

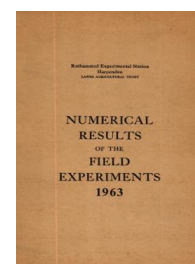
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# Yields of the Field Experiments 1963

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## Annual Experiments

### Rothamsted Research

Rothamsted Research (1964) *Annual Experiments* ; Yields Of The Field Experiments 1963, pp 155 - 182 - DOI: <https://doi.org/10.23637/ERADOC-1-183>

63/Da/1

# WINTER WHEAT

(RW 101)

Effects of nitrogen and inoculation with Azotobacter - Great Field I 1963.

Design: 4 x 4 Latin square.

Area of each plot: 0.0145 acres. Area harvested: 0.0096 acres.

Treatments. All combinations of:-

Nitrogen: None, 0.6 cwt N per acre applied as 'Nitro-Chalk'.

Azotobacter inoculation: None (sterile medium, no carbon source),

Azotobacter culture applied to seed.

Basal dressing per acre: 2.5 cwt compound fertiliser (20%  $P_{205}$ , 20%  $K_{20}$ ) broadcast in seedbed. 40 cwt ground chalk.

Cultivations, etc.: Ground chalk applied at 20 cwt per acre: Sept 26, 1962. Ploughed: Oct 29. Ground chalk applied at 20 cwt per acre, seed drilled at 2 1/2 bushels per acre, basal dressing applied by hand: Nov 14. 'Nitro-Chalk' applied by hand: Apr 27, 1963. Sprayed with mecoprop/2:4-D at 7 pints in 40 gallons per acre: May 16. Combine harvested: Sept 10. Variety: Cappelle. Previous crops: Winter wheat 1961, barley 1962.

Note: Crop samples were taken throughout the season for counts of Azotobacter. Measurements of the height of the crop were made on May 9. Estimates of ear number were made on July 17 and August 13.

Standard error per plot.

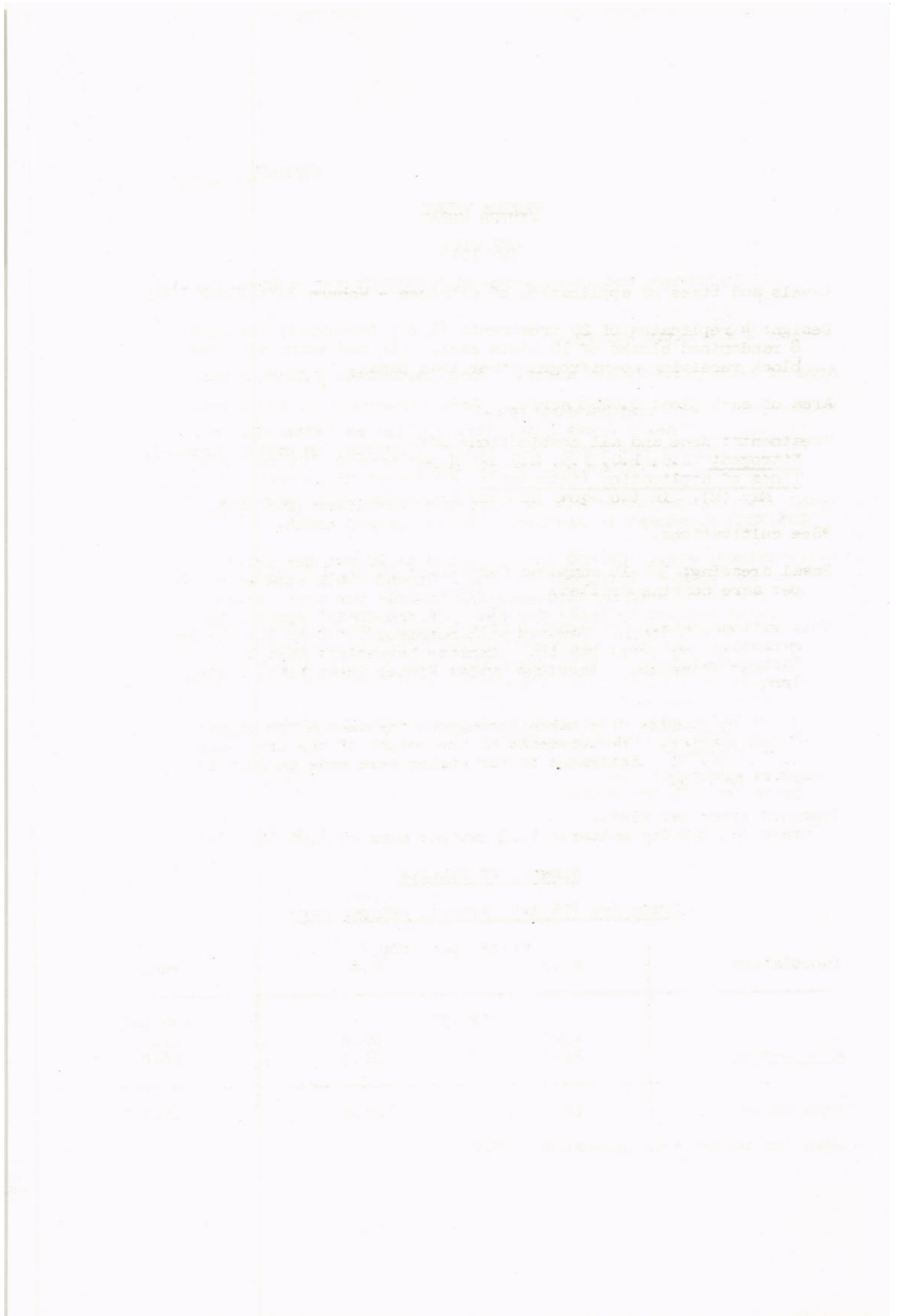
Grain (at 85% dry matter): 1.13 cwt per acre or 6.8% (6 d.f.)

## Summary of Results

Grain (at 85% dry matter): cwt per acre

| Inoculation         | N: cwt per acre |                | Mean           |
|---------------------|-----------------|----------------|----------------|
|                     | None            | 0.6            |                |
|                     |                 | ( $\pm 0.57$ ) | ( $\pm 0.40$ ) |
| None                | 13.0            | 20.6           | 16.8           |
| <u>Azotobacter</u>  | 11.9            | 21.3           | 16.6           |
| Mean ( $\pm 0.40$ ) | 12.5            | 21.0           | 16.7           |

Mean dry matter % as harvested: 79.7



63/Da/2.1

# WINTER WHEAT

(WW 101)

Levels and times of application of nitrogen - Woburn Butt Close 1963.

Design: 4 replicates of 20 treatments (4 x 5 factorial) arranged in 8 randomised blocks of 10 plots each, with one extra plot per block receiving no nitrogen other than basal.

Area of each plot: 0.0206 acres. Area harvested: 0.0137 acres.

Treatments: None and all combinations of:-

Nitrogen: 0.5, 1.0, 1.5, 2.0 cwt N per acre as 'Nitro-Chalk'.

Times of application (intended): February\* (F), April (A),

May (M), in two equal divided dressings (FM), in three (FAM).

\*See cultivations.

Basal dressing: 300 lb compound fertiliser (6% N, 15% P<sub>2</sub>O<sub>5</sub>, 15% K<sub>2</sub>O) per acre combine drilled.

Cultivations, etc.: Ploughed (after beans): Oct 10 1962, (after carrots): Oct 30. Seed drilled at 2.75 bushels per acre: Nov 1. 'Nitro-Chalk' applied: F - Mar 14, 1963, A - Apr 10, M - May 10. Sprayed with TBA/MCPA at 4 pints in 40 gallons per acre: May 9. Combine harvested: Sept 13. Variety: Cappelle. Previous crops: Plots 101 - 144, barley 1961, carrots 1962: plots 145 - 188, barley 1961, spring beans 1962.

Standard error per plot.

Grain (at 85% dry matter): 5.13 cwt per acre or 16.5% (53 d.f.)

63/Da/2.2

Summary of Results

Grain (at 85% dry matter): cwt per acre

|                     | N: cwt per acre (in addition to basal) |      |      |      | Mean    |
|---------------------|----------------------------------------|------|------|------|---------|
|                     | 0.5                                    | 1.0  | 1.5  | 2.0  |         |
| Time of application | (±2.56)                                |      |      |      | (±1.28) |
| F                   | 34.0                                   | 37.9 | 31.3 | 29.6 | 33.2    |
| A                   | 31.4                                   | 34.0 | 27.6 | 30.7 | 30.9    |
| M                   | 23.5                                   | 30.0 | 24.7 | 31.2 | 27.4    |
| FM                  | 27.8                                   | 37.3 | 35.0 | 26.9 | 31.8    |
| FAM                 | 25.5                                   | 35.1 | 34.5 | 32.2 | 31.8    |
| Mean (±1.15)        | 28.4                                   | 34.9 | 30.6 | 30.1 | 31.0    |

Mean of plots receiving no nitrogen other than basal: 11.0

Mean dry matter % as harvested (all plots): 79.8

Time of application of N

F = Mar 14

A = Apr 10

M = May 10

63/De/3.1

WHEAT

(RW 201)

Varieties and nitrogen - Long Hoos V 1963.

Design: 4 randomised blocks of 24 plots each, blocks being divided into 2 sub-blocks each, one of 15 winter wheat and one of 9 spring wheat plots.

Area of each plot: 0.0193 acres. Area harvested: 0.0129 acres.

Treatments: All combinations of:-

Varieties: Winter wheat:- Cappelle (Ca), Champlain (Ch),  
Prestige (Pr), Squarehead's Master (Sq).  
Spring wheat:- Jufy I (Ju), Opal (Op), Prestige (Pr).  
Nitrogen: None (to winter wheat except Champlain), 0.5, 0.75,  
1.0 cwt N per acre as 'Nitro-Chalk'.

Basal dresssing: 2.5 cwt per acre compound fertiliser (20%  $P_2O_5$ ,  
20%  $K_2O$ ) combine drilled.

Cultivations, etc.: Ploughed: Nov 13, 1962. Winter wheat drilled at 2.75 bushels per acre: Dec 17. Spring wheat drilled at 3 bushels per acre: Apr 19, 1963. 'Nitro-Chalk' applied: Spring wheat - Apr 23, winter wheat - Apr 27. Sprayed with mecoprop/2,4-D: Winter wheat at 7 pints in 40 gallons per acre - May 16, spring wheat at 6 pints in 40 gallons per acre - May 24. Combine harvested: Winter wheat - Sept 10, spring wheat - Sept 13. Previous crops: Spring wheat 1961, potatoes 1962.

Standard errors per plot. Grain (at 85% dry matter):

Winter wheat 3.72 cwt per acre or 11.0% (39 d.f.)  
Spring wheat 1.33 cwt per acre or 3.6% (24 d.f.)

63/Da/3.2

Summary of ResultsGrain (at 85% dry matter): cwt per acreWinter wheat

| N: cwt per<br>acre           | Variety |      |      |      | Mean     |
|------------------------------|---------|------|------|------|----------|
|                              | Ca      | Ch   | Pr   | Sq   |          |
|                              | (±1.86) |      |      |      | (±0.93)  |
| None                         | 25.7    |      | 21.0 | 24.5 | 23.7 (1) |
| 0.50                         | 34.7    | 36.3 | 34.9 | 27.1 | 33.2     |
| 0.75                         | 39.5    | 42.1 | 39.9 | 29.5 | 37.7     |
| 1.00                         | 39.9    | 44.7 | 41.3 | 28.8 | 38.7     |
| Mean (excl. none)<br>(±1.07) | 38.0    | 41.0 | 38.7 | 28.4 | 36.5*    |

(1) (±1.07)

\*Mean of plots receiving N. General mean 33.9

Mean dry matter % as harvested: 79.2

Spring wheat

| N: cwt per<br>acre | Variety |      |      | Mean    |
|--------------------|---------|------|------|---------|
|                    | Ju      | Op   | Pr   |         |
|                    | (±0.66) |      |      | (±0.38) |
| 0.50               | 37.6    | 37.7 | 30.8 | 35.3    |
| 0.75               | 38.2    | 41.1 | 31.6 | 37.0    |
| 1.00               | 40.3    | 42.7 | 31.4 | 38.1    |
| Mean (±0.38)       | 38.7    | 40.5 | 31.2 | 36.8    |

Mean dry matter % as harvested: 73.7

VarietiesWinter wheatCa = Cappelle, Ch = Champlain, Pr = Prestige,  
Sq = Squarehead's Master.Spring wheat

Ju = July I, Op = Opal, Pr = Prestige

63/Db/1

# BARLEY

(RB 101)

The effect of insecticides on thrips, aphids and the spread of virus -  
Hoosfield (Old Four Course) 1963.

Design: 6 randomised blocks of 4 plots each.

Area of each plot: 0.0206 acres. Area harvested: 0.0137 acres.

Treatments. Rogor spray: None (O), 4\* early applications (E),  
4 late applications (L), 8\* applications (EL). Rate of  
application 16 fluid oz in 40 gallons per acre.

\* Intended number. Actually treatment E received 3 and treatment  
EL 7 applications.

Basal dressing: 3 cwt compound fertiliser (20% N, 10%  $P_{2}O_{5}$ , 10%  $K_{2}O$ )  
per acre combine drilled.

Cultivations, etc.: Ploughed twice: Aug 28 and Nov 15, 1962. Seed  
drilled at 2 bushels per acre: Apr 8, 1963. E and EL plots  
sprayed with Rogor: May 9 and 30, June 11. Sprayed with  
mecoprop/2,4-D at 6 pints in 40 gallons per acre: May 24.  
EL and L plots sprayed with Rogor: June 27, July 8, 17  
and 25. Combine harvested: Sept 5. Variety: Proctor.  
Previous crops: Spring wheat 1961, oats 1962.

Note: Water traps were used and trapping records of thrips and  
aphids made throughout most of the season. Crop samples were  
taken throughout most of the season for thrips extraction.

Standard error per plot.

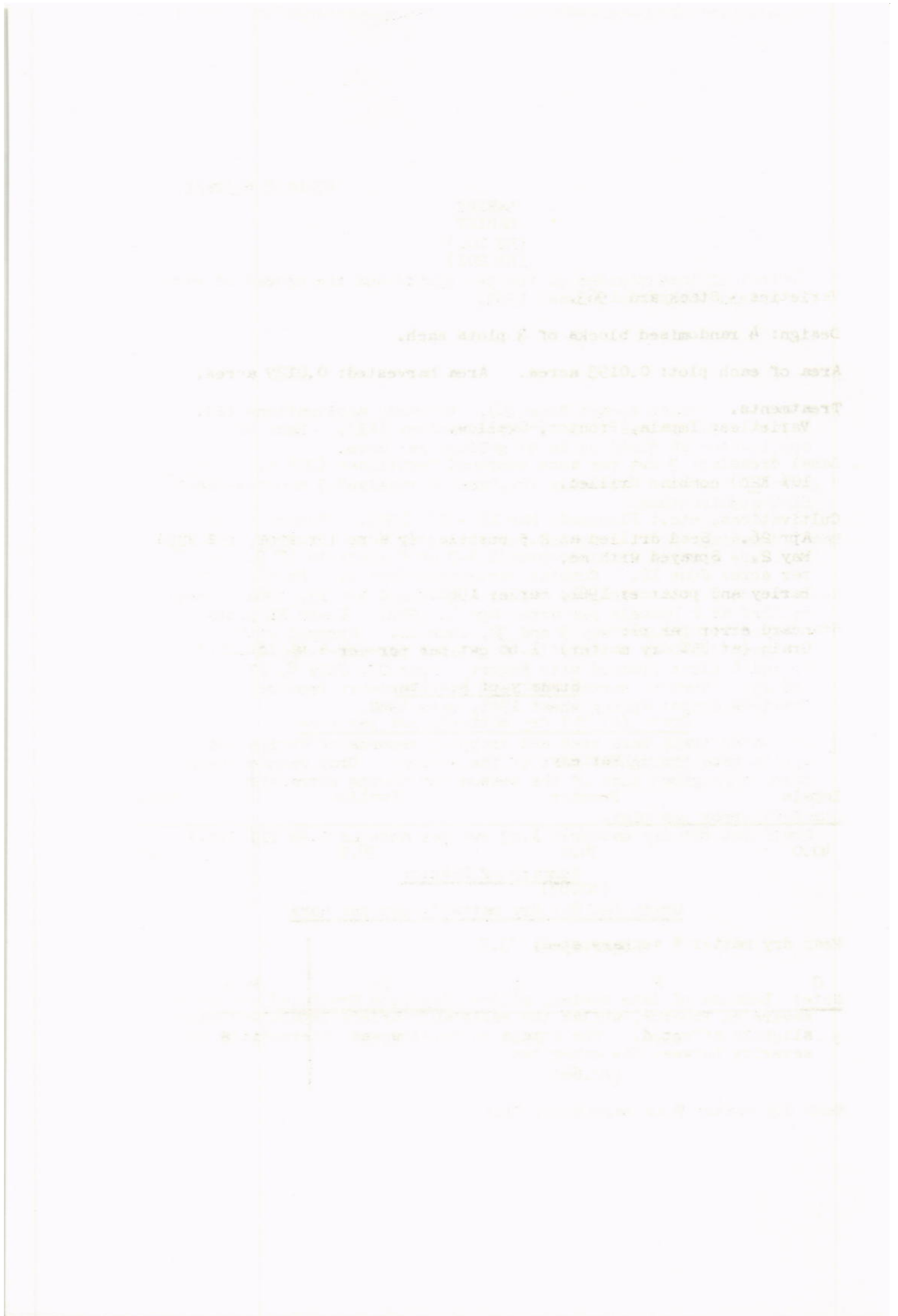
Grain (at 85% dry matter): 1.63 cwt per acre or 5.4% (15 d.f.)

## Summary of Results

Grain (at 85% dry matter): cwt per acre

| Rogor spray |      |      |      | Mean |
|-------------|------|------|------|------|
| O           | E    | L    | EL   |      |
| 30.8        | 29.6 | 29.0 | 29.9 | 29.8 |
| (±0.66)     |      |      |      |      |

Mean dry matter % as harvested: 71.1



63/Db/2

# BARLEY

(RB 201)

Varieties - Stackyard 1963.

Design: 4 randomised blocks of 3 plots each.

Area of each plot: 0.0193 acres. Area harvested: 0.0129 acres.

## Treatments.

Varieties: Impala, Proctor, Swallow.

Basal dressing: 3 cwt per acre compound fertiliser (20% N, 10% P<sub>2</sub>O<sub>5</sub>, 10% K<sub>2</sub>O) combine drilled.

Cultivations, etc.: Ploughed: Mar 15 - 23, 1963. Rotary cultivated: Apr 26. Seed drilled at 2.5 bushels per acre (Proctor at 2.25): May 2. Sprayed with mecoprop/2,4-D at 6 pints in 40 gallons per acre: June 12. Combine harvested: Sept 9. Previous crops: Barley and potatoes 1961, barley 1962.

Standard error per plot.

Grain (at 85% dry matter): 1.66 cwt per acre or 4.4% (6 d.f.)

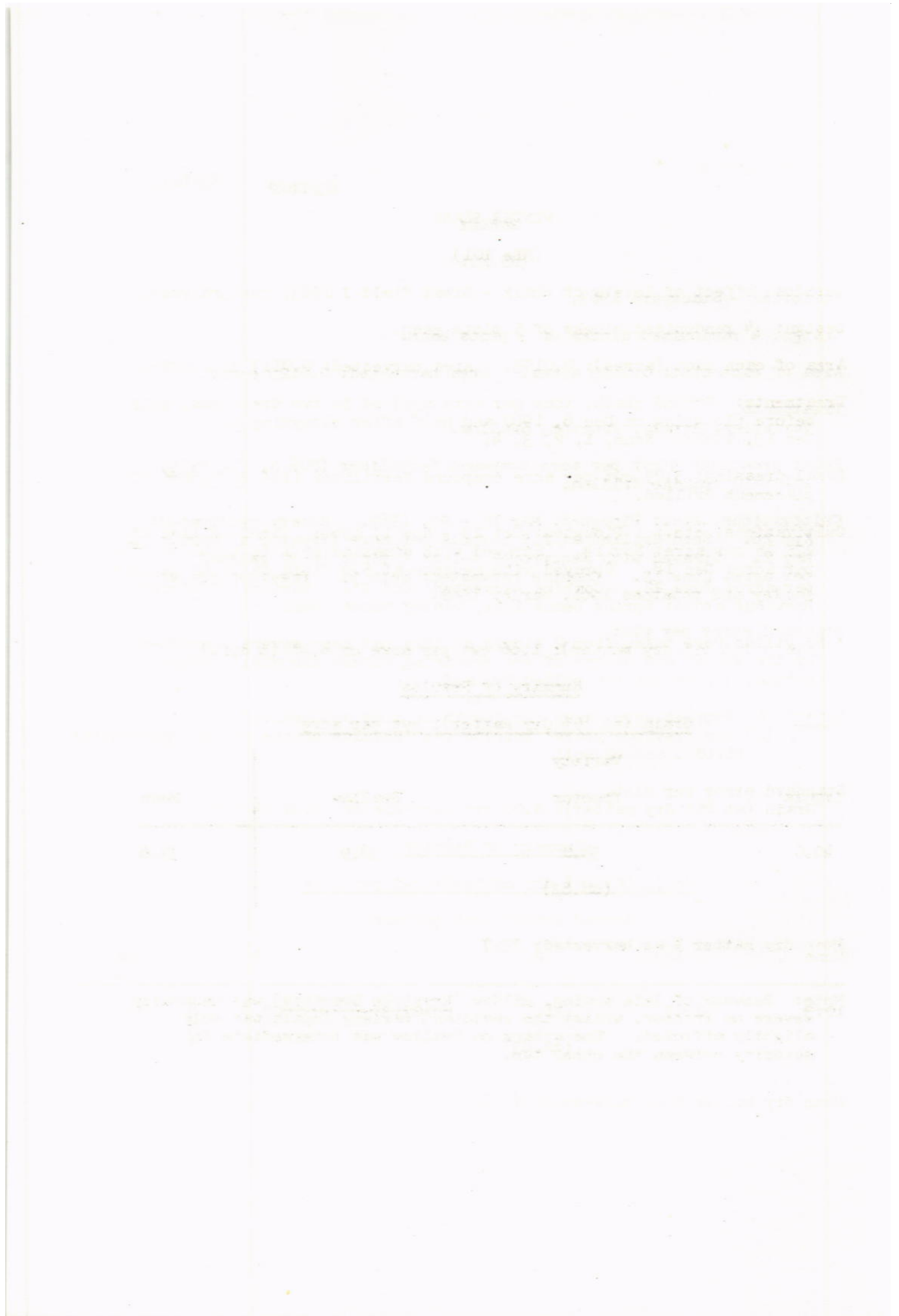
## Summary of Results

Grain (at 85% dry matter): cwt per acre

| Variety |                 |         | Mean |
|---------|-----------------|---------|------|
| Impala  | Proctor         | Swallow |      |
| 40.0    | 34.0<br>(±0.83) | 38.9    | 37.6 |

Mean dry matter % as harvested: 73.7

Note: Because of late sowing, mildew (*Erysiphe Graminis*) was unusually severe on Proctor, whilst the resistant variety Impala was only slightly affected. The attack on Swallow was intermediate in severity between the other two.



63/Dc/1

# WINTER BEANS

(RBe 101)

Residual effect of levels of chalk - Great Field I 1963, the 3rd year.

Design: 4 randomised blocks of 5 plots each.

Area of each plot (acres): 0.0193. Area harvested: 0.0117 or 0.0023.

Treatments: Ground chalk, tons per acre applied in two dressings, half before ploughing on Dec 6, 1960 and half after ploughing on Dec 13, 1960:- None, 1, 2, 3, 4.

Basal dressing: 3.25 cwt per acre compound fertiliser (14% P<sub>2</sub>O<sub>5</sub>, 28% K<sub>2</sub>O) placement drilled.

Cultivations, etc.: Ploughed: Oct 29 - Nov 1, 1962. Seed drilled at 275 lb per acre: Nov 14. Sprayed with simazine at 1 lb in 40 gallons per acre: Dec 18. Sprayed with menazon at 5.6 fluid oz in 40 gallons per acre: June 22. Combine harvested: Oct 9\*. Variety: Pedigree. Previous crops: Spring beans 1961, winter beans 1962.

\* No yields were taken from 2 blocks as they had been severely checked by the winter and on one of the remaining blocks the yields were estimated from one row pulled by hand.

Notes: (1) Samples were taken for counts of pods and beans.  
(2) For previous years' results see 'Results of the Field Experiments' 61/Dd/1 and 62/Dc/1.

Standard error per plot.

Grain (at 85% dry matter): 4.00 cwt per acre or 19.9% (4 d.f.)

## Summary of Results

Grain (at 85% dry matter): cwt per acre

| Ground chalk: tons per acre |      |      |      |      | Mean |
|-----------------------------|------|------|------|------|------|
| None                        | 1    | 2    | 3    | 4    |      |
| 10.3                        | 16.7 | 18.5 | 27.3 | 27.7 | 20.1 |
| (±2.83)                     |      |      |      |      |      |

Mean dry matter % as harvested: 66.6



63/Dc/2.1

SPRING BEANS

(RBe 201)

Control of virus by systemic insecticides - Claycroft 1963.

Design: 4 randomised blocks of 8 plots each.

Area of each plot: 0.0217 acres. Area harvested: 0.0090 acres.

Treatments. All combinations of:-

Systemic insecticides: None (O), 1 lb (S1), 3 lb per acre  
menazon as seed dressing (S3), 1 lb per acre disulfoton  
broadcast on young foliage in granular form (B).

Demeton-methyl systemic insecticide spray: None (O), 6 fluid  
oz in 80 gallons per acre (M).

Basal dressing: 3.25 cwt per acre compound fertiliser (14%  $P_{205}$ ,  
28%  $K_{20}$ ) placement drilled.

Cultivations, etc.: Ploughed: Nov 27 - Dec 3, 1962. Seed  
drilled at 200 lb per acre: Apr 9, 1963. Sprayed with  
simazine at 1 lb in 40 gallons per acre: Apr 19. Treatment  
B applied: June 11. Treatment M applied: June 27. Combine  
harvested: Sept 30. Variety: Herz Freya. Previous crops:  
Spring wheat 1961 and 1962.

Note: Counts of virus infected plants and estimates of numbers  
of aphids were made.

Standard error per plot.

Grain (at 85% dry matter): 2.03 cwt per acre or 6.4% (21 d.f.)

63/Dc/2.2

Summary of Results

Grain (at 85% dry matter): cwt per acre

| Demeton-methyl<br>spray | Systemic insecticide |      |      |      | Mean    |
|-------------------------|----------------------|------|------|------|---------|
|                         | 0                    | S1   | S3   | B    |         |
|                         | (±1.01)              |      |      |      | (±0.50) |
| 0                       | 25.0                 | 30.6 | 33.0 | 28.8 | 29.4    |
| M                       | 33.7                 | 34.7 | 34.5 | 34.3 | 34.3    |
| Mean (±0.71)            | 29.4                 | 32.7 | 33.7 | 31.6 | 31.8    |

Mean dry matter % as harvested: 72.4

Systemic insecticide

0 = None

S1 = 1 lb per acre menazon as seed dressing

S3 = 3 lb per acre menazon as seed dressing

B = 1 lb per acre disulfoton broadcast on young foliage in granular form

Demeton-methyl spray

0 = None

M = 6 fluid oz in 80 gallons per acre

63/Dd/1.1

# POTATOES

(RP 101)

Effect of chloride on uptake of other ions - Sawyers II 1963.

Design: 3 randomised blocks of 12 plots each.

Area of each plot (acres): 0.0141. Area harvested: 0.0065.

Treatments. All combinations of:-

## Fertilisers:

|                                                          |      |
|----------------------------------------------------------|------|
| No nitrogen, potassium sulphate and calcium carbonate    | (O)  |
| No nitrogen, potassium chloride and calcium sulphate     | (C)  |
| Urea, potassium sulphate and calcium carbonate           | (A)  |
| Urea, potassium chloride and calcium sulphate            | (AC) |
| Potassium nitrate and calcium sulphate                   | (N)  |
| Calcium nitrate, potassium chloride and calcium sulphate | (NC) |

Methods of placement: Broadcast, placed in one band 2.5 - 3 inches to the side of the seed.

Rates of application:

A, N: 0.81 cwt N per acre.

C: 2.15 cwt Cl per acre.

Also 3.0 cwt K<sub>2</sub>O, 1.7 cwt Ca and 1.0 cwt S per acre broadcast or placed according to treatment.

Basal dressing per acre: 1.5 cwt P<sub>2</sub>O<sub>5</sub> as triple superphosphate, placed.

Cultivations, etc.: Ploughed: Sept 27 - Oct 3, 1962. Rotary cultivated, fertilisers applied, potatoes planted: May 8, 1963. Earthed up: July 3. Sprayed with maneb at 1.2 lb in 20 gallons per acre: July 11. Sprayed with diquat at 1.2 pints in 40 gallons per acre: Sept 25. Lifted: Oct 16. Variety: Majestic. Previous crops: Fallow 1961, spring wheat 1962.

Note: Leaf samples were taken in July for chemical analysis and tuber samples at harvest for chemical analysis and assessment of quality by the Low Temperature Research Station.

Standard error per plot.

Total tubers: 0.515 tons per acre or 4.5% (22 d.f.)

63/Dd/1.2

Summary of Results

| Method of placement                      | Fertiliser |       |       |       |       |       | Mean              |
|------------------------------------------|------------|-------|-------|-------|-------|-------|-------------------|
|                                          | O          | C     | A     | AC    | N     | NC    |                   |
| <u>Total tubers: tons per acre</u>       |            |       |       |       |       |       |                   |
|                                          | (±0.298)   |       |       |       |       |       |                   |
| Broadcast                                | 9.02       | 9.77  | 12.30 | 12.69 | 11.81 | 13.21 | 11.47             |
| Placed                                   | 8.91       | 9.82  | 12.20 | 12.67 | 12.75 | 12.28 | 11.44             |
| Mean (±0.210)                            | 8.96       | 9.80  | 12.25 | 12.68 | 12.28 | 12.74 | 11.45             |
| Diff. (±0.420)                           | -0.11      | +0.05 | -0.10 | -0.02 | +0.94 | -0.93 | -0.03<br>(±0.172) |
| <u>Percentage ware (1.5 inch riddle)</u> |            |       |       |       |       |       |                   |
| Broadcast                                | 91.5       | 94.6  | 94.4  | 95.4  | 94.2  | 95.1  | 94.2              |
| Placed                                   | 92.6       | 94.2  | 95.8  | 96.9  | 95.1  | 96.4  | 95.2              |
| Mean                                     | 92.0       | 94.4  | 95.1  | 96.2  | 94.7  | 95.7  | 94.7              |
| Diff.                                    | +1.1       | -0.4  | +1.4  | +1.5  | +0.9  | +1.3  | +1.0              |

For details of treatment symbols see page 63/Dd/1.1

63/Dd/2.1

## POTATOES

(RP 301)

Time of burning off haulm - Great Knott II 1963.

Design: 4 randomised blocks of 10 plots each.

Area of each plot: 0.0848 acres. Area harvested: 0.0141 acres.

Treatments. All combinations of:-

Fungicide sprays: None (O), sprayed on 3 occasions, the first with mancozeb\*, the second and third with commercial copper oxychloride wettable powder\*\* (Cu).

Burning off haulm\*\*\*: None (O), haulm burnt off when mean destruction on sprayed plots was 2.5% (A), when haulm on sprayed plots was 20% destroyed by blight and almost all dead (B) - 2 plots per block.

In addition two plots per block (Cu 2B, MB) were sprayed as follows:-

Cu 2B: As 'Cu', but all sprays applied later (first and second on dates of second and third sprayings of 'Cu' plots).

MB: As 'Cu', but all sprayings with mancozeb.

Both were burnt off at date B.

\* 1.5 lb fungicide, containing 80% mancozeb, in 20 gallons per acre.

\*\* At 2.3 lb Cu in 20 gallons per acre.

\*\*\* With undiluted BOV at 16 gallons per acre.

Basal dressing: 8 cwt per acre compound fertiliser (17% N, 11% P<sub>2</sub>O<sub>5</sub>, 22% K<sub>2</sub>O).

Cultivations, etc.: Sprayed with dalapon at 7.4 lb in 40 gallons per acre: Oct 18, 1962, and again at 3.7 lb in 40 gallons per acre: Oct 30. Ploughed: Mar 28 - Apr 10, 1963. Basal dressing applied: part Apr 30, part May 8. Rotary cultivated: May 9. Potatoes machine planted: May 10. Earthed up: July 3. Cu and MB plots sprayed with mancozeb: July 9. Cu plots sprayed with copper oxychloride, MB and Cu 2B plots with mancozeb: July 22. Cu, Cu 2B plots sprayed with copper oxychloride, MB plots with mancozeb: Aug 13. Cu 2B plots sprayed with copper oxychloride: Sept 3. A plots sprayed with BOV: Sept 7. B plots sprayed with BOV: Sept 23. Lifted: Oct 29. Variety: King Edward. Previous crops: Barley 1961, spring beans 1962.

Note: (1) Periodic samples were taken for the weight of tubers, and an assessment of blight on foliage and in tubers was made weekly.

(2) The almost complete death of the haulm by late September resulted mostly from a massive infestation of aphids commencing in late July.

Standard error per plot.

Total tubers: 0.813 tons per acre or 9.0% (29 d.f.)

63/Dd/2.2

Erratum to 'The Numerical Results of the Field Experiments' 1962 page 62/Dd/2.2.

Date of burning off. The next 4 lines should read:-

O = None

A = Haulm burnt off when 1-5% blighted on Cu plots

B = Haulm burnt off when 10-20% blighted on Cu plots

C = Haulm burnt off when 50% blighted on Cu plots.

### Summary of Results

|                                    | Date of burning off       |            |                  |                  |
|------------------------------------|---------------------------|------------|------------------|------------------|
| Spray                              | O                         | A          | B                | Mean             |
| <u>Total tubers: tons per acre</u> |                           |            |                  |                  |
|                                    | (±0.406)                  |            | (±0.287)         | (±0.203)         |
| O                                  | 9.05                      | 9.10       | 9.29             | 9.18             |
| Cu                                 | 8.24                      | 7.89       | 9.11             | 8.59             |
| Mean (±0.287)                      | 8.64                      | 8.50       | 9.20<br>(±0.203) | 8.88<br>(±0.144) |
|                                    | Cu 2B<br>9.66<br>(±0.418) | MB<br>9.65 |                  |                  |

General mean: 9.04

### Percentage ware (1.5 inch riddle)

| O    | Cu            |      |            |      |  |
|------|---------------|------|------------|------|--|
|      |               |      |            |      |  |
|      | 92.2          | 92.3 | 92.0       | 92.1 |  |
|      | 91.7          | 89.4 | 90.2       | 90.4 |  |
| Mean | 92.0          | 90.8 | 91.1       | 91.2 |  |
|      | Cu 2B<br>91.9 |      | MB<br>92.9 |      |  |

General mean: 91.5

For explanation of treatment symbols see 63/Dd/2.1.

63/Dd/3.1

POTATOES

(RP 401)

Control of blight (Phytophthora infestans) by copper and tin fungicides -  
Stackyard 1963.

Design: 6 x 6 Latin square.

Area of each plot (acres): 0.0129. Area harvested: 0.0077.

|                                                                                            |     |
|--------------------------------------------------------------------------------------------|-----|
| Treatments: No fungicide                                                                   | (0) |
| Commercial copper oxychloride wettable powder at 2.5 lb Cu<br>per acre                     | (1) |
| Copper oxychloride at 2.5 lb Cu per acre with 10 lb wax                                    | (2) |
| As treatment 2 with sodium thiobenzoate at 1 lb per acre                                   | (3) |
| Commercial triphenyltin acetate wettable powder at 0.3 lb<br>triphenyltin acetate per acre | (4) |
| Triphenyltin acetate at 0.3 lb per acre in 10 lb wax                                       | (5) |
| All sprays applied in 100 gallons per acre.                                                |     |

Basal dressing: 7 cwt per acre compound fertiliser, 17% N, 11%  $P_{2}O_{5}$ ,  
22%  $K_{2}O$ .

Cultivations, etc.: Ploughed: Mar 15 - 23, 1963. Basal dressing applied,  
rotary cultivated: Apr 26. Rotary cultivated 2nd time, potatoes  
machine planted: May 6. Earthed up: June 27. Copper and tin  
fungicides applied: July 18 and 31. Haulm destroyed with diquat at  
1.2 pints in 40 gallons per acre: Sept 28. Lifted: Dec 5. Variety:  
King Edward. Previous crops: 1 year ley 1961, winter wheat 1962.

Note: A severe attack of aphids prevented the estimation of foliage  
blight, and because of slug damage following the very late harvest,  
tuber blight was not estimated.

Standard error per plot.

Total tubers: 0.577 tons per acre or 7.7% (20 d.f.)

63/Dd/3.2

Summary of Results

|                                          |                 | Fungicide |       |       |       |       |       |      |
|------------------------------------------|-----------------|-----------|-------|-------|-------|-------|-------|------|
|                                          |                 | 0         | 1     | 2     | 3     | 4     | 5     | Mean |
| <u>Total tubers: tons per acre</u>       |                 |           |       |       |       |       |       |      |
| Mean                                     | ( $\pm 0.236$ ) | 8.06      | 6.58  | 6.39  | 6.34  | 9.10  | 8.24  | 7.45 |
| Increase                                 | ( $\pm 0.333$ ) |           | -1.48 | -1.67 | -1.72 | +1.04 | +0.18 |      |
| <u>Percentage ware (1.5 inch riddle)</u> |                 |           |       |       |       |       |       |      |
| Mean                                     |                 | 90.9      | 83.9  | 85.8  | 82.5  | 92.7  | 89.8  | 87.6 |
| Increase                                 |                 |           | -7.0  | -5.1  | -8.4  | +1.8  | -1.1  |      |

For explanation of treatment symbols see page 63/Dd/3.1

63/Dd/4.1

# POTATOES

(RP 501, WP 301)

Control of weeds by herbicide sprays - Rothamsted (R) Highfield IV and Woburn (W) Butt Furlong 1963.

Design: 4 randomised blocks of 6 plots each, plots on Highfield IV (R) being split for O v N.

| Area of each plot (acres). | Area harvested (acres). |
|----------------------------|-------------------------|
| Highfield IV (R): 0.0258   | 0.0074                  |
| Butt Furlong (W): 0.0145   | 0.0096                  |

Treatments (in lb active material in 40 gallons per acre):-

|                                    |       |
|------------------------------------|-------|
| None (until weed counts were made) | (O)   |
| Mechanical cultivations            | (M)   |
| Paraquat: 0.75 lb                  | (P)   |
| Paraquat: 0.75 lb                  |       |
| + prometryne: 2 lb                 | (PrP) |
| + simazine: 0.50 lb                | (SP)  |
| + trietazine: 1 lb                 | (TP)  |

Plots on Highfield IV (R) were split for O v 0.6 cwt N per acre as 'Nitro-Chalk' in addition to basal dressing.

Basal dressing per acre: Highfield IV (R): 6 cwt compound fertiliser (17% N, 11% P<sub>2</sub>O<sub>5</sub>, 22% K<sub>2</sub>O), 6 tons dung. Butt Furlong (W): 8 cwt compound fertiliser (17% N, 11% P<sub>2</sub>O<sub>5</sub>, 22% K<sub>2</sub>O).

Cultivations, etc.:

Highfield IV (R): Dung applied: Mar 8, 1963. Ploughed: Mar 22. Basal compound applied at 4 cwt per acre, all plots rotary cultivated: Apr 30. Spring-tine cultivated: May 4. Basal compound applied at 2 cwt per acre: May 7. All plots rotary cultivated, potatoes planted: May 8. 'Nitro-Chalk' applied: May 10. Ridges rolled: May 13. M plots chain harrowed: May 30. Herbicide sprays applied: June 4. M plots grubbed: June 6. M plots weeded and then grubbed: June 15. M and O plots grubbed: July 2. M and O plots earthed up: July 4. Sprayed with maneb at 0.8 lb in 20 gallons per acre: July 9, and again at 1.2 lb in 20 gallons per acre: July 29. Sprayed with copper fungicide at 2.3 lb copper plus 0.35 pints menazon in 20 gallons per acre: Aug 14. Sprayed with maneb at 1.2 lb in 20 gallons per acre: Sept 5. Sprayed with undiluted BCV at 16 gallons per acre: Sept 12. Lifted: Oct 23. Variety: King Edward. Previous crops: Barley undersown with ryegrass 1961, barley 1962.

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Butt Furlong (W): Ploughed twice: Nov 1, 1962 and Mar 8, 1963.  
Basal dressing applied: Apr 23. Rotary cultivated: Apr 25.  
Potatoes planted: Apr 26. Ridges rolled: Apr 27. M plots  
chain harrowed: May 13. Herbicide sprays applied: May 24.  
M plots grubbed: May 25, and earthed up: June 17. O plots  
hand-weeded, grubbed and earthed up: June 22. Sprayed with  
copper fungicide at 2.3 lb copper in 20 gallons per acre:  
July 25, and again at 2.3 lb copper plus demeton methyl at  
4 fluid oz in 30 gallons per acre: Aug 23. Sprayed with  
undiluted BCV at 16 gallons per acre: Sept 13. Lifted: Oct 9.  
Variety: Majestic. Previous crops: Sugar beet 1961, barley  
1962.

Note: Plots receiving treatment O were included mainly for weed  
counts and have been omitted from the analysis of variance.

Standard errors per plot. Total tubers:

Highfield IV (R): Whole plot: 0.788 tons per acre or 8.2% (12 d.f.)  
Sub plot: 0.835 tons per acre or 8.6% (15 d.f.)  
Butt Furlong (W): 1.746 tons per acre or 16.3% (12 d.f.)

63/Dd/4.3

Summary of Results

| N: cwt per acre<br>including basal | Treatments |   |     |    |    | Mean | O |
|------------------------------------|------------|---|-----|----|----|------|---|
|                                    | M          | P | PrP | SP | TP |      |   |

Total tubers: tons per acreHighfield IV (R)

|                      | (1) and (2) |       |       |       |       |                          |       |
|----------------------|-------------|-------|-------|-------|-------|--------------------------|-------|
| 1.0                  | 9.13        | 10.34 | 9.59  | 9.40  | 9.45  | 9.58                     | 9.76  |
| 1.6                  | 10.15       | 10.03 | 9.12  | 8.91  | 10.50 | 9.74                     | 10.40 |
| Mean ( $\pm 0.394$ ) | 9.64        | 10.18 | 9.35  | 9.15  | 9.97  | 9.65                     | 10.08 |
| Diff ( $\pm 0.590$ ) | +1.02       | -0.31 | -0.47 | -0.49 | +1.05 | +0.16<br>( $\pm 0.264$ ) | +0.64 |

Butt Furlong (W)

|                      |       |       |       |      |       |       |      |
|----------------------|-------|-------|-------|------|-------|-------|------|
| Mean ( $\pm 0.873$ ) | 10.54 | 11.40 | 10.54 | 9.60 | 11.64 | 10.74 | 9.81 |
|----------------------|-------|-------|-------|------|-------|-------|------|

Percentage ware (1.5 inch riddle)Highfield IV (R)

|      |      |      |      |      |      |      |      |
|------|------|------|------|------|------|------|------|
| 1.0  | 90.8 | 89.8 | 88.7 | 91.0 | 90.3 | 90.1 | 90.0 |
| 1.6  | 91.3 | 91.0 | 91.4 | 91.6 | 92.1 | 91.5 | 91.1 |
| Mean | 91.0 | 90.4 | 90.1 | 91.3 | 91.2 | 90.7 | 90.5 |
| Diff | +0.5 | +1.2 | +2.7 | +0.6 | +1.8 | +1.4 | +1.1 |

Butt Furlong (W)

|      |      |      |      |      |      |      |      |
|------|------|------|------|------|------|------|------|
| Mean | 58.0 | 66.0 | 70.2 | 65.5 | 70.4 | 66.0 | 66.4 |
|------|------|------|------|------|------|------|------|

(1)  $\pm 0.418$  (2)  $\pm 0.491$ 

(1) For use in vertical and interaction comparisons

(2) For use in horizontal and diagonal comparisons

Treatments (in lb active material in 40 gallons per acre)

O = None (until weed counts were made)

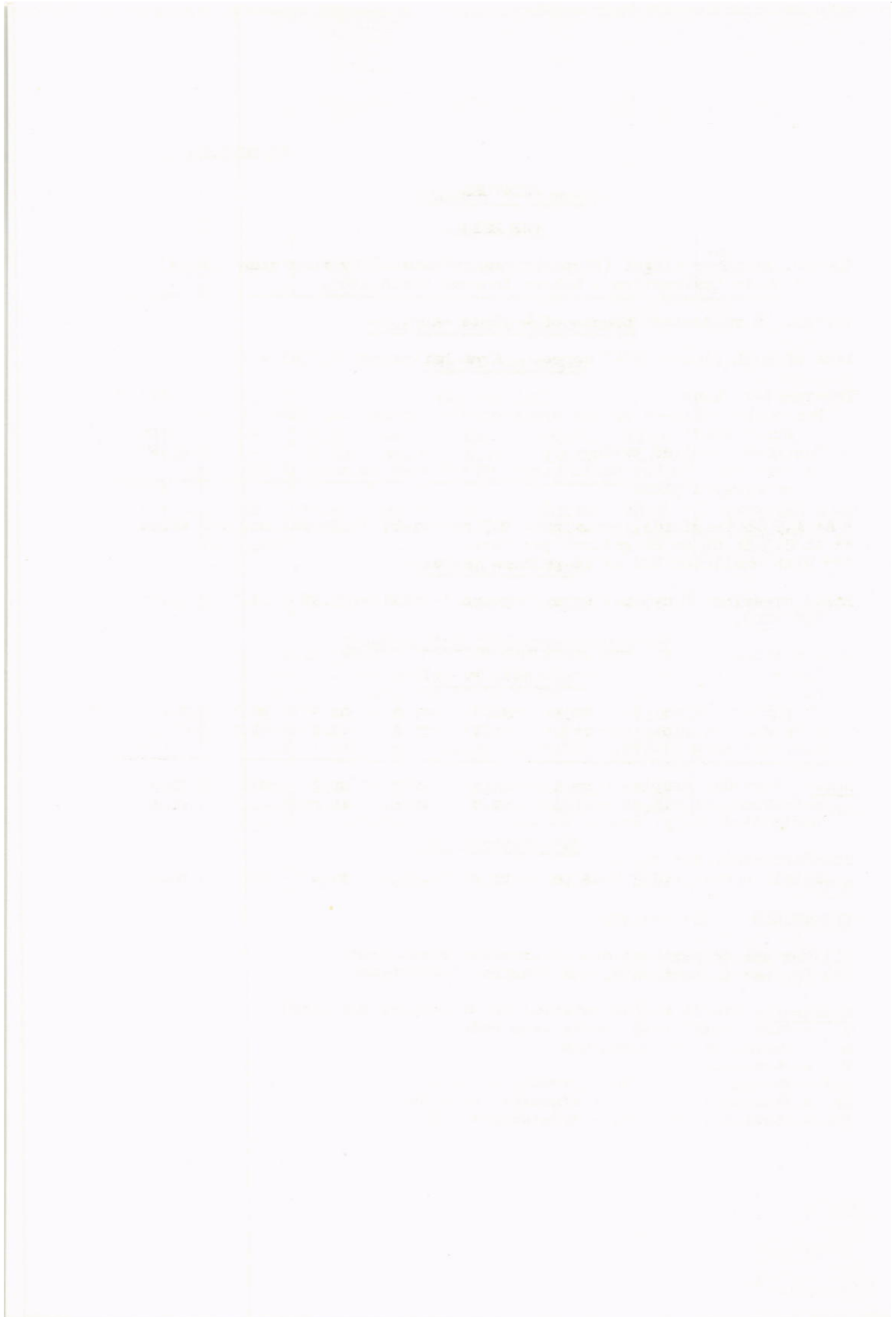
M = Mechanical cultivations

P = Paraquat: 0.75 lb

PrP = Paraquat: 0.75 lb + prometryne: 2 lb

SP = Paraquat: 0.75 lb + simazine: 0.50 lb

TP = Paraquat: 0.75 lb + trietazine: 1 lb



63/Dd/5.1

# POTATOES

(WP 201)

Control of tuber blight (*Phytophthora infestans*) by fungicide sprays and haulm destruction - Woburn Lansome Field 1963.

Design: 6 randomised blocks of 4 plots each.

Area of each plot: 0.0848 acres. Area harvested: 0.0141 acres.

|                                                                                             |        |
|---------------------------------------------------------------------------------------------|--------|
| Treatments: None                                                                            | (O)    |
| Mancozeb* followed by one spraying with copper oxychloride fungicide**                      | (Cu)   |
| Mancozeb* applied twice                                                                     | (M)    |
| As treatment <sup>Cu</sup> but haulm burnt off*** when foliage 1% blighted on sprayed plots | (Cu A) |

\* At 1.5 lb fungicide, containing 80% mancozeb, in 20 gallons per acre.

\*\* At 2.3 lb Cu in 20 gallons per acre.

\*\*\* With undiluted BOV at 16 gallons per acre.

Basal dressing: 8 cwt per acre compound fertiliser (17% N, 11% P<sub>2</sub>O<sub>5</sub>, 22% K<sub>2</sub>O).

Cultivations, etc.: Ploughed: Mar 8, 1963. Basal dressing applied: Apr 23. Rotary cultivated: Apr 24. Potatoes planted: Apr 25. Earthed up: June 19. Cu and M plots sprayed with mancozeb: July 11. Cu plots sprayed with copper oxychloride, M plots with mancozeb: July 23. A plots sprayed with BOV: Sept 13. Lifted: Oct 22. Variety: King Edward. Previous crops: Barley 1961, sugar beet 1962.

Note: Periodic samples were taken for the weight of tubers and an assessment of blight on foliage and in tubers was made. The haulm died early, mostly as a result of a severe aphid attack.

Standard error per plot.

Total tubers: 1.083 tons per acre or 14.3% (15 d.f.)

63/Da/5.2

Summary of Results

| Treatment                                |                         |      |      | Mean |
|------------------------------------------|-------------------------|------|------|------|
| O                                        | Cu                      | M    | Cu A |      |
| <hr/>                                    |                         |      |      |      |
| <u>Total tubers: tons per acre</u>       |                         |      |      |      |
| 8.51                                     | 6.72<br>( $\pm 0.441$ ) | 7.94 | 7.14 | 7.58 |
| <u>Percentage ware (1.5 inch riddle)</u> |                         |      |      |      |
| 83.5                                     | 69.8                    | 79.6 | 73.3 | 76.6 |

Treatments

O = None

Cu = Mancozeb\* followed by one spraying with copper oxychloride fungicide\*\*

M = Mancozeb\* applied twice

Cu A = As treatment Cu but haulm burnt off\*\*\* when foliage 1% blighted on sprayed plots

\* At 1.5 lb fungicide, containing 80% mancozeb, in 20 gallons per acre.

\*\* At 2.3 lb Cu in 20 gallons per acre.

\*\*\* With undiluted BCV at 16 gallons per acre.

63/De/1.1

CARROTS

(Wct 101)

The effect of systemic insecticides on yield through control of motley dwarf virus - Woburn Lansome Field 1963.

Design: A plaid rectangle of 4 rows and 8 columns.

Area of each plot: 0.0212 acres. Area harvested: 0.0016 acres.

Treatments. All combinations of:-

Granular systemic insecticide (to columns): None, 0.75 lb per acre menazon drilled just below the seed.

Early spraying: None, sprayed twice\*. (E)

Midseason spraying: None, sprayed twice. (M)

Late spraying: None, sprayed twice\*. (L)

The spray used was demeton-methyl at 6 fluid oz in 40 gallons per acre.

\*Intended treatments, only one application was made.

Basal dressing: 8 cwt compound fertiliser (10% N, 10% P<sub>2</sub>O<sub>5</sub>, 18% K<sub>2</sub>O) per acre.

Cultivations, etc.: Ploughed: Mar 8, 1963. Basal compound fertiliser applied: Apr 22. Menazon granules applied, seed drilled at 2.25 lb per acre: Apr 23. Demeton-methyl treatments applied: E - May 31, M - June 27 and July 8, L - July 22. Lifted: Sept 12. Variety: Scarlet Intermediate. Previous crops: Barley 1961, sugar beet 1962.

Note: Aphid counts and estimates of virus infection were made.

Standard errors per plot.

Roots: 2.328 tons per acre or 11.3% (14 d.f.)

Tops: 0.995 tons per acre or 14.0% (14 d.f.)

Summary of Results

| Systemic<br>Insecticide     | Times of spraying |       |       |       |       |       |       |       | Mean  |
|-----------------------------|-------------------|-------|-------|-------|-------|-------|-------|-------|-------|
|                             | -                 | E     | M     | EM    | L     | EL    | ML    | EML   |       |
| <u>Roots: tons per acre</u> |                   |       |       |       |       |       |       |       |       |
| (±1.646)                    |                   |       |       |       |       |       |       |       |       |
| None                        | 21.78             | 20.31 | 20.86 | 22.06 | 21.83 | 19.70 | 21.22 | 20.31 | 21.01 |
| Menazon                     | 19.06             | 18.17 | 19.56 | 20.73 | 20.67 | 22.25 | 20.03 | 22.19 | 20.33 |
| Mean (±1.164)               | 20.42             | 19.24 | 20.21 | 21.39 | 21.25 | 20.98 | 20.63 | 21.25 | 20.67 |
| Diff. (±2.328)*             | -2.72             | -2.14 | -1.30 | -1.33 | -1.16 | +2.55 | -1.19 | +1.88 | -0.68 |
| <u>Tops: tons per acre</u>  |                   |       |       |       |       |       |       |       |       |
| (±0.704)                    |                   |       |       |       |       |       |       |       |       |
| None                        | 7.44              | 7.42  | 6.86  | 7.44  | 7.70  | 5.91  | 7.86  | 6.31  | 7.12  |
| Menazon                     | 6.45              | 5.91  | 7.44  | 7.70  | 6.89  | 7.70  | 6.59  | 7.86  | 7.07  |
| Mean (±0.498)               | 6.95              | 6.67  | 7.15  | 7.57  | 7.29  | 6.81  | 7.22  | 7.09  | 7.09  |
| Diff. (±0.995)*             | -0.99             | -1.51 | +0.58 | +0.26 | -0.81 | +1.79 | -1.27 | +1.55 | -0.05 |

\*For use only in testing the difference of 2 differences.

Times of spraying

E = Early spraying: None, sprayed once

M = Midseason spraying: None, sprayed twice

L = Late spraying: None, sprayed once

63/De/1.2