | 63.9           | 77.1             | 73.2           | 72.3             | 78.2           | 83.0           |
| 5                        | 80.2           | 80.0             | 83.2           | 75.5             | 73.0           | 74.8             | 94.5           | 84.0           |
| 6                        | 78.2           | 82.0             | 90.5           | 79.7             | 82.4           | 82.7             | 76.4           | 76.9           |
| 7                        | 62.7           | 72.1             | 66.4           | 67.8             | 82.9           | 69.0             | 68.1           | 68.2           |
| 8                        | 65.1           | 72.1             | 45.5           | 61.2             | 64.0           | 54.8             | 44.6           | 54.1           |
| 9                        | 77.3           | 59.4             | 62.5           | 60.3             | 74.8           | 70.8             | 73.8           | 71.7           |
| 10                       | 53.3           | 68.0             | 63.4           | 64.0             | 67.0           | 71.5             | 75.3           | 73.3           |
| Mean yield--<br>Lb./plot | 69.27          | 72.63            | 67.10          | 66.26            | 69.92          | 68.56            | 70.48          | 73.31          |
| Bu./acre                 | 182.9          | 191.7            | 177.1          | 174.9            | 184.6          | 181.0            | 186.1          | 193.5          |

Average of 3 checks is 69.15 lb. per plot, or 182.6 bu. per acre.  
Least significant difference at 5-percent level for comparing treatments A<sub>2</sub>, R<sub>2</sub>, or U<sub>2</sub> with average of 3 checks is 5.73 lb. per plot, or 15.1 bu. per acre.

Least significant difference at 5-percent level for comparing treatments A<sub>1</sub> or A<sub>4</sub> with average of 3 checks is 5.95 lb. per plot, or 15.7 bu. per acre.

Sweetpotatoes - Hope, Ark.

YIELD OF U. S. NO. 1, POUNDS PER PLOT

| Replication No.         | Treatments     |                  |                |                  |                |                  |                |                |
|-------------------------|----------------|------------------|----------------|------------------|----------------|------------------|----------------|----------------|
|                         | A <sub>2</sub> | CkA <sub>2</sub> | R <sub>2</sub> | CkR <sub>2</sub> | U <sub>2</sub> | CkU <sub>2</sub> | A <sub>4</sub> | A <sub>1</sub> |
| 1                       | 17.0           | 22.5             | 12.4           | 6.4              | 18.9           | 15.0             | 11.3           | 22.5           |
| 2                       | 21.6           | 22.8             | 16.3           | 13.5             | 8.9            | 17.0             | 9.2            | 17.7           |
| 3                       | 20.2           | 20.9             | 16.2           | 11.6             | 20.5           | 11.4             | 18.0           | 16.9           |
| 4                       | 21.7           | 11.5             | 12.5           | 19.0             | 16.4           | 21.2             | 16.9           | 20.4           |
| 5                       | 18.3           | 11.2             | 23.8           | 9.6              | 9.6            | 11.4             | 18.1           | 25.4           |
| 6                       | 13.7           | 13.9             | 23.2           | 19.9             | 15.7           | 11.5             | 16.0           | 23.0           |
| 7                       | 10.2           | 19.0             | 16.5           | 16.7             | 12.9           | 15.7             | 9.6            | 12.0           |
| 8                       | 20.7           | 19.9             | 11.0           | 18.0             | 14.0           | 13.8             | 9.4            | 10.4           |
| 9                       | 31.3           | 18.1             | 23.2           | 22.4             | 24.6           | 20.2             | 25.0           | 21.6           |
| 10                      | 15.8           | 22.5             | 16.5           | 15.7             | 24.0           | 19.0             | 20.7           | 17.8           |
| Mean yield-<br>Lb./plot | 19.05          | 18.23            | 17.16          | 15.28            | 15.75          | 15.62            | 15.42          | 18.77          |
| Bu./acre                | 50.3           | 48.1             | 45.3           | 40.3             | 41.6           | 41.2             | 40.7           | 49.6           |

Average of 3 checks is 16.38 lb. per plot, or 43.2 bu. per acre.  
 Least significant difference at 5-percent level for comparing treatments A<sub>2</sub>, R<sub>2</sub>, or U<sub>2</sub> with average of 3 checks is 3.32 lb. per plot, or 8.8 bu. per acre.  
 Least significant difference at 5-percent level for comparing treatments A<sub>1</sub> or A<sub>4</sub> with average of 3 checks is 3.39 lb. per plot, or 8.9 bu. per acre.

ANALYSIS OF VARIANCE

| Variants            | Degrees of freedom | Mean squares |             |
|---------------------|--------------------|--------------|-------------|
|                     |                    | Total yield  | U. S. No. 1 |
| Replications        | 9                  | 450.30       | 57.62       |
| Treatment pairs     | 3                  | 104.75       | 33.36       |
| Error (a)           | 27                 | 72.35        | 22.84       |
| Treatments in pairs | 4                  | 27.32        | 19.31       |
| Error (b)           | 36                 | 53.93        | 18.65       |

Sweetpotatoes - Fayetteville, Washington County, Ark.

Cooperating Agency ..... Arkansas Agricultural Experiment Station  
 Cooperators conducting experiment ..... J. R. Cooper and Roy Lambert  
 Soil type ..... Newtonia silt loam  
 Plot size ..... 12' x 40'  
 Harvest area ..... 6' x 40'  
 Planting date ..... May 19, 1948  
 Harvest date ..... October 22, 1948  
 Variety ..... Golden Belle  
 Fertilizer ..... 500 pounds 4-12-4

TOTAL YIELD, POUNDS PER PLOT

| Replication No.         | Treatments     |                  |                |                  |                |                  |                |                |
|-------------------------|----------------|------------------|----------------|------------------|----------------|------------------|----------------|----------------|
|                         | A <sub>2</sub> | CkA <sub>2</sub> | R <sub>2</sub> | CkR <sub>2</sub> | U <sub>2</sub> | CkU <sub>2</sub> | A <sub>4</sub> | A <sub>1</sub> |
| 1                       | 77.5           | 69.6             | 47.4           | 41.1             | 76.1           | 83.3             | 41.7           | 51.1           |
| 2                       | 55.1           | 23.1             | 41.6           | 64.5             | 53.6           | 48.7             | 75.4           | 71.4           |
| 3                       | 51.3           | 43.9             | 63.8           | 52.8             | 61.9           | 82.0             | 63.5           | 47.4           |
| 4                       | 81.7           | 111.7            | 83.2           | 70.9             | 119.3          | 105.0            | 87.3           | 44.8           |
| 5                       | 80.5           | 87.4             | 95.2           | 100.5            | 98.1           | 118.1            | 101.3          | 100.4          |
| 6                       | 101.4          | 93.5             | 76.6           | 82.5             | 160.1          | 101.7            | 111.7          | 113.0          |
| 7                       | 136.7          | 94.4             | 107.0          | 144.9            | 95.8           | 78.9             | 83.1           | 81.8           |
| 8                       | 87.9           | 85.4             | 126.1          | 75.1             | 79.7           | 90.1             | 100.9          | 90.4           |
| 9                       | 73.5           | 95.8             | 82.8           | 80.5             | 80.9           | 71.3             | 77.7           | 88.7           |
| 10                      | 107.9          | 61.9             | 90.6           | 96.2             | 76.5           | 105.6            | 97.4           | 84.5           |
| Mean yield-<br>Lb./plot | 85.35          | 76.67            | 81.43          | 80.90            | 90.20          | 88.47            | 84.00          | 77.35          |
| Bu./acre                | 282            | 253              | 269            | 267              | 298            | 292              | 277            | 255            |

Average of 3 checks is 82.01 lb. per plot, or 271 bu. per acre.  
 Least significant difference at 5-percent level for comparing treatments A<sub>1</sub>, R<sub>2</sub>, or U<sub>2</sub> with average of 3 checks is 13.0 lb. per plot, or 43 bu. per acre.  
 Least significant difference at 5-percent level for comparing treatments A<sub>1</sub> or A<sub>4</sub> with average of 3 checks is 14.0 lb. per plot, or 46 bu. per acre.

Sweetpotatoes - Fayetteville, Ark.

YIELD OF U. S. NO. 1, POUNDS PER PLOT

| Replication No.          | Treatments     |                  |                |                  |                |                  |                |                |
|--------------------------|----------------|------------------|----------------|------------------|----------------|------------------|----------------|----------------|
|                          | A <sub>2</sub> | CkA <sub>2</sub> | R <sub>2</sub> | CkR <sub>2</sub> | U <sub>2</sub> | CkU <sub>2</sub> | A <sub>4</sub> | A <sub>1</sub> |
| 1                        | 23.8           | 14.3             | 10.3           | 9.6              | 26.2           | 35.3             | 7.1            | 6.5            |
| 2                        | 8.6            | 1.6              | 13.1           | 16.6             | 12.6           | 7.2              | 20.1           | 23.3           |
| 3                        | 8.3            | 6.9              | 18.9           | 19.0             | 19.2           | 19.5             | 12.7           | 13.2           |
| 4                        | 18.4           | 31.4             | 29.7           | 23.9             | 44.5           | 41.7             | 28.6           | 10.5           |
| 5                        | 28.9           | 27.3             | 33.2           | 32.8             | 35.5           | 46.7             | 38.2           | 37.6           |
| 6                        | 28.3           | 27.3             | 25.6           | 27.9             | 71.5           | 39.9             | 42.0           | 42.5           |
| 7                        | 63.1           | 35.6             | 42.0           | 58.0             | 31.0           | 30.8             | 21.8           | 22.5           |
| 8                        | 28.6           | 22.2             | 61.8           | 27.8             | 21.6           | 20.8             | 38.7           | 25.6           |
| 9                        | 19.5           | 17.2             | 29.9           | 27.0             | 17.1           | 15.0             | 29.3           | 36.7           |
| 10                       | 44.8           | 16.0             | 26.9           | 32.8             | 17.7           | 29.8             | 12.3           | 10.6           |
| Mean yield--<br>Lb./plot | 27.23          | 19.98            | 29.14          | 27.54            | 29.69          | 28.67            | 25.08          | 22.90          |
| Bu./acre                 | 90             | 66               | 96             | 91               | 98             | 95               | 83             | 76             |

Average of 3 checks is 25.40 lb. per plot, or 92.2 bu. per acre.

Least significant difference at 5-percent level for comparing treatments A<sub>2</sub>, R<sub>2</sub>, or U<sub>2</sub> with average of 3 checks is 7.4 lb. per plot, or 24.0 bu. per acre.

Least significant difference at 5-percent level for comparing treatments A<sub>1</sub> or A<sub>4</sub> with average of 3 checks is 8.5 lb. per plot, or 28.6 bu. per acre.

ANALYSIS OF VARIANCE

| Variants            | Degrees of freedom | Mean squares |             |
|---------------------|--------------------|--------------|-------------|
|                     |                    | Total yield  | U. S. No. 1 |
| Replications        | 9                  | 2,824.8      | 711.46      |
| Treatment pairs     | 3                  | 352.4        | 167.02      |
| Error (a)           | 27                 | 443.3        | 194.85      |
| Treatments in pairs | 4                  | 153.5        | 76.14       |
| Error (b)           | 36                 | 259.8        | 66.77       |

YIELD IN TONS PER ACRE, FIRST HARVEST

SPINACH

Spinach-- Michigan Muck Experimental Farm, Clinton County, Mich.

Cooperating agency ..... Michigan Agricultural Experiment Station

Cooperators conducting experiment ..... P. M. Harmer, J. F. Davis, and L. M. Turk, East Lansing

Soil type ..... Carlisle muck

Plot size ..... 10'8" x 24' (split between beets and spinach)

Harvest area ..... 5 1/3' x 20'

Planting dates ..... June 18 and August 10, 1948

Harvest dates ..... July 27 and October 7, 1948

Variety ..... Long Standing Bloomsdale

Fertilizer ..... 1,500 pounds per acre 0-10-20, containing 5 percent copper sulfate and 2 1/2 percent borax

| Replication No. | Treatments     |                  |                |                  |                |                  |                |                |
|-----------------|----------------|------------------|----------------|------------------|----------------|------------------|----------------|----------------|
|                 | A <sub>2</sub> | CkA <sub>2</sub> | R <sub>2</sub> | CkR <sub>2</sub> | U <sub>2</sub> | CkU <sub>2</sub> | A <sub>4</sub> | A <sub>1</sub> |
| 1               | 2.61           | 2.03             | 2.43           | 2.42             | 2.64           | 2.32             | 2.03           | 2.03           |
| 2               | 1.90           | 2.51             | 2.43           | 1.26             | 2.46           | 2.39             | 2.36           | 1.91           |
| 3               | 2.44           | 2.17             | 2.06           | 2.23             | 2.60           | 2.21             | 2.01           | 2.44           |
| 4               | 2.60           | 2.01             | 1.86           | 3.13             | 1.83           | 2.31             | 2.13           | 2.01           |
| 5               | 1.87           | 1.58             | 1.84           | 1.10             | 1.63           | 1.75             | 1.34           | 1.11           |
| 6               | 2.49           | 2.36             | 1.53           | 2.49             | 2.72           | 2.21             | 2.42           | 2.30           |
| 7               | 2.69           | 3.08             | 2.01           | 3.08             | 2.13           | 2.67             | 2.28           | 1.54           |
| 8               | 2.46           | 2.93             | 3.97           | 3.56             | 2.41           | 2.68             | 2.04           | 1.86           |
| 9               | 2.62           | 2.76             | 2.39           | 1.70             | 2.03           | 2.58             | 2.38           | 1.88           |
| 10              | 1.47           | 2.19             | 2.61           | 1.68             | 1.45           | 1.84             | 1.56           | 1.95           |
| Mean yield      | 2.32           | 2.36             | 2.31           | 2.27             | 2.19           | 2.30             | 2.05           | 1.90           |

Average for 3 checks is 2.31.

Least significant difference at 5-percent level for comparing treatments A<sub>2</sub>, R<sub>2</sub>, or U<sub>2</sub> with average of 3 checks is 0.3090.

Least significant difference at 5-percent level for comparing treatments A<sub>1</sub> or A<sub>4</sub> with average of 3 checks is 0.3143.

## Spinach - Michigan

## YIELD IN TONS PER ACRE, SECOND HARVEST

| Replication No. | Treatments     |                  |                |                  |                |                  |                |                |
|-----------------|----------------|------------------|----------------|------------------|----------------|------------------|----------------|----------------|
|                 | A <sub>2</sub> | CkA <sub>2</sub> | R <sub>2</sub> | CkR <sub>2</sub> | U <sub>2</sub> | CkU <sub>2</sub> | A <sub>4</sub> | A <sub>1</sub> |
| 1               | 5.75           | 5.27             | 6.01           | 5.75             | 5.51           | 5.76             | 5.23           | 5.76           |
| 2               | 3.90           | 3.34             | 4.47           | 4.58             | 4.22           | 3.95             | 3.62           | 2.32           |
| 3               | 3.67           | 3.42             | 5.00           | 3.72             | 5.09           | 3.46             | 4.12           | 4.42           |
| 4               | 4.69           | 4.44             | 4.86           | 3.52             | 4.52           | 5.92             | 4.04           | 4.78           |
| 5               | 5.14           | 4.55             | 3.96           | 4.16             | 3.99           | 4.55             | 4.31           | 4.52           |
| 6               | 3.92           | 3.92             | 4.14           | 4.14             | 4.83           | 6.13             | 4.51           | 4.58           |
| 7               | 4.14           | 4.19             | 3.61           | 4.04             | 4.37           | 3.15             | 3.94           | 3.85           |
| 8               | 4.25           | 4.78             | 3.12           | 3.25             | 2.84           | 4.01             | 3.53           | 3.27           |
| 9               | 2.72           | 2.95             | 3.53           | 4.22             | 3.10           | 2.05             | 2.67           | 3.14           |
| 10              | 4.05           | 4.13             | 4.57           | 3.65             | 4.06           | 3.85             | 2.36           | 4.17           |
| Mean yield      | 4.22           | 4.10             | 4.33           | 4.10             | 4.25           | 4.28             | 3.83           | 4.08           |

Average for 3 checks is 4.16.

Least significant difference at 5-percent level for comparing treatments A<sub>2</sub>, R<sub>2</sub>, U<sub>2</sub> with average of 3 checks is 0.4388.

Least significant difference at 5-percent level for comparing treatments A<sub>1</sub> or A<sub>4</sub> with average of 3 checks is 0.4633.

## ANALYSIS OF VARIANCE

| Variants            | Degrees of freedom | Mean squares |            |
|---------------------|--------------------|--------------|------------|
|                     |                    | 1st harvest  | 2d harvest |
| Replications        | 9                  | 0.8588       | 3.8588     |
| Treatment pairs     | 3                  | .5145        | .3701      |
| Error (a)           | 27                 | .1900        | .4646      |
| Treatments in pairs | 4                  | .0486        | .1600      |
| Error (b)           | 36                 | .1656        | .3076      |

POUNDS HARVESTED PER PLOT--6 PLANTS--JULY 22--AUG. 6

TOMATOES

Tomatoes-- Lexington, Fayette County, Ky.

Cooperating agency ..... Kentucky Agricultural Experiment Station

Cooperators conducting experiment ..... A. J. Olney and E.M. Emmert

Soil type ..... Maury silt loam

Plot size ..... 20' x 25'

Harvest area..... 10' x 15'

Planting date ..... May 18, 1948

Harvest dates ..... July 22, 29; August 6, 12, 18, 26, 31;  
September 7, 17, 1948

Variety ..... Rutgers

Fertilizer ..... 500 pounds of 20 percent superphosphate and  
400 pounds of ammonium nitrate

| Replication No. | Treatments     |                  |                |                  |                |                  |                |                |
|-----------------|----------------|------------------|----------------|------------------|----------------|------------------|----------------|----------------|
|                 | A <sub>2</sub> | CkA <sub>2</sub> | R <sub>2</sub> | CkR <sub>2</sub> | U <sub>2</sub> | CkU <sub>2</sub> | A <sub>4</sub> | A <sub>1</sub> |
| 1               | 1.7            | 5.0              | 9.2            | 9.3              | 4.1            | 5.7              | 5.4            | 7.5            |
| 2               | 6.9            | 4.1              | 5.4            | 3.3              | 8.4            | 2.4              | 4.4            | 5.6            |
| 3               | 4.1            | 4.5              | 4.0            | 3.8              | 3.5            | 5.4              | 1.5            | 2.0            |
| 4               | 4.8            | 7.9              | 9.7            | 5.4              | 6.0            | 5.7              | 8.1            | 4.3            |
| 5               | 5.2            | 5.5              | 1.9            | 3.3              | 4.7            | 6.5              | 5.2            | 6.6            |
| 6               | 3.6            | 5.9              | 3.9            | 5.6              | 3.1            | 4.7              | 7.7            | 5.7            |
| 7               | 5.2            | 5.7              | 5.2            | 9.1              | 4.4            | 6.7              | 4.2            | 11.0           |
| 8               | 5.8            | 6.7              | 5.0            | 6.6              | 7.9            | 0.0              | 5.1            | 0.9            |
| 9               | 5.7            | 7.3              | 6.0            | 6.0              | 2.9            | 9.0              | 6.8            | 5.6            |
| 10              | 8.5            | 7.7              | 6.4            | 4.6              | 10.9           | 6.5              | 8.1            | 4.0            |
| Mean            | 5.15           | 6.03             | 5.67           | 5.70             | 5.59           | 5.26             | 5.65           | 5.32           |

Average of 3 checks is 5.66.

Least significant difference at 5-percent level for comparing treatments A<sub>2</sub>, R<sub>2</sub>, and U<sub>2</sub> with average of 3 checks is 1.63.

Least significant difference at 5-percent level for comparing treatments A<sub>1</sub> or A<sub>4</sub> with average of 3 checks is 1.59.



## Tomatoes - Lexington, Ky.

## POUNDS HARVESTED PER PLOT--6 PLANTS--JULY 22-AUG. 26

| Replication No. | Treatments     |                  |                |                  |                |                  |                |                |
|-----------------|----------------|------------------|----------------|------------------|----------------|------------------|----------------|----------------|
|                 | A <sub>2</sub> | CkA <sub>2</sub> | R <sub>2</sub> | CkR <sub>2</sub> | U <sub>2</sub> | CkU <sub>2</sub> | A <sub>4</sub> | A <sub>1</sub> |
| 1               | 13.1           | 22.6             | 37.1           | 24.2             | 25.6           | 26.4             | 24.6           | 21.5           |
| 2               | 24.0           | 25.3             | 17.5           | 15.5             | 25.7           | 21.5             | 20.8           | 25.5           |
| 3               | 21.6           | 23.1             | 24.2           | 23.3             | 20.1           | 21.1             | 16.4           | 16.9           |
| 4               | 25.6           | 34.2             | 31.6           | 28.1             | 25.2           | 28.4             | 25.3           | 26.9           |
| 5               | 27.2           | 23.5             | 19.0           | 22.9             | 17.0           | 28.5             | 30.5           | 27.2           |
| 6               | 20.0           | 33.5             | 22.8           | 30.1             | 13.5           | 18.9             | 19.2           | 25.1           |
| 7               | 23.0           | 22.8             | 33.0           | 19.3             | 12.7           | 20.7             | 24.8           | 33.7           |
| 8               | 20.6           | 16.4             | 16.3           | 23.6             | 26.6           | 11.1             | 23.5           | 11.3           |
| 9               | 28.7           | 24.3             | 29.9           | 23.9             | 15.7           | 19.5             | 22.2           | 23.4           |
| 10              | 31.0           | 29.9             | 27.2           | 20.6             | 38.5           | 28.5             | 32.1           | 24.5           |
| Mean            | 23.48          | 25.56            | 25.86          | 23.15            | 22.06          | 22.46            | 23.94          | 23.60          |

Average of 3 checks is 23.72.

Least significant difference at 5-percent level for comparing treatments A<sub>2</sub>, R<sub>2</sub>, or U<sub>2</sub> with average of 3 checks is 3.90.

Least significant difference at 5-percent level for comparing treatments A<sub>1</sub> or A<sub>4</sub> with average of 3 checks is 4.04.

## Tomatoes - Lexington, Ky.

## POUNDS HARVESTED PER PLOT--6 PLANTS--JULY 22-SEPT. 17

| Replication No. | Treatments     |                  |                |                  |                |                  |                |                |
|-----------------|----------------|------------------|----------------|------------------|----------------|------------------|----------------|----------------|
|                 | A <sub>2</sub> | CkA <sub>2</sub> | R <sub>2</sub> | CkR <sub>2</sub> | U <sub>2</sub> | CkU <sub>2</sub> | A <sub>4</sub> | A <sub>1</sub> |
| 1               | 64.1           | 84.6             | 92.0           | 71.0             | 76.5           | 86.2             | 73.6           | 77.8           |
| 2               | 40.7           | 60.7             | 48.3           | 46.8             | 48.4           | 54.5             | 46.1           | 58.5           |
| 3               | 55.6           | 65.9             | 79.8           | 65.0             | 37.9           | 39.6             | 38.1           | 35.1           |
| 4               | 73.8           | 82.3             | 86.5           | 74.4             | 53.6           | 66.2             | 57.8           | 61.2           |
| 5               | 37.9           | 39.0             | 41.7           | 38.3             | 46.2           | 63.5             | 61.6           | 45.1           |
| 6               | 91.6           | 90.5             | 91.1           | 73.2             | 73.3           | 69.5             | 50.3           | 82.1           |
| 7               | 85.5           | 69.5             | 57.5           | 65.9             | 43.8           | 75.5             | 74.1           | 67.0           |
| 8               | 53.5           | 64.2             | 66.5           | 76.1             | 70.4           | 51.0             | 65.8           | 49.6           |
| 9               | 79.5           | 93.6             | 91.9           | 79.5             | 75.0           | 59.2             | 60.6           | 54.1           |
| 10              | 86.3           | 61.5             | 52.2           | 63.6             | 73.8           | 67.4             | 78.2           | 70.6           |
| Mean            | 66.85          | 71.18            | 70.75          | 65.38            | 59.89          | 63.26            | 60.62          | 60.11          |

Average of 3 checks is 66.61.

Least significant difference at 5-percent level for comparing treatments A<sub>2</sub>, R<sub>2</sub>, U<sub>2</sub> with average of 3 checks is 8.29.

Least significant difference at 5-percent level for comparing treatments A<sub>1</sub> or A<sub>4</sub> with average of 3 checks is 8.90.

## Tomatoes - Lexington, Ky.

NUMBER OF FRUITS HARVESTED PER PLOT--6 PLANTS--JULY 22-AUG. 6

| Replication No. | Treatments     |                  |                |                  |                |                  |                |                |
|-----------------|----------------|------------------|----------------|------------------|----------------|------------------|----------------|----------------|
|                 | A <sub>2</sub> | CkA <sub>2</sub> | R <sub>2</sub> | CkR <sub>2</sub> | U <sub>2</sub> | CkU <sub>2</sub> | A <sub>4</sub> | A <sub>1</sub> |
| 1               | 6              | 19               | 26             | 25               | 13             | 16               | 17             | 27             |
| 2               | 21             | 12               | 16             | 10               | 27             | 8                | 13             | 16             |
| 3               | 15             | 13               | 11             | 11               | 13             | 19               | 4              | 7              |
| 4               | 15             | 23               | 30             | 16               | 20             | 16               | 23             | 15             |
| 5               | 17             | 16               | 7              | 10               | 16             | 20               | 16             | 22             |
| 6               | 9              | 20               | 13             | 18               | 10             | 14               | 24             | 18             |
| 7               | 16             | 18               | 17             | 28               | 12             | 19               | 12             | 33             |
| 8               | 17             | 22               | 17             | 20               | 19             | 0                | 16             | 3              |
| 9               | 19             | 19               | 17             | 19               | 9              | 26               | 20             | 17             |
| 10              | 24             | 22               | 22             | 14               | 33             | 20               | 46             | 12             |
| Mean            | 15.9           | 18.4             | 17.6           | 17.1             | 17.2           | 15.8             | 18.1           | 17.0           |

Average of 3 checks is 17.1.

Least significant difference at 5-percent level for comparing A<sub>2</sub>, R<sub>2</sub>, or U<sub>2</sub> with average of 3 checks is 5.42.Least significant difference at 5-percent level for comparing treatments A<sub>1</sub> or A<sub>4</sub> with average of 3 checks is 5.06.

## Tomatoes - Lexington, Ky.

NUMBER OF FRUITS HARVESTED PER PLOT--6 PLANTS--JULY 22-AUG. 26

| Replication No. | Treatments     |                  |                |                  |                |                  |                |                |
|-----------------|----------------|------------------|----------------|------------------|----------------|------------------|----------------|----------------|
|                 | A <sub>2</sub> | CkA <sub>2</sub> | R <sub>2</sub> | CkR <sub>2</sub> | U <sub>2</sub> | CkU <sub>2</sub> | A <sub>4</sub> | A <sub>1</sub> |
| 1               | 49             | 80               | 110            | 78               | 85             | 85               | 80             | 74             |
| 2               | 84             | 96               | 57             | 55               | 93             | 88               | 91             | 92             |
| 3               | 71             | 72               | 78             | 77               | 83             | 82               | 59             | 63             |
| 4               | 91             | 118              | 105            | 95               | 93             | 104              | 80             | 77             |
| 5               | 115            | 91               | 78             | 85               | 65             | 93               | 110            | 106            |
| 6               | 60             | 119              | 87             | 69               | 42             | 61               | 61             | 78             |
| 7               | 74             | 75               | 67             | 115              | 55             | 66               | 74             | 111            |
| 8               | 63             | 52               | 52             | 77               | 82             | 36               | 80             | 34             |
| 9               | 95             | 70               | 91             | 82               | 47             | 59               | 67             | 80             |
| 10              | 103            | 96               | 106            | 66               | 146            | 97               | 141            | 77             |
| Mean            | 80.5           | 86.9             | 83.1           | 79.9             | 79.1           | 77.1             | 84.3           | 79.2           |

Average of 3 checks is 81.3.

Least significant difference at 5-percent level for comparing treatments A<sub>2</sub>, R<sub>2</sub>, or U<sub>2</sub> with average of 3 checks is 14.45.Least significant difference at 5-percent level for comparing treatments A<sub>1</sub> or A<sub>4</sub> with average of 3 checks is 14.54.

Tomatoes - Lexington, Ky.

TOMATOES - BELTSVILLE, PRINCE GEORGES COUNTY, MD.

NUMBER OF FRUITS HARVESTED PER PLOT--6 PLANTS--JULY 22--SEPT. 17

Cooperating agency ..... Bureau of Plant Industry, Soils, and Agricultural Engineering

Cooperators conducting experiment ..... W. S. Porte and V. R. Boswell  
 Soil type ..... Morgenac loamy sand  
 Plot size ..... 20' x 25'  
 Harvest area ..... 20' x 20' and 10' x 20'  
 Planting date ..... May 18, 1948  
 Harvest dates ..... As indicated  
 Variety ..... Marglobe  
 Fertilizer ..... 900 pounds 5-10-5

| Replication No. | Treatments     |                  |                |                  |                |                  |                |                |
|-----------------|----------------|------------------|----------------|------------------|----------------|------------------|----------------|----------------|
|                 | A <sub>2</sub> | CkA <sub>2</sub> | R <sub>2</sub> | CkR <sub>2</sub> | U <sub>2</sub> | CkU <sub>2</sub> | A <sub>4</sub> | A <sub>1</sub> |
| 1               | 412            | 463              | 454            | 432              | 462            | 473              | 373            | 421            |
| 2               | 212            | 367              | 300            | 312              | 232            | 336              | 325            | 362            |
| 3               | 342            | 400              | 449            | 407              | 266            | 251              | 229            | 212            |
| 4               | 424            | 468              | 480            | 414              | 313            | 385              | 319            | 332            |
| 5               | 230            | 229              | 267            | 228              | 339            | 394              | 358            | 293            |
| 6               | 490            | 421              | 469            | 367              | 373            | 352              | 289            | 426            |
| 7               | 469            | 375              | 349            | 362              | 281            | 409              | 392            | 336            |
| 8               | 399            | 359              | 333            | 406              | 356            | 326              | 388            | 319            |
| 9               | 447            | 428              | 436            | 469              | 403            | 351              | 323            | 337            |
| 10              | 473            | 390              | 319            | 374              | 409            | 391              | 489            | 478            |
| Mean            | 389.8          | 390.0            | 385.6          | 377.1            | 343.4          | 366.9            | 348.5          | 351.6          |

POUNDS HARVESTED PER PLOT, JULY 23 TO AUG. 6  
(Inner and Outer Rows Not Separated)

| Replication No. | Treatments     |                  |                |                  |                |                  |                |                |
|-----------------|----------------|------------------|----------------|------------------|----------------|------------------|----------------|----------------|
|                 | A <sub>2</sub> | CkA <sub>2</sub> | R <sub>2</sub> | CkR <sub>2</sub> | U <sub>2</sub> | CkU <sub>2</sub> | A <sub>4</sub> | A <sub>1</sub> |
| 1               | 3.1            | 3.2              | 5.2            | 4.1              | 7.5            | 5.5              | 10.2           | 3.5            |
| 2               | 2.9            | 2.9              | 4.8            | 1.1              | 4.0            | 4.0              | 6.3            | 6.8            |
| 3               | 3.4            | 2.6              | 4.1            | 6.2              | 3.3            | 5.9              | 6.0            | 5.3            |
| 4               | 1.5            | 2.6              | 3.7            | 2.0              | 3.8            | 2.0              | 3.6            | 1.4            |
| 5               | 2.8            | 2.6              | 4.0            | 6.5              | 4.7            | 4.6              | 6.4            | 4.1            |
| 6               | 3.0            | 2.7              | 1.6            | 1.1              | 1.0            | 1.3              | .8             | .3             |
| 7               | 1.9            | 2.7              | 4.7            | 2.7              | 3.1            | 1.9              | 1.2            | 1.0            |
| 8               | 1.0            | 2.7              | .4             | 2.8              | 1.9            | 1.8              | 3.5            | .7             |
| 9               | 1.1            | .7               | .6             | 1.2              | 1.2            | .6               | 1.3            | 1.7            |
| 10              | 2.3            | 2.2              | 2.3            | 1.7              | 0              | 2.5              | 3.1            | 2.1            |
| Mean yield      | 2.30           | 2.49             | 3.14           | 2.94             | 3.05           | 3.01             | 4.24           | 2.69           |

Average of 3 checks is 378.00.

Least significant difference at 5-percent level for comparing treatments A<sub>2</sub>, R<sub>2</sub>, or U<sub>2</sub> with average of 3 checks is 41.04.

Least significant difference at 5-percent level for comparing treatments A<sub>1</sub> or A<sub>4</sub> with average of 3 checks is 46.56.

ANALYSIS OF VARIANCE

| Variants           | Degrees of freedom | Mean squares               |       |       |                            |       |        |
|--------------------|--------------------|----------------------------|-------|-------|----------------------------|-------|--------|
|                    |                    | Pounds per plot, 7/22 to - |       |       | Fruits per plot, 7/22 to - |       |        |
|                    |                    | 8/6                        | 8/26  | 9/17  | 8/6                        | 8/26  | 9/17   |
| Replications       | 9                  | 8.91                       | 76.96 | 1,052 | 98.12                      | 1,363 | 19,019 |
| Treatment pairs    | 3                  | .26                        | 22.55 | 390   | 8.15                       | 108   | 7,601  |
| Error (a)          | 27                 | 4.08                       | 33.24 | 183   | 34.24                      | 397   | 5,666  |
| Treatment in pairs | 4                  | 1.24                       | 14.93 | 74    | 16.09                      | 102   | 793    |
| Error (b)          | 36                 | 4.97                       | 25.45 | 102   | 57.79                      | 364   | 2,110  |

Average of 3 checks is 2.81.

Least significant difference at 5-percent level for comparing A<sub>2</sub>, R<sub>2</sub>, or U<sub>2</sub> with average of 3 checks is 0.96.

Least significant difference at 5-percent level for comparing A<sub>1</sub> or A<sub>4</sub> with average of 3 checks is 1.00.

POUNDS HARVESTED PER PLOT, AUG. 14-24

| Replication No. | Treatments     |      |                  |      |                |      |                  |      |                |      |                  |       |                |      |                |      |
|-----------------|----------------|------|------------------|------|----------------|------|------------------|------|----------------|------|------------------|-------|----------------|------|----------------|------|
|                 | A <sub>2</sub> |      | CkA <sub>2</sub> |      | R <sub>2</sub> |      | CkR <sub>2</sub> |      | U <sub>2</sub> |      | CkU <sub>2</sub> |       | A <sub>4</sub> |      | A <sub>1</sub> |      |
|                 | In.            | Out. | In.              | Out. | In.            | Out. | In.              | Out. | In.            | Out. | In.              | Out.  | In.            | Out. | In.            | Out. |
| 1               | 23.5           | 17.3 | 19.2             | 17.5 | 32.5           | 28.4 | 30.7             | 24.5 | 35.5           | 33.3 | 28.8*            | 26.8* | 20.0           | 18.5 | 30.0           | 27.0 |
| 2               | 18.5           | 19.5 | 32.0             | 35.0 | 35.0           | 32.1 | 37.6             | 34.0 | 28.0           | 28.6 | 28.8             | 26.8  | 26.3           | 34.0 | 33.8           | 31.0 |
| 3               | 27.2           | 20.8 | 27.4             | 35.8 | 27.0           | 27.0 | 21.6             | 14.7 | 32.3           | 18.0 | 29.7             | 29.0  | 32.0           | 28.5 | 25.2           | 23.1 |
| 4               | 27.0           | 25.9 | 27.4             | 27.2 | 20.7           | 26.5 | 29.7             | 29.5 | 27.5           | 27.1 | 32.0             | 36.5  | 17.1           | 30.7 | 15.3           | 17.5 |
| 5               | 22.7           | 19.5 | 12.6             | 19.0 | 29.4           | 30.3 | 25.5             | 26.4 | 23.3           | 25.5 | 20.9             | 19.0  | 24.8           | 22.3 | 19.6           | 26.5 |
| 6               | 19.3           | 17.9 | 18.0             | 18.1 | 16.1           | 17.4 | 17.0             | 10.3 | 17.2           | 28.1 | 21.4             | 18.5  | 14.9           | 18.0 | 14.8           | 13.6 |
| 7               | 16.5           | 11.1 | 13.8             | 12.0 | 38.0           | 39.0 | 17.2             | 27.0 | 28.8           | 31.5 | 24.9             | 26.4  | 16.0           | 14.6 | 11.5           | 10.0 |
| 8               | 20.1           | 24.4 | 36.0             | 28.5 | 13.5           | 18.8 | 21.9             | 27.9 | 17.5           | 16.0 | 14.3             | 16.9  | 26.1           | 23.0 | 31.9           | 19.8 |
| 9               | 12.3           | 13.6 | 16.8             | 15.0 | 10.0           | 5.5  | 9.3              | 11.0 | 15.9           | 13.3 | 16.4             | 16.4  | 13.5           | 12.3 | 15.5           | 14.8 |
| 10              | 12.0           | 13.3 | 23.0             | 23.8 | 22.0           | 30.8 | 15.5             | 26.6 | 16.1           | 10.2 | 20.6             | 17.6  | 44.0           | 27.0 | 23.0           | 34.5 |
| Mean yield      | 38.24          |      | 45.81            |      | 50.00          |      | 45.79            |      | 47.37          |      | 47.17            |       | 46.36          |      | 43.84          |      |

\* These two figures include the harvest of August 14 in which the inner and outer rows for this plot were not separated. The total yield of 15.7 lb. was split equally between the inner and outer rows.

Average of 3 checks is 46.26.

Least significant difference at 5-percent level for comparing treatments A<sub>2</sub>, R<sub>2</sub>, and U<sub>2</sub> with average of 3 checks is 7.82.

Least significant difference at 5-percent level for comparing treatments A<sub>1</sub> or A<sub>4</sub> with average of 3 checks is 8.96.

POUNDS HARVESTED PER PLOT, AUG. 14-SEPT. 7

| Replication No. | Treatments     |       |                  |      |                |      |                  |      |                |      |                  |      |                |      |                |      |
|-----------------|----------------|-------|------------------|------|----------------|------|------------------|------|----------------|------|------------------|------|----------------|------|----------------|------|
|                 | A <sub>2</sub> |       | CkA <sub>2</sub> |      | R <sub>2</sub> |      | CkR <sub>2</sub> |      | U <sub>2</sub> |      | CkU <sub>2</sub> |      | A <sub>4</sub> |      | A <sub>1</sub> |      |
|                 | In.            | Out.  | In.              | Out. | In.            | Out. | In.              | Out. | In.            | Out. | In.              | Out. | In.            | Out. | In.            | Out. |
| 1               | 52.0           | 36.3  | 34.7             | 41.5 | 67.5           | 55.4 | 58.7             | 57.0 | 84.0           | 60.3 | 53.3             | 50.3 | 39.5           | 36.0 | 52.0           | 51.0 |
| 2               | 65.0           | 63.5  | 66.5             | 68.5 | 57.5           | 69.6 | 61.1             | 74.5 | 61.0           | 65.6 | 68.3             | 68.3 | 68.3           | 66.5 | 60.8           | 64.0 |
| 3               | 72.2           | 55.8  | 77.9             | 82.3 | 52.5           | 56.0 | 66.1             | 47.2 | 60.3           | 41.0 | 59.2             | 60.0 | 56.5           | 47.0 | 54.2           | 54.6 |
| 4               | 73.0           | 59.9  | 62.4             | 52.2 | 67.7           | 60.0 | 61.7             | 63.2 | 47.5           | 60.1 | 57.0             | 60.5 | 54.1           | 68.7 | 41.8           | 64.0 |
| 5               | 70.7           | 65.5  | 38.1             | 51.6 | 67.9           | 60.8 | 53.5             | 61.4 | 49.8           | 50.5 | 48.4             | 49.0 | 71.3           | 66.8 | 56.6           | 70.0 |
| 6               | 49.3           | 56.4  | 63.5             | 52.6 | 46.6           | 44.9 | 39.5             | 39.8 | 70.7           | 73.1 | 60.9             | 65.0 | 51.4           | 55.5 | 46.3           | 54.1 |
| 7               | 39.5           | 37.1  | 31.8             | 34.0 | 79.0           | 87.6 | 62.2             | 75.5 | 55.8           | 56.5 | 69.9             | 68.4 | 44.5           | 32.6 | 41.0           | 34.0 |
| 8               | 93.1           | 105.4 | 107.0            | 90.0 | 62.5           | 53.8 | 49.9             | 64.4 | 62.5           | 54.0 | 41.8             | 52.4 | 92.6           | 98.0 | 85.9           | 91.8 |
| 9               | 40.8           | 41.6  | 42.3             | 36.0 | 19.5           | 13.8 | 41.3             | 36.0 | 47.4           | 53.3 | 48.9             | 48.4 | 50.5           | 56.3 | 51.5           | 54.8 |
| 10              | 45.5           | 41.3  | 56.0             | 57.8 | 77.0           | 70.3 | 54.5             | 73.6 | 49.6           | 47.7 | 57.1             | 47.1 | 81.0           | 72.5 | 67.0           | 74.0 |
| Mean yield      | 116.39         |       | 114.67           |      | 116.99         |      | 114.11           |      | 115.07         |      | 113.42           |      | 120.96         |      | 116.94         |      |

Average of 3 checks is 114.07.

Least significant difference at 5-percent level for comparing treatments A<sub>2</sub>, R<sub>2</sub>, and U<sub>2</sub> with average of 3 checks is 16.54.

Least significant difference at 5-percent level for comparing treatments A<sub>1</sub> or A<sub>4</sub> with average of 3 checks is 20.93.

POUNDS HARVESTED PER PLOT, AUG. 14-SEPT. 24

| Replication No. | Treatments     |       |                  |       |                |       |                  |       |                |       |                  |       |                |       |                |       |
|-----------------|----------------|-------|------------------|-------|----------------|-------|------------------|-------|----------------|-------|------------------|-------|----------------|-------|----------------|-------|
|                 | A <sub>2</sub> |       | CkA <sub>2</sub> |       | R <sub>2</sub> |       | CkR <sub>2</sub> |       | U <sub>2</sub> |       | CkU <sub>2</sub> |       | A <sub>4</sub> |       | A <sub>1</sub> |       |
|                 | In.            | Out.  | In.              | Out.  | In.            | Out.  | In.              | Out.  | In.            | Out.  | In.              | Out.  | In.            | Out.  | In.            | Out.  |
| 1               | 84.5           | 68.5  | 64.7             | 73.5  | 106.3          | 86.9  | 84.2             | 78.0  | 114.0          | 92.6  | 80.8             | 70.9  | 71.8           | 63.0  | 79.2           | 82.0  |
| 2               | 102.0          | 92.8  | 103.0            | 96.1  | 83.5           | 96.4  | 96.4             | 105.5 | 90.5           | 89.8  | 101.8            | 103.6 | 105.1          | 92.0  | 92.3           | 95.0  |
| 3               | 105.2          | 81.8  | 114.9            | 109.3 | 82.0           | 83.0  | 89.9             | 69.4  | 86.8           | 62.5  | 83.2             | 92.0  | 82.0           | 79.0  | 87.2           | 96.3  |
| 4               | 100.0          | 77.3  | 85.6             | 73.7  | 87.2           | 78.5  | 95.7             | 83.4  | 62.5           | 78.6  | 73.0             | 73.7  | 81.1           | 94.7  | 66.8           | 88.5  |
| 5               | 100.7          | 91.0  | 66.6             | 83.6  | 96.4           | 99.8  | 85.5             | 87.9  | 86.8           | 89.5  | 76.4             | 78.5  | 106.3          | 101.8 | 79.6           | 94.5  |
| 6               | 83.3           | 90.4  | 92.0             | 84.1  | 69.6           | 76.4  | 60.0             | 61.8  | 92.7           | 105.6 | 99.4             | 91.0  | 84.4           | 81.5  | 61.3           | 66.6  |
| 7               | 71.0           | 60.6  | 60.3             | 66.5  | 113.5          | 121.5 | 95.7             | 110.5 | 75.8           | 81.0  | 118.4            | 101.4 | 65.5           | 52.6  | 61.5           | 57.5  |
| 8               | 138.1          | 153.9 | 149.5            | 128.5 | 101.0          | 92.8  | 71.4             | 86.4  | 99.0           | 84.5  | 65.8             | 78.9  | 125.6          | 131.6 | 125.9          | 136.3 |
| 9               | 60.3           | 57.1  | 57.3             | 58.0  | 38.0           | 31.8  | 64.3             | 57.0  | 76.9           | 79.3  | 72.9             | 69.9  | 78.0           | 83.8  | 85.5           | 84.3  |
| 10              | 60.2           | 58.3  | 77.5             | 78.3  | 105.0          | 100.3 | 78.0             | 104.1 | 68.6           | 71.2  | 77.1             | 68.6  | 103.5          | 103.0 | 89.5           | 100.5 |
| Mean yield      | 173.7          |       | 172.3            |       | 175.0          |       | 166.5            |       | 168.8          |       | 167.7            |       | 178.6          |       | 173.0          |       |

Average of 3 checks is 168.8.

Least significant difference at 5-percent level for comparing treatments A<sub>2</sub>, R<sub>2</sub>, and U<sub>2</sub> with average of 3 checks is 21.34.

Least significant difference at 5-percent level for comparing treatments A<sub>1</sub> or A<sub>4</sub> with average of 3 checks is 26.39.

Tomatoes - Beltsville

TOTAL YIELD, POUNDS PER PLOT  
(4 rows - 20 plants)

| Replication No.          | Treatments     |                  |                |                  |                |                  |                |                |
|--------------------------|----------------|------------------|----------------|------------------|----------------|------------------|----------------|----------------|
|                          | A <sub>2</sub> | CkA <sub>2</sub> | R <sub>2</sub> | CkR <sub>2</sub> | U <sub>2</sub> | CkU <sub>2</sub> | A <sub>4</sub> | A <sub>1</sub> |
| 1                        | 156            | 141              | 198            | 166              | 214            | 157              | 145            | 165            |
| 2                        | 198            | 202              | 185            | 203              | 184            | 209              | 203            | 194            |
| 3                        | 190            | 227              | 169            | 165              | 153            | 181              | 167            | 189            |
| 4                        | 179            | 162              | 169            | 181              | 145            | 149              | 179            | 157            |
| 5                        | 194            | 153              | 200            | 180              | 181            | 159              | 214            | 178            |
| 6                        | 177            | 179              | 148            | 123              | 199            | 192              | 167            | 128            |
| 7                        | 134            | 130              | 241            | 209              | 160            | 222              | 119            | 120            |
| 8                        | 293            | 281              | 194            | 161              | 185            | 146              | 261            | 263            |
| 9                        | 118            | 116              | 70             | 122              | 157            | 143              | 163            | 171            |
| 10                       | 121            | 156              | 208            | 184              | 140            | 148              | 210            | 192            |
| Mean yields-<br>Lb./plot | 176.0          | 174.9            | 178.2          | 169.4            | 171.8          | 170.6            | 182.8          | 175.7          |
| Tons/acre                | 9.58           | 9.52             | 9.70           | 9.22             | 9.35           | 9.29             | 9.95           | 9.56           |

Average of 3 checks is 171.6 lb. per plot, or 9.34 tons per acre.

Least significant difference at 5-percent level for comparing treatments A<sub>2</sub>, R<sub>2</sub>, and U<sub>2</sub> with average of 3 checks is 21.56 lb. per plot, or 1.17 tons per acre.

Least significant difference at 5-percent level for comparing treatments A<sub>1</sub> or A<sub>4</sub> with average of 3 checks is 26.81 lb. per plot, or 1.46 tons per acre.

ANALYSIS OF VARIANCE

| Variants            | Degrees of freedom | Mean squares      |                    |                    |                     | Total yield |
|---------------------|--------------------|-------------------|--------------------|--------------------|---------------------|-------------|
|                     |                    | July 23 to Aug. 6 | Aug. 14 to Aug. 24 | Aug. 14 to Sept. 7 | Aug. 14 to Sept. 24 |             |
| Replications        | 9                  | 17.85             | 367.99             | 1,207.42           | 2,266.09            | 4,483.67    |
| Treatment pairs     | 3                  | 3.89              | 70.28              | 40.62              | 103.67              | 227.67      |
| Error (a)           | 27                 | 2.09              | 107.95             | 694.69             | 1,050.71            | 2,209.07    |
| Treatments in pairs | 4                  | 3.10              | 50.88              | 18.84              | 66.51               | 163.00      |
| Error (b)           | 36                 | 1.49              | 36.52              | 93.36              | 191.22              | 378.19      |

Cotton - Winterville, Ga.

YIELD OF SEED COTTON POUNDS PER ACRE

COTTON

Cotton-- Athens (Winterville), Clark County, Ga.

Cooperating agency ..... University of Georgia, College of Agriculture

Cooperators conducting experiment ..... Matthias Stelly and W. O. Collins, Athens.

Soil type ..... Durham sandy loam

Plot size ..... 12.7' x 39.7'

Harvest area ..... 6.3' x 30'

Planting date ..... April 29, 1948

Harvest dates ..... September 14, 24, and October 21, 1948

Variety ..... Empire Wilt Resistant

Fertilizer ..... 600 pounds 6-8-6; 200 pounds sodium nitrate

| Replication No. | Treatments     |                  |                |                  |                |                  |                |                |
|-----------------|----------------|------------------|----------------|------------------|----------------|------------------|----------------|----------------|
|                 | A <sub>2</sub> | CkA <sub>2</sub> | R <sub>2</sub> | CkR <sub>2</sub> | U <sub>2</sub> | CkU <sub>2</sub> | A <sub>4</sub> | A <sub>1</sub> |
| 1               | --             | 2,113            | 2,054          | 1,943            | 2,088          | 2,275            | 2,230          | 2,345          |
| 2               | 2,308          | 2,093            | 2,390          | 2,183            | 2,058          | 2,076            | 2,236          | 2,286          |
| 3               | 2,149          | 2,131            | 2,140          | 2,138            | 2,194          | 2,202            | 2,246          | 2,434          |
| 4               | 2,153          | 2,358            | 2,023          | 1,883            | 2,210          | 2,014            | 2,176          | 2,214          |
| 5               | 1,703          | 1,720            | 2,131          | 2,237            | 2,311          | 2,040            | --             | 1,714          |
| 6               | 1,525          | 1,492            | 1,889          | 1,873            | 2,231          | 2,066            | 2,038          | 1,624          |
| 7               | 1,918          | 2,033            | 1,795          | 2,044            | 2,485          | 2,212            | 1,957          | 2,145          |
| 8               | 1,870          | 2,204            | 1,332          | 1,580            | 1,822          | 1,761            | 2,227          | 2,235          |
| 9               | --             | 2,463            | 2,144          | 2,236            | 1,962          | 1,337            | 1,993          | 1,852          |
| 10              | 2,315          | 2,120            | 1,867          | 1,829            | 2,110          | 2,086            | 1,502          | 1,396          |
| Mean yield      | 2,001.1        | 2,072.7          | 1,976.5        | 1,994.6          | 2,147.1        | 2,006.9          | 2,061.3        | 2,024.5        |

Average for 3 checks is 2,024.7.

Least significant difference at 5-percent level for comparing treatments A<sub>2</sub>, R<sub>2</sub>, or U<sub>2</sub> with average of 3 checks is 156.9.

Least significant difference at 5-percent level for comparing treatments A<sub>4</sub> or A<sub>1</sub> with average of 3 checks is 192.

ANALYSIS OF VARIANCE

| Variants            | Degrees of freedom | Mean squares |
|---------------------|--------------------|--------------|
| Replications        | 9                  | 144,766      |
| Treatment pairs     | 3                  | 28,493       |
| Error (a)           | 27                 | 109,770      |
| Treatments in pairs | 4                  | 33,081       |
| Error (b)           | 33                 | 22,463       |



Cotton--Athens (Whitehall), Clark County, Ga.

Cooperating agency ..... University of Georgia, College of  
Agriculture  
Cooperators conducting  
experiment ..... Matthias Stelly and W. O. Collins, Athens  
Soil type ..... Cecil sandy clay loam  
Plot size ..... 12.7' x 39.7'  
Harvest area ..... 6.3' x 30'  
Planting date ..... June 3, 1948  
Harvest dates ..... October 26 and December 7, 1948  
Variety ..... Cokers 100 Wilt Resistant  
Fertilizer ..... 600 pounds 6-8-6; 200 pounds sodium  
nitrate

YIELD OF SEED COTTON, POUNDS PER ACRE

| Replication<br>No. | Treatments     |                  |                |                  |                |                  |                |                |
|--------------------|----------------|------------------|----------------|------------------|----------------|------------------|----------------|----------------|
|                    | A <sub>2</sub> | CkA <sub>2</sub> | R <sub>2</sub> | CkR <sub>2</sub> | U <sub>2</sub> | CkU <sub>2</sub> | A <sub>4</sub> | A <sub>1</sub> |
| 1                  | 1,078          | 926              | 636            | 655              | 1,595          | 1,507            | 541            | 597            |
| 2                  | 1,531          | 1,427            | 583            | 683              | 1,144          | 1,310            | 691            | 849            |
| 3                  | 1,238          | 1,008            | 1,130          | 787              | 1,178          | 1,251            | 1,384          | 1,592          |
| 4                  | 1,270          | 1,282            | 1,132          | 1,128            | 1,499          | 1,584            | 1,030          | 866            |
| 5                  | 1,408          | 1,224            | 1,408          | 887              | 1,090          | 1,357            | 1,395          | 1,587          |
| 6                  | 1,163          | 1,388            | 1,431          | 1,320            | 1,030          | 1,500            | 1,153          | 1,309          |
| 7                  | 1,140          | 1,409            | 1,099          | 1,035            | 904            | 1,364            | 1,392          | 1,327          |
| 8                  | 1,155          | 1,221            | 1,130          | 1,297            | 1,337          | 1,316            | 1,274          | 1,138          |
| 9                  | 1,056          | 835              | 1,164          | 1,216            | 1,088          | 1,016            | 1,245          | 1,090          |
| 10                 | 1,363          | 1,430            | 1,211          | 1,386            | 1,148          | 937              | 520            | 1,225          |
| Mean yield         | 1,240          | 1,215            | 1,092          | 1,039            | 1,201          | 1,314            | 1,062          | 1,158          |

Average of 3 checks is 1,189.

Least significant difference at 5-percent level for comparing  
A<sub>2</sub>, R<sub>2</sub>, or U<sub>2</sub> with average of 3 checks is 161.

Least significant difference at 5-percent level for comparing  
A<sub>1</sub> or A<sub>4</sub> with average of 3 checks is 195.

ANALYSIS OF VARIANCE

| Variants            | Degree of<br>freedom | Mean squares |
|---------------------|----------------------|--------------|
| Replications        | 9                    | 104,316      |
| Treatment pairs     | 3                    | 168,928      |
| Error (a)           | 27                   | 111,198      |
| Treatments in pairs | 4                    | 31,638       |
| Error (b)           | 36                   | 25,424       |

# TOBACCO

Bright Tobacco-- Shotwell Experiment Station, Raleigh,  
Wake County, N. C.

Cooperating agency ..... North Carolina Agricultural Experiment  
Station

Cooperators conducting  
experiment ..... W. G. Woitz and C. A. Carlson

Soil type ..... Durham sandy loam

Plot size ..... 40' x 15'

Harvest area ..... 36' 8" x 11' 3"

Planting date ..... May 5, 1948

Harvest dates ..... July 1, 13, 27, August 2, 9, 12, 16,  
19, and 23, 1948

Variety ..... 402

Fertilizer ..... 30 lb. N, 90 lb. P<sub>2</sub>O<sub>5</sub>, 60 lb. K<sub>2</sub>O.

## WEIGHT OF CURED LEAF, POUNDS PER PLOT

| Replication<br>No.       | Treatments     |                  |                |                  |                |                  |                |                |
|--------------------------|----------------|------------------|----------------|------------------|----------------|------------------|----------------|----------------|
|                          | A <sub>2</sub> | CkA <sub>2</sub> | R <sub>2</sub> | CkR <sub>2</sub> | U <sub>2</sub> | CkU <sub>2</sub> | A <sub>1</sub> | A <sub>4</sub> |
| 1                        | 15.41          | 15.34            | 14.97          | 16.03            | 15.84          | 14.47            | 14.72          | 14.90          |
| 2                        | 16.27          | 15.53            | 15.41          | 15.90            | 15.09          | 14.72            | 15.34          | 15.03          |
| 3                        | 16.59          | 15.59            | 16.27          | 13.34            | 16.47          | 15.59            | 15.34          | 14.97          |
| 4                        | 15.41          | 15.65            | 14.03          | 14.47            | 15.21          | 15.15            | 13.09          | 13.53          |
| 5                        | 14.59          | 13.65            | 13.84          | 14.41            | 14.72          | 13.65            | 13.72          | 14.03          |
| 6                        | 13.90          | 14.34            | 14.21          | 13.15            | 14.09          | 13.72            | 14.90          | 12.90          |
| 7                        | 12.65          | 14.27            | 14.90          | 14.65            | 13.47          | 13.90            | 14.34          | 15.41          |
| 8                        | 15.15          | 13.72            | 15.90          | 14.34            | 14.78          | 12.97            | 14.41          | 14.53          |
| 9                        | 15.27          | 15.03            | 15.34          | 14.59            | 15.15          | 15.53            | 14.59          | 15.90          |
| 10                       | 15.47          | 14.90            | 13.72          | 14.15            | 14.78          | 15.72            | 14.90          | 14.15          |
| Mean yield--<br>Lb./plot | 15.07          | 14.80            | 14.86          | 14.50            | 14.96          | 14.54            | 14.53          | 14.53          |
| Lb./acre                 | 1,459          | 1,433            | 1,438          | 1,404            | 1,448          | 1,407            | 1,407          | 1,407          |

Average of 3 checks is 14.61 lb. per plot. or 1,414 lb. per acre.  
Least significant difference at 5-percent level for comparing  
treatments A<sub>2</sub>, R<sub>2</sub>, or U<sub>2</sub> with average of 3 checks is 0.534 lb. per  
plot, or 51 lb. per acre.

Least significant difference at 5-percent level for comparing  
treatments A<sub>1</sub> or A<sub>4</sub> with average of 3 checks is 0.549 lb. per plot,  
or 53 lb. per acre.

## ANALYSIS OF VARIANCE

| Variants            | Degrees of<br>freedom | Mean squares |
|---------------------|-----------------------|--------------|
| Replications        | 9                     | 2.6705       |
| Treatment pairs     | 3                     | .5563        |
| Error (a)           | 27                    | .5939        |
| Treatments in pairs | 4                     | .4673        |
| Error (b)           | 36                    | .4915        |

# PEANUTS

Peanuts-- Shotwell Experiment Station, Raleigh,  
Wake County, N. C.

Cooperating agency ..... North Carolina Agricultural Experiment  
Station

Operators conducting  
experiment ..... W. L. Nelson, C. A. Carlson, and  
W. E. Colwell

Soil type ..... Durham sandy loam

Plot size ..... 8' x 30'

Harvest area ..... 4' x 28'

Planting date ..... May 4, 1948

Harvest dates ..... September 25 to October 8, 1948

Variety ..... Virginia Bunch

Fertilizer ..... 500 pounds 0-12-12 and 600 pounds  
gypsum

## YIELD OF HAY, POUNDS PER ACRE

| Replication<br>No. | Treatments     |                  |                |                  |                |                  |                |                |
|--------------------|----------------|------------------|----------------|------------------|----------------|------------------|----------------|----------------|
|                    | A <sub>2</sub> | CkA <sub>2</sub> | R <sub>2</sub> | CkR <sub>2</sub> | U <sub>2</sub> | CkU <sub>2</sub> | A <sub>4</sub> | A <sub>1</sub> |
| 1                  | 4,184          | 4,631            | 5,452          | 5,077            | 4,638          | 5,257            | 4,674          | 5,243          |
| 2                  | 4,955          | 3,306            | 4,710          | 4,393            | 4,768          | 4,084            | 5,128          | 5,229          |
| 3                  | 4,415          | 4,033            | 4,487          | 5,020            | 4,631          | 4,732            | 3,666          | 4,134          |
| 4                  | 4,977          | 6,244            | 5,092          | 5,149            | 5,913          | 5,661            | 4,386          | 3,500          |
| 5                  | 4,048          | 3,939            | 3,853          | 4,184            | 3,738          | 3,320            | 5,416          | 4,336          |
| 6                  | 4,364          | 3,154            | 4,696          | 4,451            | 6,539          | 4,170            | 4,451          | 4,206          |
| 7                  | 3,911          | 3,745            | 5,344          | 3,875            | 4,357          | 3,810            | 5,243          | 4,040          |
| 8                  | 5,380          | 5,654            | 4,364          | 3,968            | 4,905          | 3,774            | 4,422          | 5,322          |
| 9                  | 5,056          | 4,415            | 4,991          | 4,977            | 4,379          | 5,906            | 4,753          | 4,364          |
| 10                 | 4,969          | 5,574            | 7,123          | 3,435            | 5,841          | 5,409            | 5,128          | 5,668          |
| Mean yield         | 4,625.9        | 4,469.5          | 5,011.2        | 4,452.9          | 4,952.9        | 4,612.3          | 4,726.7        | 4,604.2        |

Average of 3 checks is 4,511.6.

Least significant difference at 5-percent level for comparing treatments A<sub>2</sub>, R<sub>2</sub>, or U<sub>2</sub> with average of 3 checks is 524.4.

Least significant difference at 5-percent level for comparing treatments A<sub>1</sub> or A<sub>4</sub> with average of 3 checks is 531.5.

peanuts - Raleigh, N. C.

YIELD OF NUTS ADJUSTED TO 60 PERCENT SHELLING, POUNDS PER ACRE

| Replication No. | Treatments     |                  |                |                  |                |                  |                |                |
|-----------------|----------------|------------------|----------------|------------------|----------------|------------------|----------------|----------------|
|                 | A <sub>2</sub> | CkA <sub>2</sub> | R <sub>2</sub> | CkR <sub>2</sub> | U <sub>2</sub> | CkU <sub>2</sub> | A <sub>4</sub> | A <sub>1</sub> |
| 1               | 3,007          | 3,128            | 2,718          | 3,834            | 2,552          | 2,961            | 3,441          | 2,697          |
| 2               | 3,012          | 2,485            | 3,251          | 3,033            | 2,948          | 2,992            | 3,963          | 3,256          |
| 3               | 2,707          | 2,892            | 3,184          | 2,585            | 2,947          | 3,147            | 2,715          | 2,662          |
| 4               | 3,454          | 3,005            | 2,868          | 2,949            | 3,033          | 3,226            | 3,387          | 2,866          |
| 5               | 2,568          | 2,692            | 2,467          | 2,948            | 2,066          | 2,090            | 2,485          | 2,283          |
| 6               | 2,849          | 2,312            | 2,550          | 3,022            | 2,798          | 2,870            | 2,678          | 2,888          |
| 7               | 2,581          | 2,491            | 2,721          | 2,576            | 2,429          | 2,529            | 2,043          | 2,665          |
| 8               | 2,265          | 1,839            | 3,021          | 2,432            | 2,831          | 2,216            | 2,635          | 2,433          |
| 9               | 2,465          | 2,529            | 2,692          | 2,608            | 2,823          | 2,574            | 2,755          | 2,198          |
| 10              | 2,542          | 3,166            | 2,992          | 2,476            | 2,862          | 2,529            | 2,870          | 3,355          |
| mean yield      | 2,745.0        | 2,653.9          | 2,846.4        | 2,846.3          | 2,728.9        | 2,713.4          | 2,897.2        | 2,730.3        |

Average of 3 checks is 2,737.9.

Least significant difference at 5-percent level for comparing treatments A<sub>2</sub>, R<sub>2</sub>, or U<sub>2</sub> with average of 3 checks is 231.7.

Least significant difference at 5-percent level for comparing treatments A<sub>1</sub> or A<sub>4</sub> with average of 3 checks is 229.8.

Peanuts - Raleigh, N. C.

SHELLING PERCENTAGE, LARGE AND MEDIUM NUTS

| Replication No. | Treatments     |                  |                |                  |                |                  |                |                |
|-----------------|----------------|------------------|----------------|------------------|----------------|------------------|----------------|----------------|
|                 | A <sub>2</sub> | CkA <sub>2</sub> | R <sub>2</sub> | CkR <sub>2</sub> | U <sub>2</sub> | CkU <sub>2</sub> | A <sub>4</sub> | A <sub>1</sub> |
| 1               | 68.25          | 68.35            | 67.05          | 69.58            | 64.40          | 65.13            | 67.48          | 65.63          |
| 2               | 69.35          | 67.08            | 65.25          | 69.25            | 66.00          | 68.80            | 65.90          | 63.75          |
| 3               | 65.75          | 63.68            | 67.28          | 66.38            | 66.88          | 65.80            | 66.53          | 65.50          |
| 4               | 68.45          | 66.35            | 67.45          | 65.13            | 66.75          | 65.13            | 65.48          | 66.50          |
| 5               | 66.15          | 65.88            | 66.50          | 67.58            | 65.88          | 65.48            | 65.63          | 63.08          |
| 6               | 68.43          | 66.75            | 63.75          | 64.00            | 65.78          | 64.50            | 66.13          | 65.88          |
| 7               | 64.28          | 64.80            | 67.50          | 65.25            | 64.30          | 64.18            | 66.13          | 67.25          |
| 8               | 65.75          | 61.78            | 63.35          | 67.10            | 65.83          | 66.35            | 64.95          | 63.78          |
| 9               | 63.88          | 61.53            | 64.75          | 63.13            | 67.60          | 62.95            | 65.75          | 63.38          |
| 10              | 65.08          | 60.25            | 61.00          | 66.35            | 65.85          | 64.00            | 61.68          | 61.78          |
| Mean            | 66.54          | 64.65            | 65.39          | 66.38            | 65.93          | 65.23            | 65.57          | 64.65          |

Average of 3 checks is 65.42.

Least significant difference at 5-percent level for comparing treatments A<sub>2</sub>, R<sub>2</sub>, or U<sub>2</sub> with average of 3 checks is 1.15.

Least significant difference at 5-percent level for comparing treatments A<sub>1</sub> or A<sub>4</sub> with average of 3 checks is 1.21.

Peanuts - Raleigh, N. C.

OVEN-DRY WEIGHT OF 30 PLANTS AT 6 WEEKS  
(thinned June 16, grams per plot)

| Replication No. | Treatments     |                  |                |                  |                |                  |                |                |
|-----------------|----------------|------------------|----------------|------------------|----------------|------------------|----------------|----------------|
|                 | A <sub>2</sub> | CkA <sub>2</sub> | R <sub>2</sub> | CkR <sub>2</sub> | U <sub>2</sub> | CkU <sub>2</sub> | A <sub>4</sub> | A <sub>1</sub> |
| 1               | 92             | 75               | 78             | 78               | 89             | 76               | 83             | 76             |
| 2               | 97             | 94               | 121            | 117              | 111            | 89               | 95             | 105            |
| 3               | 82             | 79               | 66             | 75               | 93             | 68               | 81             | 76             |
| 4               | 92             | 111              | 100            | 92               | 99             | 105              | 87             | 110            |
| 5               | 67             | 78               | 63             | 84               | 77             | 63               | 59             | 86             |
| 6               | 89             | 80               | 102            | 91               | 103            | 105              | 108            | 91             |
| 7               | 70             | 80               | 79             | 73               | 83             | 89               | 70             | 63             |
| 8               | 88             | 100              | 85             | 98               | 76             | 102              | 106            | 102            |
| 9               | 95             | 71               | 73             | 69               | 70             | 71               | 72             | 73             |
| 10              | 99             | 86               | 85             | 103              | 106            | 98               | 112            | 103            |
| Mean weight     | 87.1           | 85.4             | 85.2           | 88.0             | 90.7           | 86.6             | 87.3           | 88.5           |

Average of 3 checks is 86.7.

Least significant difference at 5-percent level for comparing treatments A<sub>2</sub>, R<sub>2</sub>, or U<sub>2</sub> with average of 3 checks is 7.31.

Least significant difference at 5-percent level for comparing treatments A<sub>1</sub> or A<sub>4</sub> with average of 3 checks is 7.31.

ANALYSIS OF VARIANCE

| Variants            | Degrees of freedom | Mean squares |               |                  |            |
|---------------------|--------------------|--------------|---------------|------------------|------------|
|                     |                    | Yield of hay | Yield of nuts | Shelling percent | Dry weight |
| Replications        | 9                  | 1,240,385    | 553,318       | 11.315           | 1,201.89   |
| Treatment pairs     | 3                  | 206,238      | 100,713       | 2.041            | 25.00      |
| Error (a)           | 27                 | 533,294      | 90,745        | 3.242            | 88.26      |
| Treatments in pairs | 4                  | 583,968      | 45,494        | 7.338            | 36.25      |
| Error (b)           | 36                 | 475,289      | 97,275        | 2.047            | 97.17      |